
Appendix C

Prior Orders regarding LCRA's Water Management Plan and Firm Water Curtailment Plan

Appendix C-1: Order Approving LCRA's Water Management Plan and Amending Certificate of Adjudication Nos. 14-5478 and 14-5482 – September 20, 1989

Appendix C-2: Order Approving LCRA's Drought Management Plan – December 23, 1991

Appendix C-3: Agreed Order Approving Amendments to LCRA's Water Management and Drought Management Plan – December 18, 1992

Appendix C-4: Agreed Order Approving Amendments to LCRA's Water Management and Drought Management Plan – March 1, 1999

Appendix C-5: Order Overruling Objections to LCRA's System of Priorities Set Forth in its Water Management Plan – June 3, 2003

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Appendix C-7: Order Approving LCRA's Firm Water Curtailment Plan – December 12, 2011

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Appendix C-9: Order Approving Amendments to LCRA's Water Management Plan – February 3, 2020

Appendix C-1

Order Approving LCRA's Water Management Plan and Amending
Certificate of Adjudication Nos. 14-5478 and 14-5482
(September 20, 1989)

TEXAS WATER COMMISSION



IN RE: CONSIDERATION OF	§	
THE LOWER COLORADO RIVER	§	BEFORE THE
AUTHORITY'S WATER MANAGEMENT	§	
PLAN AND AMENDMENTS TO	§	TEXAS WATER COMMISSION
CERTIFICATES OF ADJUDICATION	§	
NOS. 14-5478 AND 14-5482	§	

ORDER APPROVING LOWER COLORADO RIVER AUTHORITY'S WATER MANAGEMENT PLAN AND AMENDING CERTIFICATES OF ADJUDICATION NOS. 14-5478 AND 14-5482

On the 7th day of September, 1989, the Texas Water Commission ("Commission") held a public hearing to consider the Lower Colorado River Authority's Water Management Plan and applications to amend Certificates of Adjudication Nos. 14-5478 and 14-5482. At the hearing, the following were named as parties: the Lower Colorado River Authority; the Texas Parks and Wildlife Department; the City of Austin; the Garwood Irrigation Company; the Sierra Club, Lone Star Chapter; the Texas Farm Bureau; the Matagorda County Water Council; Houston Lighting and Power Company as Project Manager for the South Texas Project; Clear, Clean Colorado River Association; Pierce Ranch; the Village of Lakeway; the Executive Director of the Texas Water Commission; and the Public Interest Counsel of the Texas Water Commission. Having considered the evidence and arguments presented, the Commission makes the following Findings of Fact and Conclusions of Law:

FINDINGS OF FACT

1. Notice of the adjudicative public hearing was published on July 26, 1989, in the Blanco County News, Austin American-Statesman and the Colorado County Citizen, newspapers regularly published and generally circulated in Blanco, Travis and Colorado Counties, Texas, respectively; on July 27, 1989, in the San Saba News and Star, Llano News, Highlander and the Bay City Daily, newspapers regularly published and generally circulated in San Saba, Llano, Burnet, and Matagorda Counties, Texas, respectively; on July 28, 1989, in the Fayette County Record, a newspaper regularly published and generally circulated in Fayette County, Texas; on July 29, 1989, in the Wharton Journal-Spectator, a newspaper regularly published and generally circulated in Wharton County, Texas, and on July 31, 1989 in the Bastrop Advisor, a newspaper regularly published and generally circulated in Bastrop County, Texas, the only counties in which persons reside who may be affected by action taken as a result of the hearing. Said notice was published not less than thirty days before the date of the hearing.

2. On July 26, 1989, notice of the public hearing was sent by first-class mail to persons who may be affected by action taken as a result of the hearing and to each person as required by law.
3. The Lower Colorado River Authority (LCRA) is requesting approval of its Water Management Plan for the Lower Colorado River, Colorado River Basin in accordance with the Court's Final Judgment and Decree entered in Cause No. 115,414 A-1, 264th Judicial District, In Re: The Exceptions of the Lower Colorado River Authority and the City of Austin to the Adjudication of Water Rights in the Lower Colorado River Segment of the Colorado River Basin, and is further requesting approval of amendments to Certificates of Adjudication Nos. 14-5478 and 14-5482 to authorize LCRA to divert, release and use the water in Lakes Buchanan and Travis for additional beneficial uses including domestic, recreation, instream flow and bays/estuary purposes.
4. LCRA's Water Management Plan consists of two volumes. Volume I, Policies and Operations, describes the issues and conflicts in the demands on the Colorado River system and lays out the policies and management actions LCRA will use to accommodate the variety of demands on the system. Volume II, Technical Report, describes the models and data sources and the process used for the determination of the Combined Firm Yield and the Annual Rule Curve methodology. Volume II includes a set of Appendices consisting of the Court's Final Judgment and Decree, and the detailed data used to support the recommendations and conclusions discussed in Volumes I and II.
5. The Highland Lakes Reservoirs are operated by LCRA as a system for flood control and water supply. Mansfield Dam is the only structure with a dedicated flood pool and is operated during flooding according to flood-control regulations as published in the Code of Federal Regulations and under the supervision of the U.S. Corps of Engineers.
6. LCRA has a remote data acquisition system referred to as "Hydromet." The Hydromet allows for remote interrogation of a networked system of twenty-one self-reporting rainfall gages, twenty-two remotely monitored streamflow gages and six reservoir elevation gages. Twenty of the streamflow gages also gather rainfall information, giving a total of forty-one rainfall sites. The network is polled each hour, and all data is verified and stored in a real-time data base on a central computer system. Communications are a combination of microwave and UHF radio. The relational data provided by the Hydromet monitors flows above and below the lakes.
7. LCRA has a central computer system that is composed of two Digital Equipment Corporation MicroVAX II mini computers, one

of which is designated as an operations system located at the LCRA System Operations Control Center, and the other designated as a development system located at the Water Resources office. Real time data is logged and maintained on an on-line historical data base for one year. This is available for access by operations models, historical analyses, or other needs.

8. LCRA has developed several hydrologic models that are models used for routine operations of the system. Each model was developed to meet specific operational needs. The Daily Operations Model, analyzes the downstream inflow and demands by accessing streamflow data, totalling demands, and making multiple computer runs of the Model. The Flood Management Model is a user oriented operation tool which accesses real-time data and routes flood flows through the Highland Lakes. The Storage Projection Model uses historical inflow data to estimate the reliability of reservoir system storage subject to storage conditions and water demands.
9. The Daily Allocation Model will determine the extent to which releases from storage are diverted. It will perform a water balance every twenty-four hours at each river gage below Tom Miller Dam, and will allocate the natural flow of the river (whether or not it originated upstream or downstream of the lakes) to major water rights holders to the extent it is available. The remaining portion, if any, of each diversion is assumed to have been from water released from storage. Each amount is then totaled for the week, month and year to determine the total demand on storage.
10. Daily Operations are a joint effort between the System Operations Control Center (SOCC), Hydro Operations personnel located at the dams, and Water Operations personnel located at the Central Office complex. Water Operations personnel determine the required release by contacting downstream customers, operating the Daily Operations Model, and posting the daily release schedule. The SOCC then determines the optimum time and during the day to release the water based on the daily power peak demand, and orders the hydro generation units to begin and end at the necessary times. Hydro Operations personnel at each dam determine which unit to run at each dam.
11. The standard operating levels for the Highland Lakes are: Lake Buchanan, 1020.35 feet; Inks Lake, 887.30 +/- 0.4; Lake LBJ, 824.70 +/- 0.3; Lake Marble Falls, 736.60 +/- 0.4; Lake Travis, 681.00; and Lake Austin, 492.30 +/- 0.5. All levels are referenced to mean sea level.
12. The U. S. Corps of Engineers is evaluating potential flood damages to areas both upstream and downstream of Mansfield

Dam. LCRA is cooperating in this study. The Corps is also performing a reconnaissance study of possible additional flood control and water supply reservoirs. LCRA is cooperating in this study as well.

13. The Highland Lakes System consists of Lakes Buchanan, Inks, LBJ, Marble Falls, Travis and Austin.
14. LCRA's water rights for Lakes Buchanan, Inks, LBJ, Marble Falls and Travis are set forth in Certificates of Adjudication Nos. 14-5478, 14-5479, 14-5480, 14-5481 and 14-5482. LCRA operates Tom Miller Dam (the dam creating Lake Austin) pursuant to agreement with the City of Austin. Austin's water rights for Lake Austin are set forth in Certificate No. 14-5471.
15. LCRA's water rights on the Colorado River below the City of Austin are set forth in Certificates of Adjudication Nos. 14-5437, 14-5473, 14-5474, 14-5475, and 14-5476.
16. LCRA's right to use the waters of the Highland Lakes is subject to the terms and conditions as set out in the final judgment and decree dated April 20, 1988, in Cause No. 115, 414-A-1.
17. LCRA is committed to following the terms and conditions of the final judgment and decree dated April 20, 1988 in Cause No. 115, 414-A-1.
18. LCRA's first step in development of its Water Management Plan was a comprehensive review of LCRA's Board policies and existing programs that guide and shape the way LCRA manages the river system. The LCRA Board of Directors held a series of monthly public meetings and received testimony from LCRA staff, outside experts, and numerous representatives of diversified constituencies including state agencies, environmental groups, business, industry, agricultural interests, and wholesale electric customers. Based upon the evidence the Board received new comprehensive water policies were adopted by the LCRA Board. These policies form the foundation of the Plan.
19. LCRA's next step was the formulation of a Public Task Force. The LCRA staff and public task force met and worked together over a 6 month period.
20. A draft of the Technical Report (Volume II) of the Water Management Plan was transmitted to the Commission on December 30, 1988. A draft of both Volumes I and II of the Plan was submitted to the Commission's staff and distributed to the public in February 1989 for public comment, LCRA held public workshops followed by local meetings in Bay City, Eagle Lake

and at Buchanan Dam. Additionally, public discussions during LCRA Board meetings were held in March, April and May 1989. LCRA formally adopted the Plan in May 1989.

21. LCRA's proposed Water Management Plan was filed with the Commission on July 7, 1989. The Commission acknowledged receipt of LCRA's proposed Plan on July 18, 1989.
22. LCRA's Water Management Plan has essentially four criteria. One is that the Highland Lakes and the Colorado River downstream will be managed together as a single system for downstream water supply purposes. The second is that the beneficial use of the water derived from inflows below the Highland Lakes will be maximized. The third is that LCRA will stretch and conserve the waters stored in the Highland Lakes and advance water quality. The fourth is that adequate flows will be provided to maintain, and where reasonably possible, improve, fish, wildlife, and recreation resources in the Lower Colorado River and to maintain a proper ecological environment and health of related living marine resources in the Lavaca-Tres Palacios Estuary, to the extent it is affected by the lower Colorado River watershed.
23. LCRA will follow five guidelines in implementing its Water Management Plan including:
 - a. All demands for water from the Colorado River downstream of the Highland Lakes will be satisfied to the extent possible by run-of-river flows of the Colorado River;
 - b. Inflows will be passed through the Highland Lakes to honor downstream senior water rights only when those rights cannot be satisfied by the flow in the river below the Highland Lakes;
 - c. The firm, uninterruptible commitments of water from Lakes Travis and Buchanan will not exceed the Combined Firm Yield;
 - d. Water from Lakes Travis and Buchanan will be available on an interruptible basis only as long as LCRA's ability to meet the demand for uninterruptible water is not impaired;
 - e. Water shall not be released through any dam solely for hydroelectric generation, except during emergency shortages of electricity, and during other times that such releases will be needed for another beneficial purpose.
24. LCRA has the ability to constantly monitor the amount of water in the river available to meet demands through the Hydromet

System which should allow full utilization of the flows originating below Lake Travis prior to making any releases from storage or passing inflows through the reservoirs.

25. Under the Water Management Plan the four downstream irrigation operations (Gulf Coast, Lakeside, Garwood, and Pierce Ranch) will have first priority for the interruptible water in the annual allocation process. This priority will be set by establishing a Conservation Base for LCRA's two irrigation districts. LCRA intends to negotiate a contract which will include a Conservation Base acreage with Pierce Ranch. The Conservation Base acreage for Gulf Coast, Lakeside and Pierce Ranch was determined on the basis of a ten-year (1976-1985) historical average of actual production acreage. The allocation of water for these three users is based on a duty of 5.25 acre-feet of water per acre irrigated. The priority allocation and terms governing the interruption of supply of stored water for Garwood are based upon a contract between Garwood and LCRA. The 5.25 acre-foot-per-acre duty also applies to Garwood irrigated acreage. In the annual allocation process Lakeside has a priority to interruptible stored water in an amount necessary to firm up run-of-river rights to 136,500 acre-feet per year; Gulf Coast an amount necessary to firm up run-of-river rights to 194,250 acre-feet per year and Garwood an amount necessary to firm up run-of-river rights to 168,000 acre-feet per year.
26. When the federal allocation for the number of acres of rice that can be grown exceeds the Conservation Base acreage of Lakeside and Gulf Coast, then in that year LCRA will provide back up stored water for up to 28,300 acres at Lakeside and 42,800 acres at Gulf Coast. These limits represent the maximum number of acres served by each of the two divisions during the 10 year historic period that was used to establish the Conservation Base. For the Lakeside Division, any acreage over 25,000 and up to 28,300 can be served from an alternate source.
27. Lake levels follow an annual cycle--that of filling the conservation storage space in the winter and spring months of the year to be drawn down by larger water uses during the summer months.
28. Because these multiple purpose reservoirs were not constructed for recreational use, the demands for stability in the reservoir levels by recreation interests present conflicts which are extremely difficult to accommodate. If limits are to be placed on how far down the reservoirs' water levels are allowed to decline, a corresponding limitation on the amount of water that is available to supply the other demands on the reservoir system must also be agreed to.

29. To the extent that the annual analysis of the amount of water in storage reveals that there are interruptible water supplies available after meeting the demands of the irrigation operations, interruptible water may be held in the reservoirs to better ensure the security of supply or to maintain lake levels.
30. If additional sales of interruptible water exceed the Conservation Base amounts and the priority allocation for Garwood would draw the lakes below these minimum levels the LCRA Board will not declare any additional interruptible water available for sale in that year. Those levels are 660 feet msl for Lake Travis and 1012 feet msl for Lake Buchanan. LCRA is not guaranteeing minimum lake levels.
31. Another item to help keep the levels of Lakes Buchanan and Travis as high as possible is the agreement that no maintenance, except for emergencies, which would require the lowering of Lakes LBJ, Marble Falls, and Inks will be permitted if the refilling of those lakes would draw the levels of Lakes Travis and Buchanan below the minimum levels. Periodic lowering and refilling of Lake Austin will be done pursuant to the Settlement Agreement (December 10, 1988) between LCRA and the City of Austin.
32. Downstream recreation interests may be enhanced by LCRA's commitment to maintain minimum instream flows. LCRA will develop additional boat launches and recreation areas on the river through LCRA's 10-county district in order to give the public better access to the Colorado River.
33. Hydroelectric power plants located in each of the dams owned and operated by LCRA total 242 megawatts of capacity. Hydropower generally has been subordinated to be a by-product of the release of water for other purposes. LCRA retains the right to make releases solely for hydropower production in times of emergency as part of the Water Management Plan operating policies.
34. LCRA and Texas Parks and Wildlife Department (TPWD) have entered into a Memorandum of Understanding (MOU), wherein the LCRA and TPWD have agreed that LCRA's Water Management Plan would have a goal of maintaining, and where reasonably possible, improving fish, wildlife, and recreation resources in the Lower Colorado Watershed and of maintaining a proper ecological environment and health of related living marine resources in the Lavaca-Tres Palacios Estuary, to the extent that it is affected by that watershed. Some of the provisions addressed in the MOU have been included in LCRA's Water Management Plan.

35. LCRA and TPWD currently are studying the instream flow issue. These studies are scheduled for completion in March 1991.
36. Until the instream flow studies are complete, LCRA will commit to maintaining a minimum monthly mean flow of 200 cfs throughout the lower basin. This flow may, at times, be satisfied from inflows into the river channel and releases made by LCRA to satisfy the demands of downstream users. To assure that sufficient water will be available to satisfy this instream flow demand, LCRA has allocated 25,000 acre-feet of firm water supply to back up this demand on the system and the demand for inflows into the bays and estuaries.
37. Fresh water inflows are essential to maintenance of the productivity of the bays and estuaries. Preliminary data indicate that the amount of inflows needed for the Lavaca-Tres Palacios Estuary may represent the largest single demand on the system. TPWD and the Texas Water Development Board (TWDB) are currently studying the issue of how much fresh water is necessary to maintain the productivity of the bays and estuaries. The study is scheduled for completion by the end of 1989 with public review scheduled during 1990.
38. Until the bays and estuaries study is completed, LCRA has committed to a minimum monthly mean flow of 200 cfs, a minimum seasonal mean flow of 375 cfs, and a minimum annual flow of 272,121 acre-feet for the bays and estuaries. Measurements are to be made at the USGS gage at Bay City. This flow may at times be satisfied from inflows into the river channel, releases of stored water by LCRA for downstream uses and runoff or tailwaters from the rice irrigation operations. These flows will be backed up with 25,000 acre-feet of firm supply water which is also available for instream flow demands.
39. The Texas Water Development Board (TWDB) and the U.T. Bureau of Economic Geology are currently studying the Carrizo-Wilcox and Gulf Coast Aquifers. LCRA is studying the feasibility of the use of groundwater resources in conjunction with interruptible surface water supplies including the evaluation of artificial recharge of depleted aquifer storage space.
40. Under the existing LCRA Water Pricing Policy the rates for purchasing water must recover the costs associated with the Water Management Plan including necessary funds for water quality and conservation activities.
41. The water to be captured by the Stacy Reservoir are waters that otherwise would have flowed into Lake Buchanan. LCRA determined that the appropriate approach at this time was to calculate the firm yield of the Stacy reservoir separately

from the Highland Lakes, then add it back in, to give the total combined firm yield for Lakes Buchanan and Travis.

42. LCRA used a standard single reservoir operation model to determine the firm yield of the Stacy Reservoir. Inputs to the model included: inflow, net evaporation, monthly water demand distribution, and area/capacity curve for the reservoir.
43. LCRA used a multiple reservoir operations model to determine the combined firm yield of Lakes Buchanan and Travis. User defined local water demands were assumed at each of the reservoirs. Inputs to the model included: inflows, net evaporation, local water demands, monthly water demand distribution, minimum and maximum allowable contents, and area/capacity curves for each reservoir.
44. The period of 1941-1965 was used in the determination of the combined firm yield which includes the worst drought of record encountered.
45. Hydrologic data was related to reservoir inflow. The inflow that actually occurred in the record drought was adjusted to simulate a future time period. The monthly values of inflow to Lakes Buchanan and Travis for the period of January 1940 through December 31, 1972 provided to LCRA by TWC water availability model were adjusted. Under the approach used at this time by LCRA to determine the combined firm yield, the simulated operations of Stacy Reservoir did not pass flow to fulfill downstream senior run-of-the-river water rights.
46. LCRA determined how much water was necessary to satisfy daily water demands at a specific location to the extent that flow is available in the river at that point on that specific day. LCRA found that the average annual unsatisfied demand was 520,657 acre-feet; the maximum annual unsatisfied demand was 674,095 acre-feet; and minimum annual unsatisfied demand was 340,500 acre-feet.
47. LCRA determined that the firm yield of the Stacy Reservoir is 90,546 acre-feet. The combined firm yield of Lakes Buchanan and Travis without inflow from upstream of Stacy Reservoir is 445,266 acre-feet/year. Adding the firm yield of Stacy Reservoir results in the combined firm yield for Lakes Buchanan and Travis of 535,812 acre-feet/year which represents the maximum average annual demand that can be met by these two lakes during a repetition of the most critical drought of record on the lower Colorado River. The combined firm yield may also be expressed as a total of 2,679,060 acre-feet over any five consecutive calendar-year period.

48. LCRA developed a rule curve which defines the ability of Lakes Buchanan and Travis to meet annual demands in excess of the combined firm yield, while reserving an adequate supply to meet firm demands.
49. Starting with the reservoirs full, various demands ranging from .781 million acre-feet to 1.5 million acre-feet were placed on the system for the period. It was found that even at a demand of 1.5 million acre-feet per year 100% of the demand was met in 46% of the years; 75% of the demand was met in 63% of the years; and the amount of .781 million acre-feet was met in 80% of the years.
50. This annual rule curve is considered conservative to the degree that the effect of a critical short-term drought equal to or less severe than historical will be negligible only if total firm demands are less than the combined firm yield.
51. The annual operations rule curve will analyze projected annual demands and based on October 1 lake levels will guarantee the supply of water for firm demands and identify an annual amount of water which may be used for non-firm purposes. It will be modified as firm demands increase, and as hydrologic conditions change in the Colorado River Basin.
52. The operational rule curve will be applied to the system on a monthly basis to determine how the system is responding to current conditions as compared to historical operations. This will allow LCRA to optimize reservoir operations on a real time basis and to determine if adjustments to the amount of interruptible water are necessary. This monthly analysis will help LCRA detect early signs of drought and allow LCRA to timely develop and implement drought contingency measures.
53. The amount of water required to meet the firm demand within the system for the preceding year will be calculated in early October. This amount will be compared to the projections for that year, and any variations will be noted and documented. LCRA will solicit information and projections of use from all of its firm supply contract holders and other firm uses provided for by resolution of the LCRA Board. This information will be used to develop a projection of firm demands for the coming year.
54. LCRA will assess the contents of Lakes Travis and Buchanan as of October 1 to project the storage levels for January 1 of the next year. Inflows into Lakes Travis and Buchanan from the upstream tributaries will be added to this preliminary storage level based on the minimum annual inflow from the period of drought. This process will allow LCRA to reserve sufficient water in the system to meet all firm demands for one year beyond the year being considered for allocations.

Estimates for firm demand commitments for the next year will be subtracted from the total water supply available. The amount of water remaining will then be available for interruptible allocation for that year.

55. In October, LCRA will publish the results of the allocation process, notify the LCRA Board, firm contract holders, the Texas Parks & Wildlife Department and any existing or potential interruptible contract holders. During the October LCRA Board meeting information will be presented to the Board and discussed.
56. The recommended annual allocation plan will be published and LCRA will consider public comments and will take into account any significant water events that may have occurred up to the date of publication. The annual allocation plan will be submitted as a recommendation for LCRA Board approval in November of each year.
57. The portion of the combined firm yield that is not yet committed and the firm uninterruptible water that is committed but not yet being used increases the interruptible water that is available each year. The water that is captured and stored from flood flows also adds to the amount of interruptible water that is available. Over time, as the current contracts draw fully on their commitments and the remainder of the firm yield is contracted for, there will be less interruptible water available on an annual basis.
58. LCRA has committed the following amounts out of the combined firm yield amount:
 - a. Stacy Reservoir - the maximum impact of Stacy Reservoir on the firm yield of Lakes Travis and Buchanan is an average of 90,546 acre-feet per year.
 - b. City of Austin - LCRA has agreed to firm up or supplement Austin's independent water rights to the extent of 290,156 acre-feet per year. A commitment of an average of 148,300 acre-feet per year of stored water is necessary to meet this demand.
 - c. Highland Lakes Water Sale Contracts - municipal and industrial contracts total 104,754 acre-feet per year.
 - d. Cooling Water for LCRA Power Plants - LCRA Board Resolution of January 22, 1987 committed 15,000 acre-feet for Ferguson; 10,750 acre-feet for Sim Gideon and 38,101 acre-feet for Fayette Power Project for a total of 63,851 acre-feet per year.

- e. South Texas Project (STP) - LCRA has a contract to supply industrial water to STP in an amount up to 102,000 acre-feet per year. The commitment is met first by run-of-river water, firmed-up by stored water from Lakes Buchanan and Travis. Simulated operations through the drought of record showed a demand for stored water in one year of 51,700 acre-feet. A commitment of an average of 5,680 acre-feet per year of stored water is necessary to meet this demand.
- f. Instream Flows and Bay/Estuary Needs - LCRA is also committing (reserving) 25,000 acre-feet out of the combined firm yield to meet instream flows and bay and estuaries' needs.
59. LCRA is reserving 50,000 acre-feet of the remaining combined firm yield for future uses under LCRA's certificates of adjudication. This reservation will be until water supply and demand assessments for LCRA's 10-county district are completed or within three years whichever is sooner.
60. The uncommitted balance of the combined firm yield of Lakes Buchanan and Travis is 47,681 acre-feet per year.
61. LCRA is in the process of developing a drought management plan and will be submitting the plan to the Commission in 1990.
62. LCRA is conducting county-by-county assessments of alternative water supply sources. This data will be useful in the development of local drought management plans.
63. The goal of LCRA's conservation programs is to promote the development and application of practices and technologies that will improve water use efficiency, increase the beneficial re-use of water, and minimize the waste of water.
64. LCRA's water conservation programs are directed at the two largest users of water, irrigated agriculture and municipal.
65. LCRA's goal for conservation of water used by irrigated agriculture is to reduce agricultural demands for stored water from the Highland Lakes and reduce costs associated with the operation of LCRA-owned irrigation water delivery systems in Colorado, Wharton and Matagorda Counties.
66. LCRA's current irrigated agriculture conservation programs consist of activities aimed at improving the operating efficiency of irrigation water delivery systems and improving on-farm water use efficiency.
67. The major elements of the irrigation canal rehabilitation program include: improved operational control and management

of the system; vegetation removal and control; improved hydraulics characteristics of canals; installation of water control and measurement structures; and automation of water diversion facilities.

68. The irrigated canal rehabilitation program is expected to reduce water use by 30 percent within the Gulf Coast canal system. Preventive maintenance at Lakeside is expected to maintain canal efficiency.
69. The major elements of the on-farm water conservation program include: Direct support through funding and staff for the Cooperative Rice Water Management Research Program; assistance with the transfer of information from the research arena to the rice producer; conservation demonstrations such as the development and testing of an automated levee gate; and the inclusion of water conservation stipulations in LCRA's standard irrigation water sale contract.
70. Preliminary results indicate that on-farm water use can be reduced by 25 to 30 percent.
71. LCRA's municipal water conservation programs are directed towards implementation of urban water conservation and water re-use. Focus is towards encouraging and supporting local level initiatives by more than 300 public water utility systems within LCRA's statutory district.
72. The five major elements of LCRA's municipal water conservation programs are:
 - a. Direct technical assistance with the development and implementation of local water conservation programs including public awareness and education; water efficiency standards and guidelines for new construction (e.g., plumbing fixture efficiency standards); retrofit programs to improve water efficiency in existing developments; conservation-oriented water rates and other economic incentives; low-water-use landscaping (i.e., Xeriscape); and water re-use and recycling.
 - b. Distribution system audit and leak detection services for local water utilities serving fewer than 10,000 connections.
 - c. Integration of water conservation and re-use measures, as appropriate, with other LCRA programs and projects including LCRA water sale contracts; water resource planning and demand forecasting; water and wastewater utility service studies, projects, and service agreements; water rate design; environmental programs; and energy conservation programs.

- d. Public awareness and education on the water conservation opportunities, benefits, and measures. On-going activities include distribution of brochures, fact sheets, and videos on water conservation; media promotion (e.g., news articles, public service announcements, talk shows, etc.); presentations to civic and service organizations; and workshops, seminars, and special events.
 - e. Demonstrations of advanced water conservation and re-use technologies and low-water-use landscaping techniques.
- 73. LCRA will no later than December 31, 1991 reference and summarize existing information on point and nonpoint pollution sources and loading on the Colorado River including inputs of nutrients, metals, pesticides, oxygen demanding substances and other contaminants that may affect water quality, fish wildlife and recreation resources in accordance with the MOU with TPWD.
 - 74. LCRA will no later than December 31, 1991 identify new data needed to determine the effect of water quality on revision of minimum flow schedule and as soon as reasonably possible will modify its existing monitoring programs or new programs to collect such new data.
 - 75. LCRA is evaluating the potential problems associated with anoxic hypolimnetic releases from reservoirs and the potential for related fish kills due to resulting low dissolved oxygen levels downstream. LCRA will no later than December 31, 1991 reference and summarize this evaluation.
 - 76. LCRA has also applied to the Commission for an amendment to the Certificates of Adjudication Nos. 14-5478 and 14-5482 relating to Lakes Buchanan and Travis.
 - 77. Certificates of Adjudication Nos. 14-5478 (Lake Buchanan) and 14-5482 (Lake Travis) authorize LCRA to divert and use water from Lakes Buchanan and Travis for municipal, industrial, irrigation and mining purposes. LCRA is authorized to use the water impounded in Lakes Buchanan and Travis for recreation purposes with no right of diversion or release. LCRA is authorized to use the bed and banks of the Colorado River, below Lakes Buchanan and Travis to convey water released from Lakes Buchanan and Travis for use by LCRA or others entitled to use such water in the amounts and for the purposes authorized in the Certificates. LCRA is also authorized to divert and use water through Buchanan Dam and Mansfield Dam for the purpose of hydroelectric power generation.
 - 78. The Water Management Plan submitted by LCRA to the Commission for its consideration includes proposed reservoir operating

procedures whereby LCRA will divert or release waters stored in Lakes Buchanan and Travis for several additional purposes of use including domestic, recreation, instream flow and bays/estuary purposes.

79. In order to manage Lakes Buchanan and Travis as proposed in the Water Management Plan, LCRA's Certificates of Adjudication Nos. 14-5478 and 14-5482 need to be amended to authorize LCRA to divert, release and use the water in Lakes Buchanan and Travis for additional beneficial uses including domestic, recreation, instream flow and bay/estuary purposes.
80. As part of these amendments, LCRA is not requesting an additional amount of water. The proposed amendments will not result in an additional consumptive use of state water.
81. A "firm" demand is a contractual obligation or other commitment of LCRA's which must be met 100% of the time through the drought of record. Total firm demands will need to be less than or equal to the combined firm yield to be protected throughout recurrence of the drought of record.
82. Interruptible or "nonfirm" demands are LCRA's contractual obligations or other commitments for stored water which contractually do not have to be met 100% of the time. They will be met to the extent additional water is available each year after firm demands are satisfied.
83. LCRA has formally adopted standard water sale contract forms, and procedures and rules for administering water sale contracts. Existing contracts are written for firm supply of water, subject only to the general laws of availability. A second standard form contract for interruptible supply is presently being developed.
84. LCRA currently has no contracts upstream from the Highland Lakes, except those with upstream reservoirs with junior rights to the Highland Lakes which are more or less operation agreements.
85. Existing upstream operating agreements should be considered firm contracts, and their effect on the combined firm yield should be quantified as was Stacy Reservoir's effect.
86. Junior rights senior to November 1, 1987, will be honored as required by the Court's Judgment and Decree with interruptible supplies. Their diversions will be allocated similar to downstream senior rights.
87. A report which documents LCRA's compliance with the Water Management Plan during the previous year will contain information regarding the adequacy of the hydrologic and

hydraulic data monitoring system as to intensity and accuracy; accuracy of reported or monitored activities; adequacy of the operating rule curve and the adequacy of the daily allocation model and any additional information the Executive Director may request.

88. Under the approach used by LCRA at this time, the combined firm yield of Lakes Buchanan & Travis is 535,812 acre-feet/year. This amount may also be expressed as an average of a total of 2,679,060 acre-feet per year over any five consecutive calendar-year period.
89. LCRA's proposed Water Management Plan does not presently propose any new projects taking, storing or diverting water in excess of 5,000 acre-feet per year.
90. The use of an operational rule curve, as developed by LCRA, is an acceptable approach to insure utilization of the lakes' storage while at the same time guaranteeing that firm demands will be met dependably year after year.
91. LCRA's procedures and guidelines for the allocation of firm water and interruptible water supplies are acceptable, with the understanding that the allocation procedures may be amended at a later time to reflect the results of the instream flow and bay/estuary studies; provided, however, that the Commission shall retain jurisdiction to resolve all disputes regarding allocation of stored water that may arise in the future.
92. LCRA's initiatives regarding point and non-point sources of pollution are commendable.
93. The priorities in LCRA's Water Management Plan for interruptible water are subject to changes after the completion of the studies on the instream flows and bays/estuaries.
94. LCRA's proposed system operations under LCRA's Water Management Plan are consistent with the special conditions set forth in the Court's Final Judgment and Decree regarding LCRA's rights to use the waters of Lakes Buchanan and Travis.

CONCLUSIONS OF LAW

1. The public hearing was held under the authority and in accordance with Chapter 11 of the Texas Water Code, as amended and the Texas Water Commission Permanent Rules.
2. The Texas Water Commission has jurisdiction to consider LCRA's proposed Water Management Plan and applications to amend its Certificates of Adjudication.

3. LCRA's proposed Water Management Plan recognizes the necessity of beneficial inflows from the Colorado River into the Lavaca-Tres Palacios Estuary consistent with Section 11.147 of the Texas Water Code.
4. LCRA's proposed Water Management Plan recognizes the necessity of providing for the protection of fish and wildlife habitats and the water quality of the river as required by Section 11.147 of the Texas Water Code.
5. LCRA's proposed Water Management Plan recognizes the Commission's statutory authority to require water conservation and provides for water conservation consistent with Section 11.134(b)(4) of the Texas Water Code.
6. LCRA's applications to amend its Certificates of Adjudication Nos. 14-5478 and 14-5482 authorizing LCRA to use the waters of Lakes Buchanan and Travis for additional beneficial purposes do not contemplate an additional consumptive use of state water or an increased rate or period of diversion.
7. In order to effectuate the policies of this State relating to the conservation and best utilization of the water resources of this State as set forth in Chapter 11 of the Texas Water Code, LCRA's proposed Water Management Plan should be approved and LCRA's applications to amend Certificates of Adjudication Nos. 14-5478 and 14-5482 should be granted.

NOW, THEREFORE, BE IT ORDERED BY THE TEXAS WATER COMMISSION THAT:

1. LCRA's proposed Water Management Plan is approved with the following conditions:
 - a. The Water Management Plan shall be subject to the continuing right of supervision of the Commission, and the Commission, on its own motion, may reconsider any element of the plan at any time in the future.
 - b. LCRA's responsibility and authority under the Water Management Plan is limited to operational control of the Highland Lakes and LCRA's facilities downstream, and is limited by the terms of this Order.
 - c. LCRA's responsibility and authority under the Water Management Plan is subject to and shall not conflict with the authority of any watermaster operation the Commission may establish on the Colorado River.
 - d. LCRA shall make available to the Commission all real-time, historical or allocated streamflow data collected by LCRA.

- e. LCRA shall supply interruptible water, in accordance with the provisions and conditions specified in the Final Judgement and Decree, to any downstream water right with a priority date junior to December 1, 1900 and senior to November 1, 1987 that authorizes the diversion of not more than 3000 acre-feet of water per year. Priority shall be given to these water rights in the same manner that LCRA allocates water to the major irrigation operations downstream (Lakeside, Gulf Coast, Garwood and Pierce Ranch).
- f. All sales, agreements or LCRA Board commitments for the use of water in or from the Highland Lakes shall be submitted to the Commission within 45 days of the effective date of the document.
- g. LCRA shall submit a drought contingency plan within one year from the date the Commission signs this order approving the Water Management Plan. Such plan shall be subject to the review and approval of the Commission.
- h. LCRA shall allocate 25,000 acre-feet per annum of its firm water supply to supplement and maintain a minimum monthly mean flow of 200 cfs throughout the lower Colorado River measured at the USGS gage at Bastrop for instream flow purposes and a minimum monthly mean flow of 200 cfs, a minimum seasonal mean flow of 375 cfs and a minimum annual flow of 272,121 acre-feet measured at the USGS gage at Bay City for freshwater inflow to the Lavaca-Tres Palacios estuarine system.
- i. Prior to any diversion of surface water for recharge purposes, LCRA shall obtain the necessary authorizations from the Commission.
- j. LCRA shall prepare and submit to the Commission, on or before March 1 of each year beginning with March 1, 1990, a report which documents compliance with the approved Water Management Plan and any special conditions thereto during the previous year. Such report shall be in a form approved by the Executive Director.
- k. After the instream study by LCRA and TPWD is completed, but in any event no later than March, 1992, LCRA will submit an application to amend its Water Management Plan to reflect the results of the instream flow studies and the studies and evaluations referenced in Findings of fact #73, 74, & 75 above. LCRA shall do all things necessary to ensure that such application is administratively and technically complete within 6 months of submission. The Commission agrees to hold a hearing within one year of the date of LCRA's submission to

consider the amendments of the Plan, or, if the studies are not complete, to determine why such studies are not complete.

1. After completion of the TWDB and TPWD study on freshwater inflows into the bays and estuaries, as applicable to the Lavaca-Tres Palacios Estuary, and in any event no later than March, 1993, LCRA will submit an application to amend its Water Management Plan to reflect the results of the bays/estuary study. LCRA shall do all things necessary to ensure that such application is administratively and technically complete within 6 months of submission. The Commission agrees to hold a hearing within one year of the date of LCRA's submission to consider the amendments of the Plan, or, if the studies are not complete, to determine why such studies are not complete.
 - m. The combined firm yield as found by the Commission in this Order is subject to adjustment and refinement from time to time as additional studies and simulations are developed that more accurately reflect assumptions and operations as required by law.
 - n. The Commission retains jurisdiction to resolve any and all disputes regarding the allocation of stored water from Lakes Travis and Buchanan, notwithstanding the procedures and guidelines set forth in the Water Management Plan.
2. LCRA's applications to amend Certificates of Adjudication Nos. 14-5478 and 14-5482 are granted with the following conditions:
 - a. LCRA's certificates of adjudication shall reflect the combined annual firm yield of Lakes Travis and Buchanan to be as found by the Commission in this Order, and as may be modified by the Commission from time to time.
 - b. For purposes of perfection, LCRA's authorization to divert, release or use water for recreation purposes is limited to that quantity of water actually sold for that purpose whether used in, or released, or diverted from Lakes Buchanan and Travis.
3. The Chief Clerk of the Texas Water Commission forward a copy of this Order, subject to the filing of motions for rehearing, to all parties.
4. If any provision, sentence, clause or phrase of this Order is for any reason held to be invalid, the invalidity of any portion shall not affect the validity of the remaining portions of the Order.

5. Nothing in the Water Management Plan or this Order shall be construed to impair, or to authorize LCRA or any other person or entity to impair, senior or superior water rights in the Colorado River Basin.

Signed this 20th day of September, 1989.

TEXAS WATER COMMISSION


Buck J. Wynne, III, Chairman

(SEAL)


Brenda W. Foster, Chief Clerk

Appendix C-2

Order Approving LCRA's Drought Management Plan
(December 23, 1991)

THE STATE OF TEXAS
 COUNTY OF TRAVIS
 TEXAS WATER COMMISSION



I hereby certify that this is a true and correct copy of a Texas Water Commission document, the original of which is filed in the permanent records of the Commission.
 Given under my hand and the seal of office on
 JAN 6 1992

Glenn A. Vanden
 Glenn A. Vanden, Chief Clerk

SECRETARY
 TEXAS WATER COMMISSION

CONSIDERATION OF THE
 LOWER COLORADO RIVER
 AUTHORITY'S DROUGHT
 MANAGEMENT PLAN

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ORDER APPROVING LOWER COLORADO
 RIVER AUTHORITY'S DROUGHT MANAGEMENT PLAN

On the 18th day of December, 1991, the Texas Water Commission ("Commission") held a public hearing to consider the Lower Colorado River Authority's ("LCRA") proposed Drought Management Plan. At the hearing, the following were named as parties: the Lower Colorado River Authority; the Texas Parks and Wildlife Department ("TPWD"); the City of Austin; Garwood Irrigation Company; the Sierra Club, Lone Star Chapter; the Matagorda County Water Council; Houston Lighting and Power Company as Project Manager for the South Texas Project; the Executive Director of the Texas Water Commission; and the Public Interest Counsel of the Texas Water Commission. Having considered the proposed agreed order of the parties, the Commission makes the following Findings of Fact and Conclusions of Law:

FINDINGS OF FACT

1. Notice of the public hearing was published on October 10, 1991 in the Blanco County Record Courier, a newspaper regularly published and generally circulated in Blanco County, Texas; October 9, 1991 in the Austin American-Statesman, a newspaper regularly published and generally circulated in Travis County, Texas; on October 9, 1991 in the Colorado County Citizen, a newspaper regularly published and generally circulated in Colorado County, Texas; on October 10, 1991 in the San Saba News and Star, a newspaper regularly published and generally circulated in San Saba County, Texas; on October 10, 1991 in the Llano News, a newspaper regularly published and generally circulated in Llano County, Texas; on October 10, 1991 in the Highlander, a newspaper regularly published and generally circulated in Burnet County, Texas; on October 10, 1991 in the Bay City Daily Tribune, a newspaper regularly published and generally circulated in Matagorda County, Texas; on October 8, 1991 in the Fayette County Record, a newspaper regularly published and generally circulated in Fayette County, Texas; on October 5, 1991 in the El Campo Leader-News, a newspaper regularly published and generally circulated in Wharton County, Texas; and on October 7, 1991 in the Bastrop Advertiser, a newspaper regularly published and generally circulated in Bastrop County, Texas. These ten counties are

the only counties in which persons reside who may be affected by action taken as result of the hearing. Said notice was published not less than thirty (30) days before the date of the hearing.

2. On September 26, 1991, notice of the public hearing was sent by first-class mail to persons who may be affected by action taken as a result of the hearing and to each person as required by law.
3. LCRA is requesting approval of its Drought Management Plan for the Lower Colorado River, Colorado River Basin, in accordance with the Commission's September 7, 1989 Order approving LCRA's Water Management Plan and amending Certificates of Adjudication Nos. 14-5478 and 14-5482. LCRA's Water Management Plan was developed and submitted by LCRA in accordance with the Final Judgment and Decree entered by the court in Cause No. 115,414 A-1, 264th Judicial District, In Re: The Exceptions of the Lower Colorado River Authority and the City of Austin to the Adjudication of Water Rights in the Lower Colorado River Segment of the Colorado River Basin.
4. LCRA's proposed Drought Management Plan was filed with the Commission on October 19, 1990.
5. LCRA's procedures and guidelines set forth in the Water Management Plan and the Drought Management Plan for the allocation of firm water and interruptible water supplies are acceptable as conditioned by the provisions of this Agreed Order and with the understanding that the allocation procedures may be amended by the Commission at a later time for any justifiable reason including, but not limited to, an amendment to reflect the results of the instream flow and bay and estuary studies; provided, however, that the Commission shall retain jurisdiction to resolve all disputes regarding allocation of stored water that may arise in the future.
6. The priorities in LCRA's Water Management Plan and Drought Management Plan for interruptible water are subject to change after the completion of the studies on the instream flows and bays and estuaries required by conditions (k) and (l) of the September 7, 1989 Order.
7. Because of the water-availability and water-demand conditions that presently exist, it appears that 25,000 acre-feet of stored water per year probably will be adequate in the near future to firm up the minimum flows for instream flows and bays and estuaries set forth in condition (h) of the Commission's September 7, 1989 Order. Pursuant to conditions (k) and (l) of the Commission's September 7, 1989 Order, LCRA is required to submit applications to amend the Water Management Plan and the Drought Management Plan following completion of studies on instream flows and bays and estuaries

required by March 1992, and March 1993, respectively. Accordingly, it is unnecessary for the Commission to determine at this time whether the Commission, by its September 7, 1989 Order or otherwise, intended to give LCRA the authority or impose upon it the obligation to release more than 25,000 acre-feet of stored water in any one year to firm up those minimum flows.

8. Based on available studies and information, it is uncertain whether LCRA's proposed plan to begin curtailment of interruptible stored water supplies at a January 1 trigger level of 1.4 million acre-feet of water in storage is appropriate, in that it may provide more protection to firm supplies of stored water than is necessary. However, because of the water-availability and water-demand conditions that presently exist, it is likely that such level will not be reached in the near future. Accordingly, it is unnecessary for the Commission to determine at this time whether, or to what extent, such trigger level provides more protection to firm supplies than is necessary.
9. LCRA asserts that nothing in the Drought Management Plan should be construed to modify or impair in any way any contractual obligation of LCRA to supply water.

CONCLUSIONS OF LAW

1. The public hearing was held under the authority and in accordance with Chapter 11 of the Texas Water Code, as amended and the Texas Water Commission Permanent Rules.
2. The Texas Water Commission has jurisdiction to consider and take action on LCRA's proposed Drought Management Plan.
3. It is unnecessary at this time to determine whether the Commission, by its September 7, 1989 Order or otherwise intended to give LCRA the authority or impose upon it the obligation to release more than 25,000 acre-feet of stored water in any one year for instream flows and bays and estuaries. By approving the Drought Management Plan and entering this Order, the Commission specifically is not deciding these issues.

NOW, THEREFORE, BE IT ORDERED BY THE TEXAS WATER COMMISSION THAT:

1. LCRA's proposed Drought Management Plan is approved with the following conditions:
 - a. LCRA's Drought Management Plan is subject to LCRA's Water Management Plan and all findings, conclusions and conditions contained within the Commission's September 7, 1989 Order approving the Water

- Management Plan including, without limitation, any findings, conclusions and conditions contained in this Order that are also contained within the September 7, 1989 Order.
- b. The Drought Management Plan shall be subject to the continuing right of supervision of the Commission, and the Commission, on its own motion, may reconsider any element of the plan at any time in the future.
 - c. LCRA's responsibility and authority under the Drought Management Plan is limited to operational control of the Highland Lakes and LCRA's facilities downstream, and is limited by the terms of this Order and the Commission's September 7, 1989 Order.
 - d. LCRA is required to pass all inflows to the Highland Lakes to the extent necessary to satisfy the demands of all downstream senior rights, and nothing in the Drought Management Plan or this order shall be construed to modify or impair this obligation.
 - e. LCRA shall prepare and submit to the Commission, on or before March 1 of each year beginning with March 1, 1992, a report which documents compliance with the approved Drought Management Plan and any special conditions thereto during the previous year. Such report shall be in a form approved by the Executive Director.
 - f. After the instream study by LCRA and TPWD is completed, but in any event not later than March, 1992, LCRA shall submit an application to amend its Water Management Plan and its Drought Management Plan to reflect the results of the instream flow studies and the studies and evaluations referenced in Findings of Fact Nos. 73, 74, and 75 of the Commission's September 7, 1989 Order. Such application shall also propose conditions for implementing or cancelling the declaration of a drought to be worse than the drought of record. LCRA shall do all things necessary to ensure that such application is administratively and technically complete within six months of submission. The Commission agrees to hold a hearing within one year of the date of LCRA's submission to consider the amendments of the Plans, or if the studies are not complete, to determine why such studies are not complete.

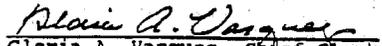
- g. After completion of the Texas Water Development Board ("TWDB") and TPWD study on freshwater inflows into the bays and estuaries, as applicable to the Lavaca-Tres Palacios Estuary, and in any event not later than March, 1993, LCRA shall submit an application to amend its Water Management Plan and its Drought Management Plan to reflect the results of the bays/estuary study. LCRA shall do all things necessary to ensure that such application is administratively and technically complete within six months of submission. The Commission agrees to hold a hearing within one year of the date of LCRA's submission to consider the amendments of the Plans, or, if the studies are not complete, to determine why such studies are not complete.
 - h. The combined firm yield as found by the Commission in Finding of Fact No. 47 of its September 7, 1989 Order is subject to adjustment and refinement from time to time as additional studies and simulations are developed that more accurately reflect assumptions and operations as required by law.
 - i. LCRA's proposed plan to begin curtailment of interruptible stored water at a January 1 trigger level of 1.4 million acre-feet of water in storage, and other aspects of LCRA's proposed curtailment plan, are subject to adjustment from time to time as additional studies and simulations may be developed that more accurately address the need to curtail interruptible supplies.
 - j. The Commission retains jurisdiction to resolve any and all disputes regarding the allocation of stored water from Lakes Travis and Buchanan, notwithstanding the procedures and guidelines set forth in the Water Management Plan and/or the Drought Management Plan.
2. The Chief Clerk of the Texas Water Commission shall forward a copy of this Order subject to the filing of motions for rehearing, to all parties.
 3. If any provision, sentence, clause or phrase of this Order is for any reason held to be invalid, the invalidity of any portion shall not affect the validity of the remaining portions of the Order.
 4. Nothing in the Drought Management Plan or this Order shall be construed to impair, or to authorize LCRA or any other person or entity to impair, senior or superior water rights in the Colorado River Basin.

Issued: DEC 23 1991

TEXAS WATER COMMISSION


John Hall, Chairman

ATTEST:


Gloria A. Vasquez, Chief Clerk

Appendix C-3

Agreed Order Approving Amendments to LCRA's
Water Management Plan and Drought Management Plan
(December 18, 1992)

THE STATE OF TEXAS
COUNTY COMMISSION
TEXAS WATER COMMISSION



I hereby certify that this is a true and correct copy of a Texas Water Commission document which is filed in the permanent records of the Commission.

Witness my hand and the seal of office on

JAN 11 1999

CONSIDERATION OF THE
LOWER COLORADO RIVER AUTHORITY'S
APPLICATION TO AMEND ITS
WATER MANAGEMENT PLAN AND
DROUGHT MANAGEMENT PLAN

Florina A. Vasquez
BEFORE THE
TEXAS WATER COMMISSION

AGREED ORDER APPROVING AMENDMENTS TO LOWER COLORADO
RIVER AUTHORITY'S WATER MANAGEMENT
PLAN AND DROUGHT MANAGEMENT PLAN

On the 2nd day of December, 1992, the Texas Water Commission ("Commission") considered the Lower Colorado River Authority's ("LCRA") application to amend its Water Management Plan and Drought Management Plan, and having heard evidence and arguments concerning the proposed order, the Commission makes the following Findings of Fact and Conclusions of Law:

Findings of Fact

- 1) Notice of the public hearing was published on September 3, 1992, in the Johnson City Record-Courier, a newspaper regularly published and generally circulated in Blanco County, Texas; on August 23, 1992 in the Austin American-Statesman, a newspaper regularly published and generally circulated in Travis County, Texas; on August 26, 1992 in the Colorado County Citizen, a newspaper regularly published and generally circulated in Colorado County, Texas; on August 27, 1992 in the San Saba News & Star, a newspaper regularly published and generally circulated in San Saba County, Texas; on September 3, 1992 in the Llano News, a newspaper regularly published and generally circulated in Llano County, Texas; on August 27, 1992 in the Marble Falls Highlander, a newspaper regularly published and generally circulated in Burnet County, Texas; on

August 25, 1992 in the Bay City Daily Tribune, a newspaper regularly published and generally circulated in Matagorda County, Texas; on August 25, 1992 in the Fayette County Record, a newspaper regularly published and generally circulated in Fayette County, Texas; on August 22, 1992 in the El Campo Leader-News, a newspaper regularly published and generally circulated in Wharton County, Texas; and on August 27, 1992 in the Bastrop Advertiser, a newspaper regularly published and generally circulated in Bastrop County, Texas. These ten counties are the only counties in which persons reside who may be affected by action taken as a result of the hearing. Said notice was published not less than thirty (30) days before the date of the hearing.

- 2) On August 11, 1992, notice of the public hearing was sent by first-class mail to persons who may be affected by action taken as a result of the hearing and to each person as required by law.
- 3) LCRA's Application to Amend its Water Management Plan and Drought Management Plan ("Application") was received by the Commission on May 29, 1992 and July 15, 1992.
- 4) LCRA's Application was accepted by the Commission as administratively complete on July 23, 1992.
- 5) The Lake Travis Chamber of Commerce requested LCRA to amend its Water Management Plan to change the trigger level of Lake Travis from 660 feet msl to 667 feet msl; to limit new interruptible water contracts to the volume of water saved in the rice irrigation conservation program; and to revise the description of the lake's economy.
- 6) In response to the request by the Lake Travis Chamber of Commerce, LCRA proposes to amend the Water Management Plan to

eliminate the trigger levels of 660 feet msl for Lake Travis and 1012 feet msl for Lake Buchanan; to limit sales of interruptible stored water, other than for the four major irrigation districts' Conservation Base or Priority Allocation acreage, based on the projected volume of water in Lakes Buchanan and Travis as of January 1, of each year. No such sales would occur if either lake is less than 94% of its maximum conservation capacity. If both lakes are projected to be at their maximum conservation capacity on January 1, then such interruptible water sales would be limited to a total of 80,000 acre-feet for that year. For projected lake volumes between 94% and 100% of the conservation capacity, such interruptible water sales would be limited proportionately, based on the storage reservoir with the lowest projected percentage of capacity on January 1. LCRA also proposes to increase the Conservation Base acreage for the Gulf Coast Irrigation Division from 37,000 acres to 50,000 acres and set the Priority Allocation acreage for Pierce Ranch at 10,476 acres.

- 7) LCRA's Drought Management Plan presently allows for the cancellation of curtailments of interruptible stored water to the four major irrigation districts if the combined storage of Lakes Buchanan and Travis is at least 1.4 million acre-feet on July 1.
- 8) LCRA proposes to amend LCRA's Drought Management Plan to provide that curtailment of interruptible stored water for the four major irrigation districts may be cancelled at any time during the year prior to July 31. The criteria for cancelling the curtailments is that the combined storage of Lakes Buchanan and Travis is projected to be equal to or greater than 1.4 million acre-feet of water anytime in July.

- 9) LCRA's Water Management Plan presently allows LCRA to reserve 50,000 acre-feet of the remaining combined firm yield of Lakes Buchanan and Travis for future uses under LCRA's certificates of adjudication. This reservation will be until water supply and demand assessments for LCRA's 10-county statutory district are completed or within three years, whichever is sooner.
- 10) LCRA has completed the water supply and demand assessments for its 10-county statutory district. The results of these studies indicate new surface water demands of approximately 39,000 acre-feet annually by the year 2013.
- 11) LCRA is presently in the process of updating these water supply and demand assessments to include the results of the 1990 federal census. To allow LCRA additional time to complete such updated assessments, it is reasonable to allow LCRA to continue to reserve 50,000 acre-feet of the remaining combined firm yield of Lakes Buchanan and Travis for future uses under its certificate of adjudication, through December 31, 1993.
- 12) The Commission's September 7, 1989 Order approving LCRA's Water Management Plan, directed LCRA in accordance with Findings of Fact No. 73, 74, and 75, to reference and summarize information on point and non-point pollution sources and loading on the Colorado River, identify new data needed to determine water quality effects on revision of the minimum flow schedule, and evaluate potential problems associated with anoxic hypolimnetic releases from reservoirs and the potential for related fish kills due to resulting low dissolved oxygen levels downstream. LCRA has completed these studies and evaluations. The instream flow schedule set forth in this Agreed Order was developed in response to those studies and evaluations.

- 13) The Commission's December 23, 1991 Order approving LCRA's Drought Management Plan directed LCRA to propose conditions for implementing and cancelling a declaration of a drought worse than the drought of record.
- 14) LCRA proposes that its Drought Management Plan be amended to provide that the LCRA Board of Directors will declare a drought worse than the drought of record when the following three conditions are simultaneously met:
 - (a) drought at least 36 consecutive months (36 months since both Lakes Buchanan and Travis were last full); and
 - (b) the cumulative inflow deficit since the beginning of the drought exceeds the envelope curve for cumulative inflow deficits by at least 5% for six consecutive months; and
 - (c) the combined storage of Lakes Buchanan and Travis is less than 600,000 acre-feet.

The LCRA Board of Directors will cancel such a declaration if any of the following conditions are met:

- (d) the cumulative inflow deficit since the beginning of the drought is less than the envelope curve for cumulative inflow deficits by at least 5% for six consecutive months; or
 - (e) the combined storage in Lakes Buchanan and Travis is greater than 1.4 million acre-feet of water.
- 15) LCRA and TPWD have completed their instream flow needs study for the lower Colorado River. Based upon this study LCRA proposes that LCRA's Water Management Plan and Drought Management Plan be amended as follows:

- (a) LCRA's existing commitment of 25,000 acre-feet of firm yield water supply, to supplement and maintain instream flows, be increased to an average of 31,800 acre-feet annually during any 10 consecutive year period.
 - (b) LCRA will maintain the daily river flows below the City of Austin's Longhorn Dam at no less than the subsistence/critical flows in all years.
 - (c) When the combined storage of Lakes Buchanan and Travis is projected to be above 1.4 million acre-feet of water on January 1, or if interruptible stored water curtailments are cancelled, LCRA will maintain during that calendar year or portion thereof target flows to the extent of inflows each day to the Highland Lakes as measured by upstream gages.
 - (d) Interruptible water contracts will be totally cutoff when the minimum January 1 storage of Lakes Buchanan and Travis is at or below 325,000 acre-feet of water.
- 16) The schedule of instream flows for the Colorado River downstream of the City of Austin's Longhorn Dam is as follows:

Subsistence/
Critical Flows (cfs) Target Flows (cfs)

Month	Austin	Bastrop	Bastrop	Eagle Lake	Egypt
January	46 ^c	120	370	300	240
February	46 ^c	120	430	340	280
March	46 ^c	500 ^b	560	500 ^a	360
April	46 ^c	500 ^b	600	500 ^a	390
May	46 ^c	500 ^b	1030	820	670
June	46 ^c	120	830	660	540
July	46 ^c	120	370	300	240
August	46 ^c	120	240	200	160
September	46 ^c	120	400	320	260
October	46 ^c	120	470	380	310
November	46 ^c	120	370	290	240
December	46 ^c	120	340	270	220

^a Since target flow at Eagle Lake (based on overall community habitat availability) were insufficient to meet Blue Sucker (*Cycleptus elongatus*) spawning requirements during March and April target flows were superseded by critical flow recommendations for this reach.

^b This flow should be maintained for a continuous period of not less than six weeks during these months. A flow of 120 cfs will be maintained on all days not within the six week period.

^c LCRA will maintain a mean daily flow of 100 cfs at the Austin gage at all times, to the extent of inflows each day to the Highland Lakes as measured by upstream gages, until the combined storage of Lakes Buchanan and Travis reaches 1.4 million acre-feet of water. A mean daily flow of 75 cfs, to the extent of inflows each day to the Highland Lakes as measured by upstream gages, will

then be maintained until the combined storage of Lakes Buchanan and Travis reaches 1.0 million acre-feet of water. When the combined storage of Lakes Buchanan and Travis is reduced below 1.0 million acre-feet of water, then a subsistence/critical flow of 46 cfs will be maintained at all times regardless of inflows.

In addition, if the subsistence/critical flow of 46 cfs should occur for an extended period of time, then operational releases will be made by LCRA to temporarily alleviate the subsistence/critical flow conditions. Specifically, should the flow at the Austin gage be below a 65 cfs daily average for a period of 21 consecutive days, LCRA will make operational releases from storage sufficient to maintain daily average flow at the Austin gage of at least 200 cfs for two consecutive days. If this operational release condition persists for three consecutive cycles (69 days), then a minimum average daily flow of at least 75 cfs will be maintained for the next 30 days.

- 17) The priorities in LCRA's Water Management Plan and Drought Management Plan for use of interruptible water are subject to change after the completion of the studies on bay and estuary inflows referenced in condition (1) of the September 7, 1989 Order Approving LCRA's Water Management Plan.
- 18) Until such time that the Commission amends the requirement for freshwater inflows into the Lavaca Tres-Palacios Estuary as a result of the completion of the Texas Water Development Board and Texas Parks and Wildlife Department study on freshwater inflows LCRA shall continue to maintain a minimum monthly mean flow of 200 cfs, a minimum seasonal mean flow of 375 cfs and a minimum annual flow of 272,121 acre-feet measured at the USGS gage at Bay City for freshwater inflow to the Lavaca-Tres Palacios estuarine system.

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Conclusions of Law

- 1) The Commission considered this Agreed Order under the authority and in accordance with Chapter 11 of the Texas Water Code, as amended and 31 Texas Administrative Code ("TAC") § 295 et. al.
- 2) The Texas Water Commission has jurisdiction to consider and take action on LCRA's application to amend its Water Management Plan and Drought Management Plan.

NOW, THEREFORE, BE IT ORDERED BY THE TEXAS WATER COMMISSION THAT:

- 1) LCRA's proposed amended Water Management Plan and Drought Management Plan are approved with the following conditions:
 - a) LCRA's amended Water Management Plan is subject to all findings, conclusions, and conditions contained in the Commission's September 7, 1989 Order approving the Plan, except to the extent specifically provided otherwise by this Agreed Order.
 - b) LCRA's amended Drought Management Plan is subject to all findings, conclusions, and conditions, contained in the Commission's December 23, 1991 Order approving the Plan, except to the extent specifically provided otherwise by this Agreed Order.
 - c) Nothing in this Agreed Order shall be construed to impair any party's right to contest or seek clarification of, at anytime, any issue in connection with LCRA's Water Management Plan and Drought Management Plan. The Commission takes notice that the Sierra Club has contested the issue of priority of use of interruptible water and that contest has been remanded for hearing.

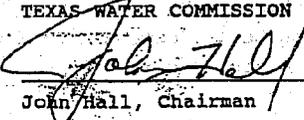
- 9 -

Nothing in this Agreed Order shall be construed as deciding that issue. Furthermore, if in that hearing, the priority of use for interruptible water, as it relates to instream flows, is determined by the Commission to be different than that set forth in those Plans, any party shall have the express right to reopen the issue of instream flow requirements by submitting a written request for hearing to the Office of Hearings Examiners.

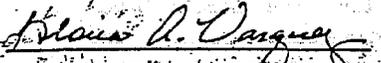
- 2) The Chief Clerk of the Texas Water Commission shall forward a copy of this Agreed Order subject to the filing of motions for rehearing, to all parties.
- 3) If any part of this Agreed Order is for any reason held to be invalid, the invalidity of any portion shall not affect the validity of the remainder of the Agreed Order.
- 4) Nothing in LCRA's Water Management Plan and Drought Management Plan or this Agreed Order shall be construed to impair, or to authorize LCRA or any other person or entity to impair, senior or superior water rights in the Colorado River Basin.

ISSUED: DEC 18 1992

TEXAS WATER COMMISSION


John Hall, Chairman

ATTEST:


Gloria A. Vasquez, Chief Clerk

BW12/05

- 10 -

Appendix C-4

Agreed Order Approving Amendments to LCRA's
Water Management Plan and Drought Management Plan
(March 1, 1999)

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION



THE STATE OF TEXAS
COUNTY OF TRAVIS
I hereby certify that this is a true and correct copy of a Texas Natural
Resource Conservation Commission document, which is filed in the
permanent records of the Commission.
Given under my hand and the seal of office on

Debra A. ... MAR 04 1999

DOCKET NO. 98-1387-WR

La Donna ...
Texas Natural Resource
Conservation Commission

CONSIDERATION OF THE
LOWER COLORADO RIVER AUTHORITY'S
APPLICATION TO AMEND ITS WATER
MANAGEMENT PLAN INCLUDING ITS
DROUGHT MANAGEMENT
PLAN

§
§
§
§
§
§

BEFORE THE
TEXAS NATURAL RESOURCE
CONSERVATION COMMISSION

ORDER APPROVING AMENDMENTS TO LOWER COLORADO
RIVER AUTHORITY'S WATER MANAGEMENT PLAN
INCLUDING ITS DROUGHT MANAGEMENT PLAN

On the 24th day of February, 1999, the Texas Natural Resource Conservation Commission ("Commission") considered the Lower Colorado River Authority's ("LCRA") application to amend its Water Management Plan including its amended Drought Management Plan ("WMP"), and having heard evidence and arguments concerning the proposed order, the Commission makes the following Findings of Fact and Conclusions of Law:

Findings of Fact

- 1) Notice of the public comment meeting and notice of the Commission's Agenda Date on proposed amendments to LCRA's WMP was published on December 17, 1998, in the Johnson City Record-Courier, a newspaper regularly published and generally circulated in Blanco County, Texas; on December 18, 1998 in the Austin American-Statesman, a newspaper regularly published and generally circulated in Travis County, Texas; on December 23, 1998 in the Colorado County Citizen, a newspaper regularly published and

generally circulated in Colorado County, Texas; on December 17, 1998 in the San Saba News & Star, a newspaper regularly published and generally circulated in San Saba County, Texas; on December 17 and 24, 1998 in the Llano News, a newspaper regularly published and generally circulated in Llano County, Texas; on December 18, 1998 in the Marble Falls Highlander, a newspaper regularly published and generally circulated in Burnet County, Texas; on December 20, 1998 in the Bay City Daily Tribune, a newspaper regularly published and generally circulated in Matagorda County, Texas; on December 18, 1998 in the Fayette County Record, a newspaper regularly published and generally circulated in Fayette County, Texas; on December 19, 1998 in the El Campo Leader-News, a newspaper regularly published and generally circulated in Wharton County, Texas; and on December 19, 1998 in the Bastrop Advertiser, a newspaper regularly published and generally circulated in Bastrop County, Texas. These ten counties are the only counties in which persons reside who may be affected by action taken by the Commission on the proposal amendments. Said notice was published not less than thirty (30) days before the Commission's Agenda Date.

- 2) On December 16, 1998, notice of the public comment meeting and the Commission's Agenda Date was sent by first-class mail to persons who may be affected by action taken by the Commission and to each person as required by law.
- 3) By Commission order of September 20, 1989, the Commission conditionally approved LCRA's WMP. By Commission order of December 23, 1991, the Commission conditionally approved LCRA's Drought Management Plan, which is included as part of LCRA's WMP. Amendments to the plans were conditionally approved by Commission agreed order of December 18, 1992. These prior orders of the Commission required LCRA to submit an application to amend its WMP to reflect the results of a bay/estuary study to be completed

by Texas Water Development Board (TWDB) and Texas Parks & Wildlife Department (TPWD). In 1993, LCRA, TWDB, TPWD, and TNRCC entered into a cooperative agreement to complete the study. The study was completed in 1997 and LCRA filed its proposed amendments to the WMP to reflect the results of the study.

- 4) LCRA's application to Amend its WMP including its Drought Management Plan ("Application") was received by the Commission on May 29, 1997; addenda were received December 29, 1997 and September 29, 1998.
- 5) LCRA's Application was accepted by the Commission as administratively complete on November 13, 1998.
- 6) On January 5, 1999 the Commission held a public comment meeting. One person presented oral comments, which were not in opposition to the proposed amendments. No written public comments were provided by any person.
- 7) No protests and no requests for a contested case hearing have been filed with the Commission regarding the proposed amendments.
- 8) LCRA's WMP currently requires LCRA to meet an interim freshwater inflow need to the Lavaca-Tres Palacios Estuary, also known as the Lavaca-Colorado Estuary or the Matagorda Bay System of 272,000 acre-feet annually, as measured at the USGS Bay City gage.
- 9) LCRA's proposed amendments to the WMP would require LCRA to:
 - (a) release monthly inflows otherwise available for storage in the Highland Lakes to meet monthly target freshwater inflow needs of the Matagorda Bay System totaling 1.03 million acre-feet per year, as measured at the USGS Bay City gage, if January 1 storage levels in Lakes Travis and Buchanan combined is greater than 1.7 million acre-feet;

- (b) release monthly inflows otherwise available for storage in the Highland Lakes to meet monthly critical freshwater inflow needs of the Matagorda Bay System totaling 171,100 acre-feet per year, as measured at the USGS Bay City gage, in all years; and
 - (c) stored water releases will be a combination of firm and interruptible stored water supplies. Firm water will be supplied in years when the four major irrigation districts' stored water supplies are curtailed. Interruptible stored water will be supplied in all other years.
- 10) LCRA's WMP currently requires LCRA to use up to a maximum of 318,000 acre-feet of firm stored water over any ten (10) consecutive years for instream flows and freshwater inflow needs of the Matagorda Bay System. The WMP currently provides for a total commitment of 31,800 acre-feet per year from the Combined Firm Yield of Lakes Travis and Buchanan for instream flows and freshwater inflow needs of the Matagorda Bay System.
- 11) LCRA's proposed amendments to the WMP are as follows:
- (a) total commitments of the Combined Firm Yield from the Highland Lakes for instream flow maintenance will be an average of 12,860 acre-feet per year, with a maximum of 36,720 acre-feet in any one year; 58,700 acre-feet in any two consecutive years; 76,800 acre-feet in any three or four consecutive years; 106,100 acre-feet in any five consecutive years and 128,600 acre-feet in any six to ten consecutive years. Total commitments of the Combined Firm Yield from the Highland Lakes for freshwater inflows to the Matagorda Bay System will be an average of 3,090 acre-feet per year, with a maximum of 11,200 acre-feet in any one year; 19,700 in any two consecutive years; 24,200 acre-feet in any three or four consecutive years; 28,200 acre-feet in any five consecutive years and 30,900 acre-

feet in any six to ten consecutive years. The total firm stored water commitment for both purposes will be an average of 15,950 acre-feet per year. Estimated interruptible stored water supplied during the critical drought for both purposes will be an average of an additional 40,060 acre-feet per year.

- 12) Currently under the WMP the LCRA Board of Directors will declare a drought worse than the drought of record when three (3) conditions are simultaneously met. First, a drought of at least 36 consecutive months since both Lakes Travis and Buchanan were last full. Second, the cumulative inflow deficit since the beginning of the drought exceeds the envelope curve for cumulative inflow deficits by at least 5% for six consecutive months. Third, the combined storage of Lakes Travis and Buchanan is less than 600,000 acre-feet.
- 13) Because of the severity of the 1996 drought LCRA proposes the following amendments to the WMP:
 - (a) reduce the 36 month minimum to 24 months;
 - (b) curtailments of interruptible stored water due solely to the declaration of a drought to be worse than drought of record of less than 36 months in duration is only effective on the following January 1 or July 31, whichever occurs first following the declaration by the LCRA Board of Directors. Droughts more than 36 months in length have no restrictions as to when supply reductions can be implemented;
 - (c) prior to implementing curtailment of firm water supplies during droughts worse than drought of record, LCRA will meet with its firm water customers and develop a specific stored water curtailment plan approved by the LCRA Board of Directors and the Commission.

- (d) Such a declaration will be canceled when the combined storage in Lakes Travis and Buchanan is greater than 1.1 million acre-feet of water, which is simply the recommended threshold for curtailment of interruptible water during a repetition of the drought of record. Prior to declaring a drought worse than the drought of record, the LCRA will re-evaluate this threshold level to determine if a more accurate cancellation storage level in lieu of 1.1 million acre-feet can be determined.
- 14) LCRA's WMP currently states that the storage level for initial curtailment of interruptible stored water for the four (4) major irrigation districts (Lakeside, Gulf Coast, Garwood and Pierce Ranch) will commence when the combined storage in Lakes Travis and Buchanan is less than or equal to 1.4 million acre-feet projected on January 1.
- 15) LCRA's proposed amendment reduces the combined storage level from 1.4 to 1.1 million acre-feet projected on January 1.
- 16) LCRA's WMP currently provides that the allocation of interruptible stored water to users other than the four (4) major irrigation districts is made annually based on projected January 1 storage levels in Lakes Travis and Buchanan taken separately. The maximum supply of interruptible stored water available currently under the WMP is 80,000 acre-feet per year.
- 17) LCRA's proposed amendments will change the allocation of interruptible stored water to users other than the four (4) major irrigation districts to a semiannual allocation as follows:
- (a) the supply for January through June is based on January 1 storage levels in Lakes Travis and Buchanan taken separately;
 - (b) the supply for July through December is based on the minimum of the maximum storage levels in April, May and June in Lakes Travis and Buchanan taken separately.

- (c) maximum supply available under LCRA's proposed amendments is 30,000 acre-feet per year.
- 18) LCRA's WMP currently provides that the LCRA Board of Directors has committed to reserving 50,000 acre feet of the remaining Combined Firm Yield of the Highland Lakes through December 31, 1993 for future uses within LCRA's service area.
 - 19) LCRA's proposed amendment is to reserve 50,000 acre-feet of water of the remaining Combined Firm Yield of the Highland Lakes for future uses within LCRA's service area indefinitely, as reflected in current LCRA Board of Directors policy.
 - 20) On March 29, 1996 the Commission issued its Order severing a portion of the water rights authorized by Certificate No. 14-2564 (Hudson et ux) and combining it with all of the water rights authorized by LCRA's Certificate No. 14-5478, (Lake Buchanan) as amended. Certificate No. 14-5478C was issued to LCRA on the same date and authorizes LCRA to transfer downstream 532 acre-feet of water for use by LCRA out of Lake Buchanan with consumption use limited to 500 acre-feet per year.
 - 21) Because the priority date of the water severed from Certificate No. 14-2564 and purchased by LCRA is 1929, senior to the 1938 Lake Buchanan priority date, LCRA is requesting that the WMP be amended to reflect an increase of 500 acre-feet in the Combined Firm Yield of Lakes Buchanan and Travis from 535,812 acre-feet to 536,312 acre-feet.
 - 22) On June 2, 1997, the Commission issued its Order severing the water rights authorized by Certificate No. 14-5477B from Certificate No. 14-5477(Pierce Ranch), as amended, and combined it with LCRA's water rights authorized by Certificate No. 14-5475. (LCRA's Lakeside Irrigation Service Area)
 - 23) LCRA proposed amendments to the WMP reflect the Commission's June 2, 1997 Order.

- 24) LCRA is proposing throughout the current WMP several non-substantive amendments to reflect factual changes that have occurred during the period 1993-1997 relating to water demands, both actual and projected; changes to models; operations procedures; LCRA Board Policy and general background information. All of these proposed non-substantive amendments to the current WMP are detailed in mark-ups of the current WMP dated May 28, 1997, December 29, 1997 and September 29, 1998 that have been filed with the Commission by the LCRA.

CONCLUSIONS OF LAW

- 1) The Commission considered this Order under the authority and in accordance with Chapter 11 of the Texas Water Code, as amended, and 30 Texas Administrative Code ("TAC") § 295 et. al.
- 2) The Commission has jurisdiction to consider and take action on LCRA's application to amend its Water Management Plan.

NOW, THEREFORE, BE IT ORDERED BY THE TEXAS NATURAL CONSERVATION COMMISSION THAT:

- 1) LCRA's proposed amended Water Management Plan, which includes LCRA's amended Drought Management Plan as reflected in LCRA's detailed mark-ups of the current WMP dated May 28, 1997, December 29, 1997 and September 29, 1998, is approved with the following conditions:
 - a) LCRA's amended Water Management Plan is subject to all findings, conclusions, and conditions contained in the Commission's September 20, 1989 Order approving the Plan, except to the extent specifically provided otherwise by this Order.
 - b) LCRA's amended Drought Management Plan is subject to all findings, conclusions, and conditions, contained in the Commission's December 23, 1991 Order approving the Plan, except to the extent specifically provided otherwise by this Order.
 - c) LCRA's amended Water Management Plan, including LCRA's amended Drought Management Plan, is subject to all findings, conclusions, and conditions contained

in the Commission's December 18, 1992 Agreed Order approving amendments to the Plans, except to the extent specifically provided otherwise by this Order.

- d) Any party shall have the right, at any time, to petition the Commission to seek to amend or clarify any issue in connection with LCRA's amended Water Management Plan, which includes LCRA's amended Drought Management Plan. Nothing in this Order shall be construed to impair any party's right to contest or seek clarification of, at anytime, any issue in connection with LCRA's amended Water Management Plan, which includes LCRA's amended Drought Management Plan.
 - e) The Commission takes notice that in 1993 the Sierra Club contested the issue of priority of use of interruptible water and that contest has been remanded to the State Office of Administrative Hearings ("SOAH") for hearing and is still pending.
 - f) Nothing in this Order shall be construed as deciding the issue pending at SOAH. Furthermore, if as a result of that hearing, the priority of use for interruptible water, as it relates to instream flows, is determined by the Commission to be different than that set forth in these Plans, any party shall have the express right to reopen the issue of instream flow and bay and estuary inflow requirements by submitting a written request for hearing to the Commission.
- 2) The Chief Clerk of the Texas Natural Resource Conservation Commission shall forward a copy of this Order subject to the filing of motions for rehearing, to all parties.
 - 3) If any part of this Order is for any reason held to be invalid, the invalidity of any portion shall not affect the validity of the remainder of the Order.
 - 4) If the Texas Parks and Wildlife Department, the Texas Water Development Board, or the Commission, acting on their own motion or as a result of a petition filed by any party, shall

determine that there is a need for any updates to the freshwater inflow needs as a result of a new study for the Matagorda Bay System, the LCRA shall amend its amended Water and Drought Management Plans and submit these proposed amendments to the Commission for review and approval within one (1) year of completion of such new studies. Any party may reopen the issue of bay and estuary inflows by submitting a written request for hearing to the Commission within thirty (30) days of receiving notice of the filing of the new studies or any proposed amendment to the Plans.

- 5) Nothing in LCRA's Amended Water Management Plan and Amended Drought Management Plan or this Order shall be construed to impair, or to authorize LCRA or any other person or entity to impair, senior or superior water rights in the Colorado River Basin.

ISSUED: MAR 01 1999

TEXAS NATURAL RESOURCE
CONSERVATION COMMISSION


Robert J. Hulston, Chairman

Appendix C-5

Order Overruling Objections to LCRA's System of Priorities
Set Forth in its Water Management Plan
(June 3, 2003)

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY



AN ORDER overruling the objections of the Texas Chapter of the Sierra Club, Texas Parks and Wildlife Department, and the City of Austin to the Lower Colorado River Authority's system of priorities for its interruptible water supply set forth in its Water Management Plan; TCEQ Docket No. 1995-1317-WR.

On May 29, 2003, the Texas Commission on Environmental Quality (Commission) considered the objections of the Texas Chapter of the Sierra Club (Sierra Club), Texas Parks and Wildlife Department (TPWD), and the City of Austin (Austin) to the Lower Colorado River Authority's (LCRA) system of priorities for its interruptible water supply set forth in its Water Management Plan. The objections were presented to the Commission with a Proposal for Decision by Carol Wood, an Administrative Law Judge (Judge) with the State Office of Administrative Hearings.

After considering the Judge's Proposal for Decision and the evidence and arguments presented, the Commission makes the following Findings of Fact and Conclusions of Law:

FINDINGS OF FACT

1. On July 29, 1985, the Texas Water Commission, predecessor agency of the Texas Commission on Environmental Quality (Commission), issued its Final Determination in the Adjudication of the Lower Colorado River Segment (Final Determination).
2. Five water rights holders, including the Lower Colorado River Authority (LCRA) and the City of Austin (Austin), filed exceptions to the Final Determination in district court in Bell

County, Texas.

3. Prior to the entry of the Final Judgment and Decree (Final Judgment) in district court, the Commission on February 4, 1988, adopted a resolution agreeing to the settlement of LCRA's and Austin's water right claims in the lower Colorado River ("Resolution Agreeing to Settlement of Cause No. 115,414-A-1"). The resolution stated that, with respect to the operation of the Highland Lakes, several entities, including the Texas Parks and Wildlife Department (TPWD) and the Texas Chapter of the Sierra Club (Sierra Club), had expressed concerns regarding protection of instream flows, water quality, and bays and estuaries.
4. On June 28, 1989, the Commission issued Certificates of Adjudication Nos. 14-5478 (Lake Buchanan) and 14-5482 (Lake Travis) to LCRA. In both Certificates, Paragraph 2.B entitled "Use" reads as follows:

LCRA is authorized to divert and use not to exceed 1,500,000 acre-feet of water per annum from [the Lakes] for municipal, industrial, irrigation and mining purposes, subject to the following conditions:

* * *

- (5) Each commitment by LCRA to supply water under this Certificate . . . shall be considered to be on a firm, uninterrupted basis unless the contract, resolution or special condition defining such commitment specifically provides that such commitment 'is subject to interruption or curtailment'.

5. The Commission incorporated a condition into LCRA's Certificates of Adjudication Nos. 14-5478 and 14-5482 that required LCRA to prepare and submit to the Commission a proposed reservoir operation plan that would cover several "relevant public policies." Those policies included the following:
 - a. Recognition of the necessity of beneficial inflows from the Colorado River into the Lavaca-Tres Palacios Estuary consistent with § 11.147 of the Texas Water Code;

- b. Protection of fish and wildlife habitats consistent with § 11.147 of the Texas Water Code;
 - c. Consideration of the effects, if any, on existing instream uses and water quality consistent with § 11.147 of the Texas Water Code;
 - d. Mitigation of adverse impacts, if any, on wildlife habitats inundated by new reservoir construction;
 - e. Mitigation of adverse environmental impacts, if any, caused by new projects taking, storing or diverting in excess of 5,000 acre-feet per year consistent with § 11.152 of the Texas Water Code; and
 - f. Recognition of the Commission's statutory authority to require water conservation under § 11.134(b)(4) of the Texas Water Code.
6. The Certificates of Adjudication issued to LCRA on June 28, 1989, further provide the following:
- LCRA shall interrupt or curtail the supply of water under [the Certificates] pursuant to commitments that are specifically subject to interruption or curtailment, to the extent necessary to allow LCRA to satisfy all demands for water under such certificates pursuant to all firm, uninterruptible commitments. Commitments to supply water on a non-firm, interruptible basis may be interrupted or curtailed as necessary either on a pro rata basis or in accordance with a system of priorities, as may be set forth in various contracts and resolutions that define such commitments.
7. Nowhere in either Certificate of Adjudication issued to LCRA is there any reservation from appropriation of any water for instream flows or freshwater inflows to bays and estuaries.
8. On July 10, 1989, LCRA submitted to the Commission a proposed Water Management Plan (Plan). According to the Plan, demands for "interruptible water" are met to the extent water is available each year after firm demands are satisfied.
9. The vast majority of LCRA's commitments for interruptible water are for irrigation downstream, and most of the irrigation is for rice farming.

10. Four downstream irrigation operations (Gulf Coast and Lakeside, which are owned and operated by LCRA, and Garwood and Pierce Ranch Irrigation Companies) have commitments with LCRA that gives them "first priority" for interruptible stored water.
11. On September 20, 1989, the Commission issued an Order conditionally approving LCRA's Plan and amending LCRA's Certificates of Adjudication Nos. 14-5478 and 14-5482. The Order required LCRA to do the following:
 - a. Conduct an instream study with TPWD and submit an application to amend the Plan to reflect the results of the instream study.
 - b. Complete a freshwater inflows study with TPWD and the Texas Water Development Board (TWDB) and submit an application to amend the Plan to reflect the results of that study.
 - c. Within one year, submit a drought contingency plan for Commission review and approval.
12. Provision No. 1(a) entitled "Use" in Amendment to Certificate of Adjudication No. 14-5482A granted September 7, 1989, reads as follows:

In addition to the authorizations included in Paragraph 2.B, USE of Certificate No. 14-5482 to divert and use water from Lake Travis for municipal, industrial, irrigation and mining purposes, certificate owner is authorized to divert, use and release waters from Lake Travis for domestic, recreation, instream flows and bay/estuary purposes.
13. Provision No. 1(a) entitled "Use" in Amendment to Certificate of Adjudication No. 14-5478A, granted September 7, 1989, reads as follows:

In addition to the authorizations included in Paragraph 2.B., USE of Certificate No. 14-5478 to divert and use water from Lake Buchanan for municipal, industrial, irrigation and mining purposes, certificate owner is authorized to divert, use and release waters from Lake Buchanan for domestic, recreation, instream flows and bay/estuary purposes.
14. On October 19, 1990, LCRA filed its proposed drought contingency plan.

15. On December 23, 1991, the Commission issued an Order conditionally approving LCRA's drought contingency plan. Although entitled "Drought Management Plan," LCRA's drought contingency plan is Section 2 of LCRA's Water Management Plan.
16. Sierra Club challenged the provisions of the conditionally approved Plan that gave to the four downstream irrigation operations "first priority" for interruptible stored water.
17. LCRA and TPWD completed their instream flow needs study for the lower Colorado River and, on December 18, 1992, the Commission issued an Order conditionally approving LCRA's amendments to the Plan to adopt the instream flow requirements.
18. The issue of priority of use of interruptible water in LCRA's Plan, opposed by Sierra Club, was remanded for hearing in October, 1992.
19. A preliminary hearing on the matter was conducted on February 9, 1993. The following were designated as parties to the proceeding: LCRA, the Commission's Executive Director, the Commission's Public Interest Counsel, Sierra Club, TPWD, Austin, and Garwood Irrigation Company.
20. Additional prehearings were held in 1993, 1999, 2000, and 2002.
21. In 1993, LCRA, TWDB, TPWD, and the Commission entered into a cooperative agreement to complete a bay/estuary study.
22. The bay/estuary study was completed in 1997, and LCRA filed its proposed amendments to the Plan to reflect the results of the study.
23. On March 1, 1999, the Commission issued an Order conditionally approving LCRA's amendments to the Plan to adopt the freshwater inflow requirements.

24. Pursuant to the Plan, the four downstream irrigation operations have commitments with LCRA that give them "first priority" for LCRA's interruptible stored water supply.
- a. During the irrigation season, irrigation needs are met, as are instream flow needs and the needs of freshwater inflows to bays and estuaries, with the stored interruptible waters released by LCRA that flow downstream.
 - b. During the non-irrigation season, LCRA allocates a portion of the Highland Lakes' (Lakes) firm yield water for instream flow purposes regardless of priorities and inflows to the Lakes. A portion of the Lakes' firm yield is allocated by LCRA for freshwater inflows to bays and estuaries, regardless of priorities, to the extent of inflows to the Lakes (up to 15,900 acre-feet annually).
25. According to the Plan, the amount of instream flow to be maintained in the lower Colorado River is based on the level of the combined storage of the Highland Lakes.
- (1) Target flows will be maintained until the four downstream irrigation operations are curtailed (at 1.1 million acre-feet), to the extent inflows are available each day for storage as measured by upstream stream gages.
 - (2) When the four irrigation operations are curtailed, critical flows (a flow of at least 46 cubic feet per second at the Austin stream gage) will be maintained at all times, even if LCRA has to release stored water.
 - (3) The four irrigation operations are curtailed in proportion to the Lakes' storage content.
26. The Plan sets freshwater inflow needs for bays and estuaries at critical and target flows.
- (1) Target flows will be met when the Highland Lakes' combined storage level is greater than 1.7 million acre-feet (AF), to the extent of inflows each month to the Lakes.
 - (2) Critical flows will be met below 1.7 million AF, to the extent of inflows each month to the Lakes.

CONCLUSIONS OF LAW

1. The Commission considered this Order under the authority of and in accordance with Chapter 11 of the TEX. WATER CODE (Water Code), as amended (West 2002), and 30 TEX. ADMINISTRATIVE CODE (TAC) § 295 *et seq.* (2002).
2. The Commission has jurisdiction to consider and take action on the objections to LCRA's system of priorities for its interruptible water supply set forth in its Water Management Plan.
3. In accordance with Water Code § 11.301 *et seq.*, LCRA's interruptible water supply is part of the state water the Commission authorized LCRA to appropriate in Certificates of Adjudication Nos. 14-5478 and 14-5482 issued June 28, 1989.
4. The considerations set out in Water Code § 11.147 do not preclude LCRA's interruptible water supply scheme.
5. Neither LCRA's Certificates of Adjudication, the Water Code, nor the Commission's rules prohibit LCRA from curtailing environmental flows before curtailing the four irrigation operations set out in the Plan.
6. Neither state law nor the common law principles of the public trust doctrine require LCRA to afford instream uses "first priority," or preference over other uses, of its interruptible water supply.
7. Neither state law nor the public trust doctrine requires LCRA to revise its Water Management Plan to give instream uses first priority for its interruptible water supply.
8. The priority of use for LCRA's interruptible water supply as it relates to instream uses should be as specified in LCRA's Water Management Plan.

NOW, THEREFORE IT IS ORDERED BY THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY THAT:

1. The objections of the Texas Chapter of the Sierra Club, Texas Parks and Wildlife Department, and the City of Austin to the Lower Colorado River Authority's system of priorities for its interruptible water supply set forth in LCRA's Water Management Plan are overruled.
2. The Chief Clerk of the Texas Commission on Environmental Quality shall forward a copy of this Order, subject to the filing of motions for rehearing, to all parties.
3. If any part of this Order is for any reason held to be invalid, the invalidity of that portion shall not affect the validity of the remainder of this Order.

Issue Date: JUN 03 2003

TEXAS COMMISSION ON
ENVIRONMENTAL QUALITY



Robert Huston, Chairman

Appendix C-6

Agreed Order Approving Amendments to
LCRA's Water Management Plan
(January 27, 2010)

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY



AGREED ORDER APPROVING AMENDMENTS TO LOWER COLORADO RIVER AUTHORITY'S WATER MANAGEMENT PLAN

On the 27th day of January, 2010, the Texas Commission on Environmental Quality ("Commission") considered the Lower Colorado River Authority's ("LCRA") application (Application No. 5838) to amend its Water Management Plan (WMP) and having heard evidence and arguments concerning Application No. 5838 and the proposed order, the Commission makes the following Findings of Fact and Conclusions of Law:

FINDINGS OF FACT

- 1) LCRA's Application No. 5838 to amend the WMP was received by the Commission on May 16, 2003, and was declared administratively complete on May 7, 2004.
- 2) Notice of the application to amend the WMP and of the public meeting on the proposed amendments to the WMP was published on September 27, 2004, in the Austin American-Statesman, a newspaper regularly published and generally circulated in Travis County, Texas; on September 29, 2004, in the Colorado County Citizen, a newspaper regularly published and generally circulated in Colorado County, Texas; on October 10, 2004, in the Matagorda County Tribune, a newspaper regularly published and generally circulated in Bastrop County, Texas; on October 10, 2004, in the Bay City Tribune, a newspaper regularly published and generally circulated in Matagorda County, Texas; on October 1, 2004, in the Fayette County Record, a newspaper regularly published and generally circulated in Fayette County, Texas; on September 29, 2004, in the El Campo Leader-News, a newspaper regularly published and generally circulated in Wharton County, Texas; and on September 25, 2004, in the Bastrop Advertiser, a newspaper regularly published and generally circulated in Bastrop County, Texas. These counties are the only counties in which persons reside who may be affected by action taken by the Commission on the proposed amendments.
- 3) On September 14, 2004, notice of an application to amend the WMP and notice of the public meeting was sent by first-class mail to the water right holders of record in the Colorado River Basin as required by law.
- 4) On November 8, 2004, the Commission held a public meeting. One person presented oral comments, and five (5) entities provided written comments in opposition to the proposed amendments.
- 5) The following persons/entities filed protests and requested a contested case hearing with the Commission regarding the proposed amendments: STP Nuclear Operating Company; City of Austin; Texas Parks and Wildlife Department; Sierra Club, Lone Star Chapter; and the National Wildlife Federation.

- 6) The applicant, LCRA, has requested numerous editorial and organization changes to the WMP designed to correct errors, improved readability and achieve internal consistency in the documents. All of these proposed non-substantive amendments to the WMP are detailed in mark-ups of the existing approved WMP dated May 16, 2003, June 10, 2004, April 29, 2005, March 1, 2006, April 24, 2009, November 25, 2009, and December 17, 2009, that were filed with Commission by the LCRA.
- 7) LCRA's proposed amendments to the WMP fall within four areas: curtailment policy for interruptible stored water supplies; allocation of stored water for environmental protection; incorporation of LCRA's Drought Contingency Plan into the WMP; and update of the WMP Appendices.
- 8) LCRA's proposed amendments to the WMP show the 2000 reported surface water demands by its firm customers from all sources of supply as approximately 296,600 acre-feet annually. The ten-year projected firm demands (through 2010), developed in 2000, were approximately 360,071 acre-feet per year - an increase of 63,471 acre-feet per year. The primary reason for this projected increase is additional water use around the Highland Lakes. Since LCRA filed its application in 2003, its obligations to provide firm supply to the STP Nuclear Operating Company (STPNOC) have been clarified in an Amended and Restated Contract which, among other things, obligates LCRA to provide no more than 20,000 acre-feet per year (rolling five-year average) of firm supply for up to two nuclear generating units and up to 40,000 acre-feet per year (rolling five-year average) of firm supply for more than two generating units, with staged deliveries based on STPNOC's reservoir level subject only to LCRA bay and estuary restrictions and according to a Water Delivery Plan. Contractual Permit No. 327A was issued by the Commission on August 31, 2009, based on the Amended and Restated Contract and the included Water Delivery Plan. The total estimated firm demands for all LCRA customers to be satisfied under this WMP are sufficient to address any additional firm demand that STPNOC might have in the timeframe for which these present amendments to the WMP are intended to be effective, after taking into consideration firm water allocated for environmental purposes.
- 9) With this large projected increase in firm water demand, and because firm water demands take priority over all other uses, LCRA requested the proposed amendments to the WMP to provide a compensating reduction in interruptible supplies. This reduction will be achieved by revising the annual interruptible water supply curtailment policy. LCRA's proposal to amend curtailment policy is as follows:
 - (a) If the total water in storage in either Lakes Buchanan or Travis is less than 94% on January 1 or June 1, then interruptible water supplies will not be made available to any customers located outside the four downstream irrigation operations (Pierce Ranch, Garwood, Gulf Coast, and Lakeside).
 - (b) If the total combined water in storage in Lakes Buchanan and Travis on January 1 is equal to or greater than 1,400,000 acre-feet, then LCRA will supply the interruptible stored water demands of the downstream four irrigation operations. This is based on the assumption that the maximum annual demand for the interruptible stored water acreage of 83,700 acres projected for 2010, under a 1 in 5 dry year condition, was 273,000 acre-feet. Using that as the greatest interruptible stored water demand, a set of smaller interruptible stored water supplies were assumed to generate a set of first and second crop acreages expected to be cultivated by each particular irrigation operations.

- (c) Curtailment of interruptible supply to the irrigation operations will commence when the total combined January 1 storage in Lake Buchanan and Travis is less than 1,400,000 acre-feet. When the combined storage in Lakes Buchanan and Travis on January 1 is between 1,400,000 acre-feet and 1,150,000 acre-feet, the interruptible stored water supply available will vary beginning at 273,000 acre-feet available at 1.4 million acre-feet of storage and decreasing at a rate of approximately 31,200 acre-feet for each 100,000 acre-foot decrease in combined storage until a value of 195,000 acre-feet available at a combined storage of 1.15 million acre-feet. When the combined storage in Lakes Buchanan and Travis on January 1 is less than 1,150,000 acre-feet, the interruptible stored water supply made available to the irrigation operations will vary beginning at 195,000 acre-feet available at 1.15 million acre-feet of storage and decreasing at a rate of approximately 4,250 acre-feet for each 100,000 acre-foot decrease in combined storage until a value of 160,000 acre-feet available at a combined storage of 325,000 acre-feet. This curtailment is depicted in Figure 4-1 of the Water Management Plan.
 - (d) Cutoff of the interruptible stored water supply for any purpose for the coming year will occur when the combined storage in Lakes Buchanan and Travis on January 1 is less than or equal to 325,000 acre-feet.
 - (e) If at any time during the year the total storage in Lakes Buchanan and Travis, combined, is less than or equal to 200,000 acre-feet, then all use of interruptible stored water will be stopped.
 - (f) During any period of curtailment or cutoff of interruptible supplies to the irrigation operations that is instituted on January 1, LCRA will cancel such curtailment at any time during the year prior to July 31, if the combined storage in Lakes Buchanan and Travis is projected to be equal to or greater than 1,400,000 acre-feet anytime in July. Further, the remaining available interruptible stored water supplies for the year may be reallocated, at this time, between irrigation operations if such allocations do not adversely affect any irrigation operation.
 - (g) During periods of curtailment, LCRA will allow each irrigation operation the option of either: (1) using up to a maximum authorized volume of interruptible stored water allocated to that operation, or (2) using sufficient water to cultivate a level of acreage agreed upon among the customers within each irrigation operation and LCRA.
- 10) LCRA's proposed amendments to the WMP also include a change in the procedure for supplying water for instream flow needs at certain locations downstream of Lady Bird Lake.
- (a) To the extent that inflows are legally available for storage in Lakes Buchanan and Travis, LCRA will release such inflows to help satisfy target instream flow needs, as set out in Table 2-1 of the WMP, whenever the combined water storage in Lakes Buchanan and Travis on January 1 is at or above 1,400,000 acre-feet.

- (b) LCRA will make such releases from Lakes Buchanan and Travis as are needed to help maintain critical instream flows, as set out in Table 2-1 of the WMP, at certain locations downstream of Lady Bird Lake. The level of releases to help maintain critical instream flows will not be limited by the inflows that are legally available for storage in Lakes Buchanan and Travis.
 - (c) In rare instances, LCRA's ability to meet the instream flow requirements set forth in this WMP may be impaired by certain unavoidable constraints such as the capacity of its hydro-generation units and hydro-generation scheduling mandates as well as unforeseen diversions, unforeseen changes in flow conditions downstream, and adjustments to the ratings of the applicable gages.
- 11) LCRA's proposed amendments to the WMP include a change in the reservoir operation procedure for providing water for estuarine fresh water inflow needs. The proposed amendment adds an intermediate level of supply for estuarine freshwater inflows that provides for a slightly more gradual reduction of the supply made available to Matagorda Bay than contained in the previously approved WMP. LCRA is required to release water from Lakes Buchanan and Travis to help maintain monthly estuarine inflows in accordance with the following procedure only to the extent that inflows are legally available for storage in Lake Buchanan and Travis as measured at the upstream gages:
 - (a) when the combined storage in Lakes Buchanan and Travis on January 1 is greater than or equal to 1,700,000 acre-feet, LCRA will release those storable inflows up to but not exceeding the amount needed to provide target freshwater inflow needs; and
 - (b) when the combined storage in Lakes Buchanan and Travis on January 1 is less than 1,700,000 acre-feet and greater than 1,100,000 acre-feet, LCRA will release those storable inflows up to but not exceeding the amount needed to provide one hundred and fifty percent of the critical freshwater inflow needs; and
 - (c) when the combined storage in Lakes Buchanan and Travis on January 1 is equal to or less than 1,100,000 acre-feet, LCRA will release those storable inflows up to but not exceeding the amount needed to provide critical freshwater inflows in all years.
- 12) The proposed amendments are deemed by LCRA as a balance between a modest incremental decrease in irrigation water supplies during drought conditions and modest increased inflow to Matagorda Bay during non-drought years to help maintain ecologically important freshwater inflows to the Bay.
- 13) Based on LCRA's determination of a balance of environmental and irrigation impacts, the recommended amendments to the WMP include an increase of stored water released for estuarine freshwater inflow. This increase would be provided in years when the January 1 storage level in Lakes Buchanan and Travis is between 1,100,000 and 1,700,000 acre-feet (55 and 86 percent full, respectively).
- 14) Among the issues raised in the hearing requests filed regarding the proposed amendments was the degree to which the amendments reflected consideration of the best information on environmental flow needs available at that time. While that issue remains in dispute, all parties agree that credible and extensive scientific information relating to environmental flow needs is available at

this time that is not incorporated in this order, but should be considered in developing and implementing an updated version of the WMP in the near future. That credible scientific information includes but is not limited to the August 2006 Matagorda Bay Freshwater Inflow Needs Study; the October 10, 2008 Matagorda Bay Health Evaluation; the March 31, 2008 Lower Colorado River, Texas Instream Flow Guidelines; and data collected by LCRA, TPWD, TWDB, and other agencies and researchers.

- 15) During the critical drought, LCRA proposes that the total stored water provided for environmental protection remain essentially the same as provided under the previously approved WMP. However, LCRA's proposed amendments provide that more of this commitment be met with firm, rather than interruptible stored water. The firm stored water so designated would increase from 16,950 acre-feet to 33,440 acre-feet. This additional firm commitment would be provided from available, but uncommitted supplies from Lakes Buchanan and Travis.
- 16) The LCRA Drought Contingency Plan (DCP), as required by Commission rules (30 Texas Administrative Code §§ 288.20 *et seq.*), was approved by the LCRA Board of Directors and submitted to the Commission in April 2000. The 2000 DCP was based on Chapter 4 of the WMP. Under current Commission rules, the DCP must be updated every five years. The DCP filed by LCRA with the Commission in 2000 was updated and approved by the LCRA Board of Directors and submitted to the Commission in April 2005. Consistent with the requirements of Chapter 288 of the Commission rules, LCRA also reviewed its DCP prior to May 1, 2009, but did not make any further changes to the DCP at that time. In December 2009, the LCRA Board approved further modifications to the DCP to reflect customer comment received in response to recent severe drought conditions. LCRA has submitted redline changes to Chapter 4 of the WMP that incorporates these recent changes.
- 17) On March 29, 1996 the Commission issued an Order severing a portion of the water rights authorized by Certificate of Adjudication No 14-2564 and combining them with LCRA's Certificate of Adjudication No. 14-5478 (Lake Buchanan). Certificate of Adjudication 14-5478C was issued to LCRA on the same date and authorized LCRA to transfer 532 acre-feet of water downstream to Lake Buchanan and consumptively use 500 acre feet per year of this water. Because the priority date of the severed water was senior to LCRA's rights to divert water from Lake Buchanan, LCRA requested and was granted on March 4, 1999, an increase in the Combined Firm Yield of Lakes Buchanan and Travis from 535,812 acre-feet to 536,312 acre-feet.
- 18) On August 29, 2003, LCRA filed a request with the Commission to cancel Certificate of Adjudication 14-5478C and for the Commission to rescind the March 29, 1996 Order severing water rights from Certificate Adjudication 14-2564 and combining them with LCRA's water rights authorized by Certificate of Adjudication 14-5478. On March 22, 2004, LCRA filed a Request to Abandon Certificate of Adjudication 14-5478C. Based on the abandonment, LCRA proposes that the WMP be amended to reflect a Combined Firm Yield of 535,812 acre-feet of water, which is the amount of the Combined Firm Yield prior to the issuance of Certificate of Adjudication 14-5478C.
- 19) The WMP contains two appendices: Volume I, which includes relevant LCRA Board policies, and Volume II, which contains technical information on the WMP and previous amendments. Changes to Volume I will reflect revisions made to LCRA Board policies since 1999. Changes to Volume II will reflect changes in agreements between LCRA and the Colorado River Municipal Water District, delete obsolete appendices, and update LCRA's standard form contracts and raw water contract rules.

- 20) LCRA supports this Order. In order to provide some certainty and to ensure prompt action on a new revision to the WMP, each of the parties identified in Finding of Fact No. 5 agree not to oppose the approval of this Order.

CONCLUSIONS OF LAW

- 1) The Commission considered this Order under the authority and in accordance with Chapter 11 of the Texas Water Code, as amended, and 30 Texas Administrative Code (“TAC”) Chapter 295.
- 2) The Commission has jurisdiction to consider and take action on LCRA’s application to amend the WMP.

NOW, THEREFORE, BE IT ORDERED BY THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY THAT:

- 1) LCRA’s amended Water Management Plan is approved with the following conditions:
- a) LCRA’s amended Water Management Plan is subject to all findings, conclusions, and conditions contained in the Commission’s Order dated September 20, 1989, December 23, 1991, December 18, 1992 and March 1, 1999, approving and amending the WMP, except to the extent that this Order specifically provides otherwise.
 - b) Notwithstanding any other provision in the revised Water Management Plan, for purposes of establishing LCRA’s obligations to supply interruptible stored water for agricultural use within the four major irrigation operations and to provide water for instream flows and freshwater inflows in calendar year 2010, the following shall apply:
 - 1. LCRA’s obligations to provide water for instream flows and freshwater inflows in January 2010 shall be governed by the Water Management Plan in effect on January 1, 2010.
 - 2. From February 1, 2010 through December 31, 2010, LCRA’s obligations shall be governed by the WMP in effect on February 1, 2010. In providing interruptible stored water for agricultural use within the four major irrigation operations and in providing water for instream flows and freshwater inflows during this period, LCRA’s obligations shall be determined based on the combined storage in Lakes Buchanan and Travis on February 1, 2010.
 - c) LCRA shall implement the provisions of the amended Water Management Plan regarding the provision of instream flows in a manner so as maintain, on an instantaneous basis, instream flows of 46 cfs and 500 cfs critical flows as set forth in Table 2-1 during the times those respective flow values are in effect. During those times when the target instream flow requirements as set forth in Table 2-1 of the WMP are in effect, LCRA will schedule the passage of inflows to lakes Buchanan and Travis that are legally available for storage to maintain the target flows as a daily average. Furthermore, during those times when target instream flow requirements are in effect and when such inflows are sufficient to allow LCRA to satisfy the daily target flow requirement at the Bastrop gage, LCRA will also schedule the passage of

these inflows to maintain the following minimum flows, as measured at any time at the Bastrop gage:

Month	Minimum Flow (cfs) 100% of the time	Minimum Flow (cfs) 95% of the time
January	266	
February	269	
March	233	
April	244	287
May	492	579
June	355	418
July	295	347
August	165	
September	201	
October	208	
November	241	
December	264	

It is hereby recognized that, in rare instances, LCRA's ability to meet the instream flow requirements set forth in this WMP may be impaired by certain unavoidable constraints such as the capacity of its hydro-generation units and hydro-generation scheduling mandates as well as unforeseen diversions, unforeseen changes in flow conditions downstream, and adjustments to the ratings of the applicable gages.

- d) For purposes of estimating required releases of water from Lakes Buchanan and Travis to meet the instream flow or freshwater inflow requirements of this WMP, LCRA shall rely on stage data obtained from the gaging system jointly maintained and operated by the U.S. Geological Survey and LCRA for determining these requirements. If the ratings used to convert stage to flow published by LCRA and the USGS are not identical at the time required releases are estimated, LCRA shall have discretion to rely on the latest updated rating of the gage.
- e) The approval of the amended WMP does not reflect a final determination, or create a presumption, that the environmental flow provisions contained therein are adequate or appropriate based upon more recent information available at this time.
- f) Because of the importance of updating the environmental flow and drought curtailment provisions of the WMP to reflect the best available science and information, LCRA shall promptly initiate, by not later than July 1, 2010, a revision process designed to develop further proposed amendments to the Water Management Plan. The revision process should be reasonably calculated to allow meaningful participation by interested basin stakeholder groups and to achieve regional consensus, where possible.

LCRA shall file an application for approval of proposed amendments with the Executive Director by not later than July 1, 2013. That application shall include a summary of the steps taken by LCRA to further public participation and to achieve consensus, where possible, in developing the proposed amendments. To the extent that the Executive Director determines such application is not administratively complete, LCRA shall make reasonable and good faith efforts to timely provide any

additional information necessary to have the application declared administratively complete at the earliest possible time.

Those proposed amendments shall address, at a minimum, the following:

1. Interruptible curtailment procedures needed to ensure that LCRA can satisfy projected firm customer demand should intense drought conditions such as those experienced over the past several decades recur;
2. An evaluation of the adequacy of the criteria for declaring a drought worse than drought of record;
3. An evaluation of the minimum combined storage of water in Lakes Buchanan and Travis necessary or appropriate to protect firm customers through a repeat of the drought of record or under conditions worse than a drought of record;
4. Incorporation of appropriate changes to reflect LCRA's agreements and obligations to STPNOC under the Settlement Agreement and Amended and Restated Contract, including the Water Delivery Plan;
5. LCRA's agreement with the City of Austin regarding return flows, consistent with Section VIII(C)(1) of the Settlement Agreement by and between the City of Austin and the LCRA Regarding Joint Water Resource Management and the Resolution of Certain Regulatory Matters Pending at the TCEQ, dated June 18, 2007;
6. Revisions to provisions governing the manner in which LCRA provides water from Lakes Buchanan and Travis to address environmental flow needs that shall use the best available scientific information, including the information referenced in Finding of Fact 15, and shall provide water for such needs to the maximum extent reasonable and practicable when considering all public interests as set forth in Texas Water Code §11.147 and any applicable environmental flow standards adopted pursuant to Texas Water Code § 11.1471. Such revisions shall include:
 - i. a mechanism for adjusting the manner in which LCRA provides water for environmental flow needs that addresses significant improvements in storage conditions during the course of a year;
 - ii. a mechanism for limiting harmful intra-daily fluctuations of instream flows to prevent significant adverse impacts from periods of low flows; and

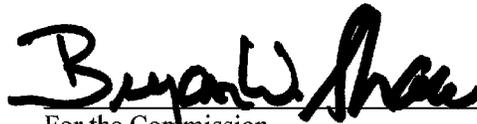
- iii. specification, to the maximum extent reasonable, of an overall instream flow regime.

The Commission hereby directs the Executive Director's staff to make all reasonable efforts to complete its technical review of the application for proposed amendments to the Water Management Plan by not later than one year after the date of LCRA's application is declared administrative complete and, as part of that staff review process, to allow other interested persons who request the opportunity to do so to submit, consistent with the timeline established by Commission staff, information regarding environmental flow issues and other issues addressed by the amendments for consideration. To facilitate the prompt completion of the technical review, LCRA shall respond fully to all requests from the Executive Director's staff for additional information within 30 days after receipt of those requests unless otherwise agreed upon by the Executive Director's staff. Upon completion of the technical review, the application and associated hearing requests, if any, on that application will be given high priority and set for prompt consideration and action by the Commission.

- g) Consistent with 30 Tex. Admin. Code Ch. 288, LCRA shall review and update, as appropriate, in accordance with the schedule required by such rules, those portions of Chapter 4 that relate to its Drought Contingency Plan (DCP) that do not change the triggers or amount of curtailment of interruptible supply or the triggers related to instream flows and bay and estuary inflows. Changes to other portions of the DCP, including any changes to LCRA's specific, quantified targets for water use reductions of firm customers required by chapter 288, do not constitute an amendment to the Water Management Plan requiring notice and an opportunity for contested case hearing, but must otherwise comply with the public notice requirements of Chapter 288 of the Commission's rules. Prior to implementing any mandatory firm water customer curtailment allowed under Texas Water Code section 11.039, LCRA shall work with its firm customers to develop a specific water curtailment plan, which must be approved by the LCRA Board and the Commission pursuant to other applicable procedures.
- h) Nothing in this Order shall be construed to impair or limit any party's right to contest the LCRA's proposal for incorporating the results of existing or future freshwater inflow or instream flow studies in any future proceedings relating to amendments of the Water Management Plan.
- i) Nothing in this Order, other than Findings of Fact 17 and 18, shall be construed as addressing the calculation of the combined firm yield of Lakes Buchanan and Travis and no party shall be deemed to have waived the right to contest in any future proceeding the calculation of the combined firm yield of Lakes Buchanan and Travis solely as a result of this Order.
- j) The Commission acknowledges the challenges to the adequacy of the environmental flow provisions included in the proposed amendments to the Water Management Plan previously raised by the Texas Parks and Wildlife Department, National Wildlife Federation, and the Lone Star Chapter of the Sierra Club. Those parties have agreed that compliance by LCRA with the provisions of this Order would eliminate the need for a Commission proceeding

to resolve those challenges. However, in the event that LCRA fails to meet any requirement set out in decretal paragraph (f) above, the Commission expressly recognizes that the issues raised by those challenges will again require consideration. Accordingly, any of those parties may, if it has reason to believe LCRA has failed to meet any such requirement, file, with the Office of the Chief Clerk, a written request seeking a hearing on the adequacy of environmental flow provisions approved by this Order and detailing the alleged failure by LCRA to comply with the requirements of decretal paragraph (f). Any such hearing request shall be set for prompt consideration by the Commission and, subject to compliance with routine requirements for hearing requests, shall be granted unless the Commission determines that LCRA has fully complied with the requirements of decretal paragraph (f).

- k) LCRA agrees to be bound by the terms, conditions and provisions contained herein and such agreement is a condition precedent to the approval of the proposed amendments.
 - l) LCRA shall conform the text of the Water Management Plan to be consistent with the provisions of this Order.
- 2) The Chief Clerk of the Texas Commission on Environmental Quality shall forward a copy of this Order, to all parties.
 - 3) If any part of this Order held to be invalid, the invalidity of any portion shall not affect the validity of the remainder of the Order.
 - 4) Nothing in LCRA's Water Management Plan, as amended, or this Order shall be construed to impair, or to authorize LCRA or any other person or entity to impair, senior or superior water rights in the Colorado River Basin.


For the Commission

DATE ISSUED **JAN 27 2010**

Appendix C-7

Order Approving LCRA's Firm Water Curtailment Plan
(December 12, 2011)

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY



AN ORDER

approving the Lower Colorado River Authority's Water Curtailment Plan for its Firm Water Customers; Docket No. 2011-2097-WR

On December 7, 2011, the Texas Commission on Environmental Quality ("TCEQ" or "Commission") considered the request for approval of its Water Curtailment Plan, filed on October 21, 2011. LCRA's firm Water Curtailment Plan is an amendment to LCRA's Raw Water Drought Contingency Plan, which is included in LCRA's Water Management Plan, Permit No 5838. LCRA's Water Management Plan, required by its Certificates of Adjudication Nos. 14-5478 and 14-5482, provides how LCRA makes water available from Lakes Buchanan and Travis to meet "firm" water customer needs, downstream interruptible irrigation demands, and environmental flow needs of Matagorda Bay and the lower Colorado River. It also provides how LCRA will manage and curtail supplies from the lakes during times of drought including through a repeat of the Drought of Record. LCRA's Water Management Plan additionally requires that this Water Curtailment Plan be prepared before the LCRA implements mandatory firm water customer curtailment under Tex. Water Code § 11.039, and that this plan be approved by the LCRA Board and the Commission.

The Commission finds that the plan meets the requirements of Texas Water Code § 11.039 and 30 Tex. Admin. Code Chapter 288.

THEREFORE, THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY ORDERS THAT:

Lower Colorado River Authority's Water Curtailment Plan filed October 21, 2011, is approved.

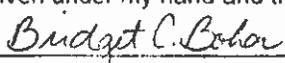
TEXAS COMMISSION ON ENVIRONMENTAL QUALITY


For the Commission

Issue Date: **DEC 12 2011**

THE STATE OF TEXAS
COUNTY OF TRAVIS

I hereby certify that this is a true and correct copy of a Texas Commission on Environmental Quality document, which is filed in the permanent records of the Commission. Given under my hand and the seal of office on

 **DEC 14 2011**
Bridget C. Bohan, Chief Clerk
Texas Commission on Environmental Quality

LCRA Firm Water Customer Curtailment Plan (for submittal to TCEQ)

I. Purpose and Background.

This plan is submitted for approval by the Texas Commission on Environmental Quality (TCEQ) consistent with LCRA's current TCEQ-approved Water Management Plan. This plan defines the general process under which LCRA will make water available during a pro rata curtailment in accordance with Texas Water Code § 11.039, and includes a variance procedure consistent with TCEQ rules. In developing the procedures within its raw water contract rules for implementing this plan, LCRA received and considered public input consistent with TCEQ rules. This plan will be treated as an amendment to LCRA's Raw Water Drought Contingency Plan (currently found in LCRA's Water Management Plan).

II. Determination of water to be made available during pro rata curtailment.

In the event the LCRA Board orders a pro rata curtailment, the amount of water made available to all firm water customers will be reduced by an equal percentage from the customers' reasonable demands. The determination of a customer's available supply during a curtailment will be based on the following:

1. Actual water use from a dry 12-month period (the "Reference Year") will serve as the default "Baseline Amount" to which pro rata reductions would be applied. The Baseline Amount would not exceed customer's contracted annual quantity.
2. The Baseline Amount is subject to adjustment based upon conditions that caused customer's water use in the Reference Year to be reduced, including, but not limited to:
 - a. implementation of water conservation or drought contingency measures during the Reference Year which resulted in quantified and documented savings;
 - b. new growth and that will result in increases to customer's reasonable demands;
 - c. plant outages or other incidents that reduced demand; and
 - d. customer did not hold a contract for the entire Reference Year.
3. The amount of water to be made available to a customer during a curtailment (the "Annual Allotment") will be equal to the Baseline Amount, less the percentage curtailment ordered by the Board.
4. A variance to a customer's Annual Allotment will be considered if failure to grant a variance would result in a threat to public health, welfare or safety and there is no practical alternative water supply.

III. Customer Curtailment Plans

Prior to a potential curtailment, firm water customers shall develop Customer Curtailment Plans. These plans shall include the customer's monthly or seasonal distribution of the customer's Annual Allotment. As part of the Customer Curtailment Plans, customers must identify or refer to specific measures to accomplish various levels of curtailment. In the event that a customer's Curtailment Plan represents a change to its Drought

Contingency Plan (DCP), the customer shall update its DCP and provide copies of the DCP to LCRA, and as required, to TCEQ.

IV. Implementation of Pro Rata Curtailment

In the event that the LCRA Board orders a pro rata curtailment, the order will include the pro rata percentage curtailment which will apply to each customer's Baseline Amount. If conditions change during a period of pro rata curtailment, the percentage curtailment may be increased or reduced by the LCRA Board.

During a pro rata curtailment, Customers will be required to use no more than their Annual Allotment as it may be pro-rated for portion of a calendar year in which curtailment is in effect. Customers who exceed their allotment will be subject to excess use rates or surcharges, to be specified by the LCRA Board, in addition to LCRA's firm water rate.

V. Cessation of Pro Rata Curtailment

In the event that the LCRA Board orders a pro rata curtailment, the order will include conditions under which the percentage curtailment may be adjusted or lifted.

Appendix C-8

Order Approving LCRA's Water Management Plan
(November 18, 2015)

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY



AN ORDER Approving Amendments to Lower Colorado River Authority's Water Management Plan; TCEQ Docket No. 2015-1444-WR

On the 4th day of November 2015, the Texas Commission on Environmental Quality (Commission) considered the Lower Colorado River Authority's (LCRA) application (Application No. 5838A) to amend its Water Management Plan (WMP) and having heard evidence and arguments concerning Application No. 5838A and the proposed order, the Commission makes the following Findings of Fact and Conclusions of Law:

FINDINGS OF FACT

- 1) LCRA's Application No. 5838A to amend the WMP was received by the Commission on March 12, 2012, and was declared administratively complete on April 19, 2012. Technical review was completed in November 2012 and the application was sent to notice and the comment period ended on May 28, 2013. On June 3, 2013, based on public comment and the ongoing drought conditions, the Executive Director determined that further evaluation of LCRA's application was necessary. In May 2014, after review of more recent severe drought data, the Executive Director's staff issued a draft report with recommendations related to the curtailment of interruptible stored water. On October 31, 2014, LCRA submitted a revised and supplemental application to amend its WMP that was intended to replace the 2012 WMP application. By statute, the technical review must be complete within one year of the administrative complete date. Technical review of LCRA's October 31, 2014 amended application was completed on June 11, 2015.

LCRA filed another revision to its application on May 21, 2015 to include its Firm Raw Water Drought Contingency Plan (Firm Customer DCP) in the WMP.

- 2) The WMP for the Lower Colorado River Basin defines LCRA's water management program and policies in accordance with the 1988 Final Judgment and Decree, *In re the Exceptions of the Lower Colorado River Authority and the City of Austin to the Adjudication of Water Rights in the Lower-Colorado River Segment of the Colorado River Basin*; the Enabling Act of the Lower Colorado River Authority; general Law of the State of Texas, particularly the Texas Water Code; LCRA's Certificates of Adjudication Nos. 14-5478 and 14-5482, as amended; the Commission's Orders concerning the WMP; and the policies of the Lower Colorado River Authority's Board of Directors. The LCRA's original and amended and supplemental applications were filed as allowed by these authorities.

- 3) Notices of the original and revised and supplemental applications to amend the WMP were each published in newspapers regularly published and generally circulated in Mason, San Saba, Lampasas, Llano, Burnet, Travis, Bastrop, Gillespie, Williamson, Fayette, Colorado, Wharton and Matagorda Counties, Texas. These counties are the only counties in which persons reside who may be affected by action taken by the Commission on the proposed amendments.
- 4) Notices of the original and revised and supplemental applications to amend the WMP were sent by first-class mail to the water right holders of record in the Colorado River Basin as required by law.
- 5) The Executive Director's technical review of the revised and supplemental application evaluated the impacts of this amendment to the Water Management Plan on existing water rights and the environment. Because this application did not change any authorizations in LCRA's Certificates of Adjudication, a complete technical review under TWC Section 11.134 was not necessary or appropriate. However, the Executive Director's technical review did include examination of LCRA's model simulations, LCRA's water use and demand projections, and LCRA's recalculation of the combined firm yield of Lakes Buchanan and Travis.
- 6) The Executive Director also determined that the amendments to the WMP requested in the revised and supplemental application do not impair existing water rights, do consider applicable environmental flow standards for the environment, are not detrimental to the public welfare, comply with TCEQ rules regarding water conservation and drought contingency plans; and are consistent with the Regional Water Plan.
- 7) The January 27, 2010 TCEQ order approving the previous amendment to the WMP required LCRA to file another amendment to address the following:
 - a. Interruptible curtailment procedures to ensure LCRA can satisfy projected firm customer demands during intense drought conditions such as those experienced over the past several decades;
 - b. Evaluation of the criteria for determining a drought worse than the Drought of Record;
 - c. Evaluation of the minimum combined storage in Lake Travis and Buchanan that would be necessary or appropriate to protect firm water customers either during a repeat of the Drought of Record or under worse conditions;
 - d. Incorporation of changes to address LCRA's agreements with STP Nuclear Operating Company (STPNOC);
 - e. LCRA's 2007 agreement with the City of Austin regarding return flows in the lower Colorado River;
 - f. Revisions to LCRA's procedures for providing water for environmental flows using the best scientific data available including provisions to accommodate changing conditions within a year, limiting harmful intra-daily fluctuations in streamflows, and, to the maximum extent reasonable, specification of an overall instream flow regime.
- 8) LCRA's application to amend its WMP addresses items (a) through (f) in Finding of Fact No. 7.

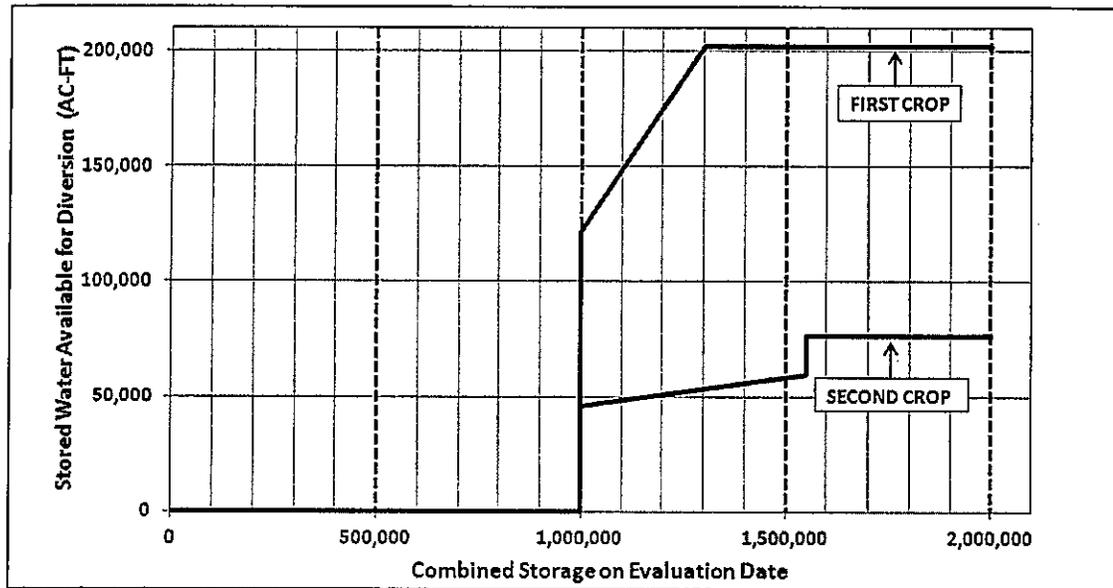
- 9) In addition to receiving firm water provided by LCRA under the agreements with STPNOC described in Finding of Fact 7.d, STPNOC has rights to divert water downstream of the Highland Lakes for use at the South Texas Project pursuant to such agreements and certificate of adjudication No. 14-5437, as amended.
- 10) In the process of incorporating changes to address LCRA's agreements with STPNOC as required by the previous order, LCRA included assumptions about its supply of water to STPNOC, and STPNOC's diversion and use of water. LCRA's actual supply of water to STPNOC, and STPNOC's actual diversion and use of water pursuant to its agreements with LCRA and pursuant to certificate of adjudication No. 14-5437, may vary from the assumptions that LCRA used.
- 11) LCRA engaged an advisory committee consisting of basin stakeholders prior to its initial application filed in 2012. The advisory committee process was required by the January 27, 2010 order to allow meaningful participation by interested basin stakeholder groups and achieve regional consensus, where possible, during the WMP revision process. Following TCEQ's draft report in May 2014, LCRA held meetings with stakeholders throughout the summer of 2014, prior to filing the revised and supplemental application. The stakeholder input process is documented in materials submitted by LCRA in support of its original and revised and supplemental applications, filed on March 12, 2012 and October 31, 2014.
- 12) LCRA requested changes to the WMP based on the stakeholder process and the Executive Director's May 2014 draft report. These requested changes are designed to address protection of firm water demands, and to incorporate updated environmental flow studies and LCRA's agreements with STP Nuclear Operating Company and the City of Austin. All of these proposed amendments to the WMP are detailed in submissions filed with the Executive Director by LCRA on October 31, 2014, November 18, 2014, March 5, 2015, April 13, 2015 and May 21, 2015.
- 13) LCRA's proposed substantive revisions to the WMP under this amendment fall within three areas: 1) Interruptible Stored Water Availability; 2) a new determination of the combined firm yield; and 3) new environmental flow criteria based on the most recent scientific studies and implementation of those criteria.
- 14) Under the WMP, firm demands take precedence over all other uses; therefore, LCRA's proposed amendment to the WMP requests a reduction in interruptible supplies to compensate for an increase in firm demands. The reduction in interruptible supplies is intended to offset the increase in firm demands.
- 15) LCRA's projected firm demands used to develop this WMP are approximately 350,086 acre-feet per year and reflect anticipated demands between 2010 and 2020.
- 16) LCRA's proposed revisions to its curtailment policies and procedures are intended to ensure that LCRA can satisfy current and projected firm demands during drought conditions, and to ensure that, in simulations of this WMP, LCRA's release of interruptible stored water does not result in combined storage dropping to the Drought Worse than Drought of Record

(DWDR) storage trigger (currently 600,000 acre feet). LCRA's curtailment methods have been found to be an acceptable approach in earlier Commission orders. The use of various rule curves and procedures continues to be an acceptable approach for addressing the allocation of interruptible stored water because this approach will allow LCRA to be responsive to changes in water supply conditions throughout the year while protecting firm demands.

- 17) LCRA proposes to revise the annual interruptible water supply curtailment policy described in Chapter 4 of the WMP. The curtailment policy includes the following:
- a. LCRA will determine availability of Interruptible Stored Water for its Gulf Coast, Lakeside operations and Pierce Ranch separately for the first and second (ratoon) crops and apply volumetric limits on the availability of Interruptible Stored Water for each crop season. (WMP Section 4.3.2.)
 - b. The amounts of Interruptible Stored Water for LCRA's Gulf Coast and Lakeside agricultural operations, and Pierce Ranch will be determined taking into consideration what Water Supply Condition is in effect: "Normal", "Less Severe Drought", or "Extraordinary Drought". (WMP Section 4.3.2.)
 - c. The Water Supply Condition will be evaluated on March 1 and July 1 (Evaluation Dates), taking into account inflows and the combined storage of Lakes Buchanan and Travis. (WMP Section 4.2.)
 - d. The Normal condition will be in effect if:
 - i. Neither the Less Severe Drought condition nor the Extraordinary Drought condition were in effect for the period prior to the Evaluation Date, and, on the Evaluation Date neither the criteria for entering Less Severe Drought or Extraordinary Drought are met; or
 - ii. The Less Severe Drought or Extraordinary Drought condition was in effect for the period prior to the Evaluation Date and the criteria for lifting Less Severe Drought is met on the Evaluation Date. (WMP Section 4.2.2.)
 - e. The Less Severe Drought conditions will be in effect if:
 - i. Combined storage in Lakes Buchanan and Travis is below 1,600,000 acre-feet and cumulative inflows into the lakes for the three months preceding the Evaluation Date are less than 50,000 acre-feet; or
 - ii. Combined storage in Lakes Buchanan and Travis is below 1,400,000 acre-feet and cumulative inflows into the lakes for the three months preceding the Evaluation Date are less than the 33rd percentile of inflows to the lakes for that three month period. The 33rd percentile will be based on United States Geological Survey streamflow data. (WMP Section 4.2.3.1.)

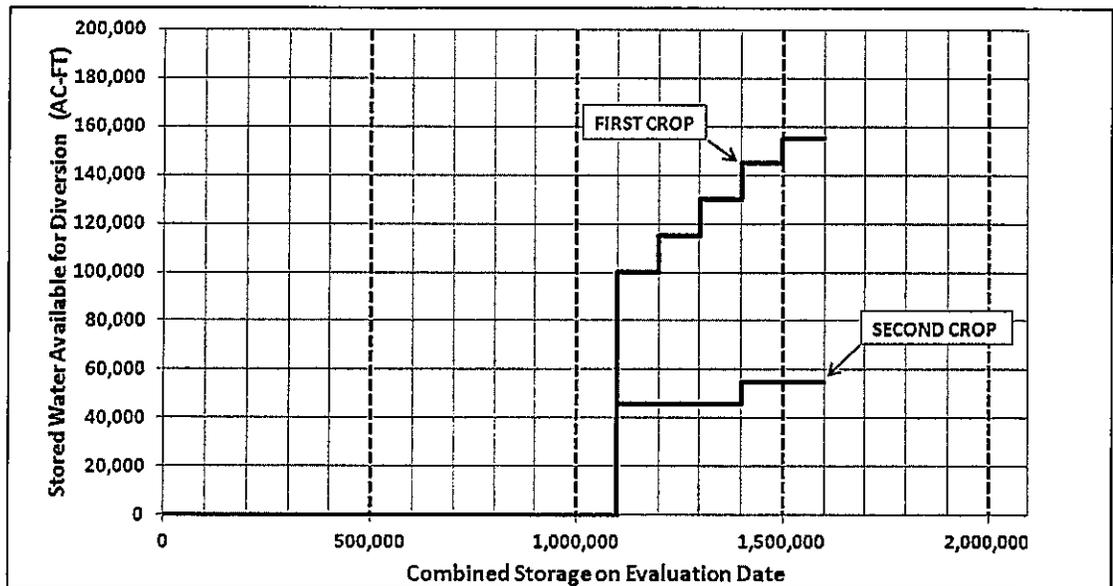
- f. The Less Severe Drought condition is also entered upon exiting the Extraordinary Drought condition, unless, the criteria for exiting Less Severe Drought condition is also met on the Evaluation Date. (WMP Section 4.2.3.1.)
- g. The Less Severe Drought condition will no longer be in effect if:
 - i. Combined storage in Lakes Buchanan and Travis has been above 1,600,000 acre-feet for one or more days during the period preceding the Evaluation Date and neither of the criteria for entering a Less Severe Drought condition is met on the Evaluation Date; or
 - ii. Combined storage in Lakes Buchanan and Travis has been above 1,400,000 acre-feet for one or more days during the period preceding the Evaluation Date, cumulative inflows to the lakes for the preceding three months are at or above the 50th percentile of inflows for that three month period, and neither of the criteria for entering Less Severe Drought are met on the Evaluation Date. The 50th percentile will be based on United States Geological Survey streamflow data. (WMP Section 4.2.3.2.)
- h. Extraordinary Drought will be in effect if:
 - i. Combined storage in Lakes Buchanan and Travis is below 1,300,000 acre-feet on the Evaluation Date; and
 - ii. Drought duration is at least 24 months; and
 - iii. The inflow intensity test for a declaration of a Drought Worse than the Drought of Record is met. (WMP Section 4.2.4.1.)
- i. Extraordinary Drought remains in effect until:
 - i. Combined storage in Lakes Buchanan and Travis has been above 1,300,000 acre-feet for one or more days during the period preceding the Evaluation Date; and
 - ii. The criteria for entering Extraordinary Drought are not met on the Evaluation Date. (WMP Section 4.2.4.2.)
- j. Under Normal conditions, the total amount of interruptible stored water to be made available for diversion at the Gulf Coast, Lakeside and Pierce Ranch irrigation operations is as follows:
 - i. First Crop
 - a. For combined storage of 1,300,000 acre-feet or more – 202,000 acre-feet;
 - b. For combined storage between 1,299,999 and 1,000,000 acre-feet – a sliding scale from 202,000 acre-feet at 1,299,999 acre-feet of combined storage to 121,500 acre-feet at 1,000,000 acre-feet of combined storage; and

- c. Below 1,000,000 acre-feet, no water except for Garwood irrigation operation consistent with prior contracts between Garwood and LCRA.
- ii. Second Crop
 - a. For combined storage of 1,550,000 or more – 76,500 acre-feet;
 - b. For combined storage between 1,549,999 acre-feet and 1,000,000 acre-feet – a sliding scale from 59,500 acre-feet at 1,549,999 acre-feet of combined storage to 46,000 acre-feet at 1,000,000 acre-feet of combined storage; and
 - c. Below 1,000,000 acre-feet no water except for Garwood irrigation operation consistent with prior contracts between Garwood and LCRA. (WMP Section 4.3.2.1.)



- k. During Normal conditions, if the combined storage in Lakes Buchanan and Travis falls below 900,000 acre-feet at any time during either the first or second crop season, all releases of Interruptible Stored Water to Gulf Coast, Lakeside and Pierce Ranch will be cut off for the remainder of the crop season. (WMP Section 4.2.3.1.)
- l. Under Less Severe conditions, the total amount of interruptible stored water to be made available for diversion at the Gulf Coast, Lakeside and Pierce Ranch irrigation operations is as follows:
 - i. First Crop
 - a. For combined storage of 1,500,000 to 1,599,999 acre-feet– 155,000 acre-feet;
 - b. For combined storage between 1,400,000 and 1,499,999 acre-feet – 145,000 acre-feet;
 - c. For combined storage between 1,300,000 and 1,399,999 acre-feet – 130,000 acre-feet;

- d. For combined storage between 1,200,000 and 1,299,999 acre-feet – 115,000 acre-feet;
 - e. For combined storage between 1,100,000 and 1,199,999 acre-feet – 100,000 acre-feet; and
 - f. Below 1,100,000 acre-feet, no water except for Garwood irrigation operation consistent with prior contracts between Garwood and LCRA.
- ii. Second Crop
 - a. For combined storage of 1,400,000 to 1,599,999 acre-feet – 55,000 acre-feet;
 - b. For combined storage between 1,100,000 acre-feet and 1,399,999 acre-feet – 46,000; and
 - c. Below 1,100,000 acre-feet no water except for Garwood irrigation operation consistent with prior contracts between Garwood and LCRA. (WMP Section 4.3.2.2.)



- m. During Less Severe Drought conditions, if the combined storage in Lakes Buchanan and Travis falls below 950,000 acre-feet at any time during either the first or second crop season, all releases of Interruptible Stored Water to Gulf Coast, Lakeside and Pierce Ranch will be cut off for the remainder of the crop season. (WMP Section 4.3.2.2.)
- n. If releases of Interruptible Stored Water to Gulf Coast, Lakeside and Pierce Ranch are cut off in the middle of a crop season, LCRA will not provide any pass-through run-of-river water that originates upstream of Lake Travis under LCRA's water rights that were historically associated with the Gulf Coast, Lakeside, and Pierce Ranch operations unless and until the combined storage in Lakes Buchanan and Travis is above 1,300,000 acre-feet. If combined storage remains above 1,300,000 acre-feet during the remainder of the crop season, LCRA will make these Pass-Through run-of-

river supplies available limited to the amount needed to finish the crop. (WMP Sections 4.3.2.1 and 4.3.2.2.)

- o. If releases of Interruptible Stored Water to Gulf Coast, Lakeside and Pierce Ranch for the first crop are cut off for the entire season, releases of interruptible stored water are also cut off for the second crop season. (WMP Sections 4.3.2.1 and 4.3.2.2.)
- p. If all available Interruptible Stored Water for Gulf Coast, Lakeside and Pierce Ranch has been diverted for the first crop season, but Interruptible Stored Water for these operations is available for the second crop season, all or part of the Interruptible Stored Water available for the second crop season can be used to finish the first crop season. (WMP Sections 4.3.2.1 and 4.3.2.2.)
- q. If Extraordinary Drought conditions are in effect, no Interruptible Stored Water or Pass-Through run-of-river water under LCRA's water rights historically associated with the Gulf Coast, Lakeside and Pierce Ranch operations will be made available for diversion within those operations. (WMP Section 4.3.2.3.)
- r. Interruptible stored water may be available in the Garwood irrigation operation for storage levels lower than indicated in the curtailment curves based on prior contracts between Garwood and LCRA. (WMP Sections 4.3.2.1, 4.3.2.2 and 4.3.2.3.)
- s. The amount of water available for Gulf Coast, Lakeside and Pierce Ranch will be based on the water supply condition combined with a Look-Ahead test. If the LCRA Board determines, under the Look-Ahead test, that the release of Interruptible Stored Water under either the Normal condition or Less Severe Drought condition (whichever is in effect) in the upcoming crop season would result in the combined storage in Lakes Buchanan and Travis falling below 600,000 acre-feet in the next twelve months or below 900,000 acre-feet in the upcoming crop season then no Interruptible Stored Water or Pass-Through run-of-river water will be released for Gulf Coast, Lakeside and Pierce Ranch for the upcoming crop season. (WMP Section 4.3.2.4.)
- t. In making its determination under the Look-Ahead Test, the LCRA Board will consider antecedent conditions, current storage and forecasted conditions. LCRA shall use the 99 percent exceedance probability, unless a different trend for inflows and combined storage is being observed. However, in no case shall LCRA's determination rely on less than a 95 percent exceedance probability. Exceedance probability refers to the likelihood that a future outcome will be better than the specified value. (WMP Section 4.3.2.4.)
- u. A Drought Worse than Drought of Record is a drought condition identified by the LCRA Board of Directors pursuant to criteria in the Water Management Plan where an ongoing drought has a real likelihood of becoming a new Drought of Record. A DWDR declaration would trigger action to cut off Interruptible Stored Water and implement mandatory pro rata curtailment of Firm Water demands. The Drought of Record is defined as the worst hydrologic drought for which streamflow records are available and is considered to be the period of time during recorded history with

natural hydrologic conditions provided the least amount of water supply. For the Water Management Plan, the Drought of Record is the drought of the 1940s and 50s. (WMP Sections ES-G and 4.7.)

- v. The amount of water to be allocated to the individual downstream interruptible agricultural operations and to individual customers within the operations will be determined in accordance with LCRA's Drought Contingency Plan for interruptible water (Interruptible DCP) and applicable agreements and contracts.

- 18) If LCRA operates Lakes Buchanan and Travis in accordance with the basic goals and guidelines included in Section 1.2 of the WMP, there should be no impact to water rights in the Colorado River Basin as a result of LCRA's requested amendments to its WMP greater than if the water rights for Lakes Buchanan and Travis were fully exercised.
- 19) The modeled simulations of the proposed curtailment procedures demonstrate that firm customer demands can be met through a repeat of the entire period of record, 1940-2013, including through a repeat of the Drought of Record, which is defined as the drought of the 1940s and 50s for this WMP and combined storage in Lakes Travis and Buchanan is maintained above 600,000 acre feet.
- 20) In 2011, 2013, 2014 and 2015, LCRA applied for, and TCEQ granted, emergency orders allowing LCRA to deviate from the existing WMP with respect to curtailment procedures for interruptible stored water as a result of severe drought conditions. Further, in 2014 and 2015, LCRA applied for, and TCEQ granted, emergency orders allowing LCRA to deviate from the existing WMP with respect to providing stored water for environmental flows. This WMP amendment includes additional protections for LCRA's firm water customers and changed curtailment procedures for supplying interruptible stored water, which should mitigate the impacts of future severe conditions. If severe dry weather conditions occur in the future, beyond those considered in this WMP that cannot be addressed through curtailment procedures in the WMP (WMP Section 4.3 and Section 4.4), LCRA can apply for an Emergency Order to allow deviations from the WMP curtailment procedures for interruptible stored water or environmental flow conditions.
- 21) This WMP amendment reduces the amount of interruptible stored water available for customers outside of the four downstream irrigation operations, and eliminates provision of water to such customers after 2018. (WMP Section 4.5.)
- 22) Based on updated modeling using a modified version of the TCEQ's water availability model (WAM) for the Colorado River Basin, the combined firm yield of Lakes Travis and Buchanan is reduced from 535,812 acre-feet (which includes 90,546 acre-feet of water associated with O.H. Ivie Reservoir) to 434,154 acre-feet (which does not include an amount for O.H. Ivie Reservoir). The combined firm yield was determined based on the average annual amount of water supplied during the critical period. The calculation of this firm yield is reasonable and consistent with that used for the previous estimate of the combined firm yield recognized in the commission's 1989 order. The new combined firm yield is a net reduction of 11,112 acre-feet from the

previously calculated combined firm yield. The combined firm yield is subject to change in future WMP revisions. (WMP Section 3.2.)

- 23) LCRA's amendment to the WMP includes a change in the procedure for supplying water to help meet instream flow needs at certain locations downstream of Lady Bird Lake and incorporates specific instream flow values based on the most recent scientific studies, and summarized as follows (and included in WMP Section 4.4.2):
- a. Three levels of instream flows: 1) subsistence; 2) base-dry; and 3) base-average.
 - b. The amount of water provided for instream flows, i.e. whether subsistence, base-dry, or base-average flow levels would apply, will be determined based on combined storage on March 1st and July 1st.
 - c. The specific trigger levels for determining which instream flow levels apply on each Evaluation Date are:
 - i. When the combined storage in Lakes Travis and Buchanan is above 1,960,000 acre-feet, base-average conditions apply;
 - ii. When the combined storage in Lakes Travis and Buchanan is between 1,900,000 and 1,960,000 acre-feet, base-dry conditions apply; and
 - iii. When the combined storage in Lakes Travis and Buchanan is less than 1,900,000 acre-feet, subsistence conditions apply.
 - d. LCRA will make releases from Lakes Buchanan and Travis limited to the daily storable inflows to help meet base-average and base-dry instream flows. In addition to storable inflows, previously stored water will be released as necessary to maintain Subsistence flows at the four streamflow gauging locations identified in Table 4-3 of the WMP.
 - e. In the event of a pro rata curtailment of firm supplies, the applicable instream flow criteria will be subject to the same percentage curtailment as imposed on LCRA's firm water customers.
 - f. For purposes of this amendment to the WMP, the subsistence and base flow criteria for gauges other than the Austin gauge, are daily (or daily average) flow values. The subsistence criteria at Austin represent minimum (or instantaneous) flow requirements.
 - g. LCRA's ability to meet the instream flow requirements set forth in the WMP may, in rare instances, be impaired by certain unavoidable constraints such as the capacity of its hydro-generation units and hydro-generation scheduling mandates as well as unforeseen diversions, unforeseen changes in flow conditions downstream, unforeseen or unscheduled operations at Longhorn Dam, and adjustments to the ratings of the applicable gages.
 - h. For the Bastrop gauge, the following minimum flow requirements apply:
 - i. During those times when base-average criteria are in effect, the minimum (or instantaneous) flow requirements, subject to availability of storable inflows, shall be 70 percent of the base-average criteria for the given month.

- ii. During those times when base-dry criteria are in effect, the minimum (or instantaneous) flow requirements, subject to availability of storable inflows, shall be 70 percent of the base-dry criteria for the given month.
 - iii. During those times that subsistence criteria are in effect, releases shall be scheduled such that the minimum flow does not drop below:
 - 1. 90 percent of the subsistence criteria when the combined storage in Lakes Travis and Buchanan is equal to or greater than 1,400,000 acre-feet; or
 - 2. 80 percent of the subsistence criteria when the combined storage in Lakes Travis and Buchanan is less than 1,400,000 acre-feet.
- 24) LCRA is not required to manage water in the lower Colorado River to specifically provide for pulse flows under this amendment to the WMP. However, LCRA will monitor pulse flows during the time period that this amendment to the WMP is in effect to assess whether pulse flows are occurring at the frequency recommended in the 2008 instream flow study of the lower Colorado River. (WMP Section 4.4.2.)
- 25) LCRA's amendment to the WMP includes a change in the procedures for supplying water to help meet freshwater inflow needs and the freshwater inflow criteria are based on the most recent scientific studies. (WMP Section 4.4.3.)
- a. The freshwater inflow criteria are based upon recent studies as described in Section 2.4.2 of the WMP.
 - b. The WMP freshwater inflow criteria include five levels of inflow to help meet freshwater inflow needs and, with the exception of threshold criteria, are defined using two-month operational criteria, as described in Table 4-6 of the WMP.
 - c. At the end of each month, to the extent storable inflows are available, LCRA will provide storable inflows, if available, as necessary to meet the two-month operational criteria.
 - d. In May and June, LCRA will determine if the three month spring freshet requirement as described in Table 4-5 of the WMP has been met within the spring period, and, if so, the two-month operational criteria will be reduced to the corresponding amount for the intervening period.
 - e. In September and October, LCRA will determine if the three month fall freshet requirement as described in Table 4-5 of the WMP has been met within the fall period, and, if so, the two-month operational criteria will be reduced to the corresponding amount for the intervening period.
 - f. In all months, LCRA will release storable inflows to help meet the Threshold level of 15,000 acre-feet per month, to the extent of storable inflows.
 - g. The combined storage trigger at which specific freshwater inflow levels apply can be found in Table 4-7 of the WMP.
 - h. In the event of a pro rata curtailment of firm supplies, the applicable freshwater inflow criteria will be subject to the same percentage curtailment as imposed on LCRA's firm water customers.
 - i. Except as provided in Finding of Fact 25.j., any time releases of Interruptible Stored Water for Gulf Coast, Lakeside and Pierce Ranch are cut off, only the Threshold requirement will be in effect.

- j. If releases for Gulf Coast, Lakeside and Pierce Ranch are cut off for the second crop but combined storage in Lakes Buchanan and Travis are above 1,300,000 acre-feet on July 1st, the two-month operational criteria shall be in effect; however, LCRA's releases of storable inflows to meet the operational criteria will be limited to no more than 50% of the storable inflows remaining after the release of storable inflows for instream flows or Threshold inflow levels, with a maximum release in a single month of 82,000 acre-feet.
 - k. If combined storage in Lakes Buchanan and Travis falls below 1,000,000 acre-feet at any time, the only criteria in effect from that month through the next Evaluation Date is Threshold.
 - l. If combined storage in Lakes Buchanan and Travis is below 1,300,000 acre-feet at the end of a month, the maximum release of storable inflows to help meet freshwater inflow criteria is 25,000 acre-feet.
 - m. When Less Severe Drought conditions are in effect, releases of storable inflows to meet the operational criteria are limited to no more than 50% of the storable inflows remaining after the release of storable inflows for instream flows or Threshold inflow levels, with a maximum release in a single month of 82,000 acre-feet if storage is above 1,300,000 acre-feet at the end of the month and a maximum release for all freshwater inflow criteria of 25,000 acre-feet if storage is below 1,300,000 acre-feet.
 - n. In certain instances, up to 5,000 acre-feet of storable inflows that are not released in a given month will be carried forward to help meet the Threshold criteria in the immediately following month.
- 26) The amount of water available to help meet environmental flow needs is subject to limits to ensure that the actual amounts made available do not exceed the amounts simulated in the development of the 2014 WMP revision for periods when combined storage in Lakes Buchanan and Travis was below 1,300,000 acre-feet on the Evaluation Date. The WMP includes annual and multi-year caps on water for environmental flows in Section 4.4.4 of the WMP.
- 27) These instream flow and freshwater inflow criteria, exclusive of pulse flows and attainment frequencies, are consistent with those recommended by the Colorado-Lavaca Senate Bill 3 science team and stakeholder groups that were adopted as environmental flow standards by TCEQ on August 8, 2012.
- 28) LCRA committed 33,440 acre-feet of firm water to environmental needs under the 2010 WMP. That amount is not changed in this amendment.
- 29) If LCRA operates Lakes Buchanan and Travis in accordance with Section 4.4 of the WMP, there should be no impact to the instream flows of the lower Colorado River or freshwater inflows to Matagorda Bay greater than if the water rights for Lakes Buchanan and Travis were fully exercised.
- 30) LCRA's amendment to the WMP includes changes to the criteria and procedures for the declaration and cancellation of a Drought Worse than the Drought of Record as specified in Section 4.7 of the WMP.

- 31) LCRA's DCP, as required by commission rules (30 Texas Administrative Code §§ 288.20 *et seq.*), was approved by the LCRA Board of Directors and submitted to the commission in June 2010. In December of 2011, the commission approved LCRA's Water Curtailment Plan for its firm customers. Under current commission rules, the DCP must be reviewed and updated as necessary every five years. Consistent with the requirements of Chapter 288, in February 2012 and May 2015, the LCRA Board approved modifications to the DCP including changes in drought response measures for firm water customers and changes in the allocation procedures for interruptible water customers. Changes to the LCRA Firm Customer DCP adopted by the Board in May 2015 and included in Appendix F of the WMP are incorporated into Chapter 4 of the WMP by reference for all purposes as if set forth in Chapter 4 in full and will become effective upon adoption of this WMP. Further revisions to the Interruptible DCP will be needed to ensure consistency with the amended WMP and prior to LCRA supplying interruptible stored water under the amended WMP. LCRA intends to publish its Interruptible DCP as a stand-alone document, once revised.
- 32) The WMP contains six appendices: 1) Appendix A, which includes technical papers addressing projections of demands, assumptions of water availability models (WAMs), methodology of drought identification, and development of the combined firm yields of Lakes Buchanan and Travis, and WAMs; 2) Appendix B, which contains flood control regulation information; 3) Appendix C, which includes previous amendments and orders related to the WMP; 4) Appendix D, which includes the 1988 Final Judgment and Decree; 5) Appendix E, which contains relevant LCRA Board policies, and 6) Appendix F, which contains LCRA's Firm Customer Drought Contingency Plan.
- 33) The naturalized flows in the Colorado WAM were updated through 2013 for this WMP. At this time Lakes Buchanan and Travis have not refilled. Updating the WAMs to include additional years of naturalized flows could result in the calculation of different trigger levels and curtailment curves than those included in the 2014 WMP amendment or of a different combined firm yield of Lakes Buchanan and Travis.
- 34) The models used to support LCRA's 2014 WMP include certain assumptions about LCRA's use of its downstream water rights that, if changed, could result in the calculation of different trigger levels or curtailment curves than those included in the 2014 WMP amendment.
- 35) Actual water use by firm customers could increase in the future above the levels considered in the models used to support LCRA's 2014 WMP amendment in a way that could result in the calculation of different trigger levels or curtailment curves.
- 36) LCRA and Garwood Irrigation Company are parties to a 1987 Agreement and a 1998 Purchase Agreement, which agreements relate to the supply of water by LCRA in the Garwood irrigation division.
- 37) Because accounting for environmental flows under the 2010 Water Management Plan and the Water Management Plan approved by this Order is month to month, it is reasonable that provisions of the Water Management Plan approved by this Order relating to environmental flow requirements be effective at the beginning of the month after this Order is issued. March 1, 2016 is the first date under the Water Management Plan approved by this Order that the

storage and inflow conditions will be used to determine the supply of interruptible water for agricultural customers and the criteria in effect to help meet environmental flow needs. Therefore, in order to transition between the Water Management Plans, the applicable Water Management Plan environmental flow criteria for the time between the effective date of this Order and February 29, 2016 should be described in the Ordering Provisions of this Order.

- 38) The amendment will not increase the amount of water authorized to be diverted.
- 39) The amendment will not increase the authorized rate of diversion.
- 40) The amendment will not cause adverse impacts on other water right holders.
- 41) The amendment will not cause adverse impacts on the environment on the stream of greater magnitude than under circumstances in which the authorization sought to be amended was fully exercised according to its terms and conditions as they existed before the requested amendment.
- 42) The amendment meets all other applicable requirements of Texas Water Code Chapter 11.
- 43) Having satisfied all of the conditions in Texas Water Code § 11.122(b), the Commission shall authorize the requested amendment.

CONCLUSIONS OF LAW

- 1) The commission considered this order under the authority and in accordance with Chapter 11 of the Texas Water Code, as amended and 30 Texas Administrative Code (“TAC”) Chapter 295; the 1988 Final Judgment and Decree, *In re the Exceptions of the Lower Colorado River Authority and the City of Austin to the Adjudication of Water Rights in the Lower-Colorado River Segment of the Colorado River Basin*; the Enabling Act of the Lower Colorado River Authority; LCRA’s Certificates of Adjudication Nos. 14-5478 and 14-5482, as amended; the Commission’s Orders concerning the WMP; and the policies of the Lower Colorado River Authority’s Board of Directors.
- 2) By entering this order, the Commission is not construing in any way either the 1987 Agreement or the 1998 Purchase Agreement between LCRA and Garwood Irrigation Company. Nothing in this Order or the WMP approved by this Order shall be considered or construed in any way to support one construction or another of the 1987 Agreement and the 1998 Purchase Agreement between LCRA and Garwood Irrigation Company. Garwood Operations will be provided Interruptible Stored Water consistent with the Garwood Purchase Agreement. Proposed Water Management Plan, p. 4-8.
- 3) This order does not alter or construe LCRA’s obligation to provide water to STPNOC, to the extent required by their agreements, or STPNOC’s right to divert and use water pursuant to certificate of adjudication No. 14-5437, as amended. Nothing in this order or the Water

Management Plan shall be considered to support one construction or another of such obligations and rights.

- 4) The commission has jurisdiction to consider and take action on LCRA's application to amend the WMP.
- 5) In accordance with Texas Water Code § 11.122(b), the Commission finds that the amendment:
 - a. Will not increase the amount of water authorized to be diverted;
 - b. Will not increase the authorized rate of diversion;
 - c. Will not cause adverse impact on other water rights holders;
 - d. Will not cause adverse impact on the environment on the stream of greater magnitude than under circumstances in which the authorization sought to be amended was fully exercised according to its terms and conditions as they existed before the requested amendment; and
 - e. Meets all other applicable requirements of Texas Water Code Chapter 11.
- 6) All conditions in Texas Water Code § 11.122(b) are fully satisfied and the Commission authorizes the amendment to LCRA's WMP.

EXPLANATION OF CHANGES

On November 4, 2015, the Commission considered LCRA's application to amend its WMP, Water Use Permit No. 5838. The Commission determined that their consideration of the matter was governed by Texas Water Code § 11.122(b) in that if the amendment application meets all five criteria required by Texas Water Code § 11.122(b), then the Commission shall authorize the amendment.

The Commission stated that the five criteria to be considered are:

1. Whether there is an increase in the amount of water authorized to be diverted;
2. Whether there is an increase in the authorized rate of diversion;
3. Whether there will be an adverse impact on other water right holders;
4. Whether there will be an adverse impact on the environment on the stream of greater magnitude than under circumstances in which the permit that is sought to be amended was fully exercised according to its terms and conditions as they existed before the requested amendment; and
5. Whether the application meets all other applicable requirements of Texas Water Code Chapter 11.

The Commission stated that Texas Water Code § 11.122(b) was enacted by the Legislature in an effort to streamline the water right amendment process. If the Commission determined that an amendment meets the five Texas Water Code § 11.122(b) criteria, the Texas Legislature has required that the Commission issue the amendment. The Commission stated that, consistent with *City of*

Marshall v. City of Uncertain, 206 S.W.3d 97 (Tex. 2006), the Commission must evaluate an application to determine whether or not it meets the five criteria.

The Commissioners agreed that all five criteria of Texas Water Code § 11.122(b) had been met, and that they were, therefore, required to authorize the amendment. More specifically, the Commission determined that the amendment does not increase the amount or rate of diversion, does not adversely impact other water right holders or the environment, and meets all other applicable requirements of Texas Water Code Chapter 11. As such, the Commission denied all hearing requests; issued the amendment to LCRA's WMP, Water Use Permit No. 5838A; adopted the Executive Director's Response to Comments; and adopted the Executive Director's Proposed Order but modified to include six additional Findings of Fact, two additional Conclusions of Law, and one additional Ordering Provision.

The Commission revised the Executive Director's Proposed Order by adding the following Findings of Fact:

1. Finding of Fact No. 38, "The amendment will not increase the amount of water authorized to be diverted."
2. Finding of Fact No. 39, "The amendment will not increase the authorized rate of diversion."
3. Finding of Fact No. 40, "The amendment will not cause adverse impacts on other water right holders."
4. Finding of Fact No. 41, "The amendment will not cause adverse impacts on the environment on the stream of greater magnitude than under circumstances in which the authorization sought to be amended was fully exercised according to its terms and conditions as they existed before the requested amendment."
5. Finding of Fact No. 42, "The amendment meets all other applicable requirements of Texas Water Code Chapter 11."
6. Finding of Fact No. 43, "Having satisfied all of the conditions in Texas Water Code § 11.122(b), the Commission shall authorize the requested amendment."

The Commission also revised the Executive Director's Proposed Order by adding the following Conclusions of Law:

1. Conclusion of Law No. 5, "In accordance with Texas Water Code § 11.122(b), the Commission finds that the amendment:
 - a. Will not increase the amount of water authorized to be diverted;
 - b. Will not increase the authorized rate of diversion;
 - c. Will not cause adverse impacts on other water right holders;
 - d. Will not cause adverse impacts on the environment on the stream of greater magnitude than under circumstances in which the authorization sought to be amended was fully exercised according to its terms and conditions as they existed before the requested amendment; and
 - e. Meets all other applicable requirements of Texas Water Code Chapter 11."

2. Conclusion of Law No. 6, “All conditions in Texas Water Code § 11.122(b) are fully satisfied and the Commission authorized the amendment to LCRA’s WMP.”

Finally, the Commission revised the Executive Director’s Proposed Order by adding Ordering Provision No. 6, which reads, “This Order is effective on the date that it is final or on January 1, 2016, whichever is earlier.”

NOW, THEREFORE, BE IT ORDERED BY THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY THAT:

- 1) LCRA’s amended Water Management Plan is approved with the following conditions:
 - a. LCRA’s amended Water Management Plan is subject to all findings, conclusions, and conditions contained in the Commission’s Orders dated September 20, 1989, December 23, 1991, December 18, 1992, March 1, 1999, and January 27, 2010 approving and amending the WMP, to the extent not inconsistent with this order.
 - b. LCRA’s amended Drought Management Plan including LCRA’s amended Drought Contingency Plan is subject to all findings, conclusions, and conditions, contained in the Commission’s September 20, 1989, December 23, 1991, December 18, 1992, March 1, 1999, and January 27, 2010 Orders and the LCRA’s December 7, 2011 Commission approved Water Curtailment Plan, to the extent not inconsistent with this order.
 - c. LCRA agrees to be bound by the terms, conditions and provisions contained herein and such agreement is a condition precedent to the approval of the proposed amendments.
 - d. LCRA shall conform the text of the Water Management Plan to be consistent with the provisions of this Order, specifically to conform to Findings of Fact numbers 16., 17.s., 17.t., 19., 23.b., and 31. The Findings of Fact provide a summary of many of the provisions in LCRA’s revised and supplemental WMP application. The Findings of Fact provide a summary of many of the provisions in the WMP document in LCRA’s revised and supplemental WMP application. With the exception of the Findings of Fact noted above, in the event of a conflict between the more general language in the Findings of Fact and the specific language in the WMP document text in LCRA’s application, the document text in LCRA’s application controls.
 - e. Consistent with 30 Texas Administrative Code Chapter 288, LCRA shall review and update, as appropriate, in accordance with the schedule required by such rules, those portions of its Drought Contingency Plan (for firm and interruptible customers) that do not change the triggers, amount of curtailment of interruptible stored water supply, or the triggers or criteria related to bay and estuary inflows or instream flows. Such changes do not constitute an amendment to the WMP requiring notice and opportunity for contested case hearing, but must otherwise comply with the public notice requirements of Chapter 288 of the Commission’s rules.

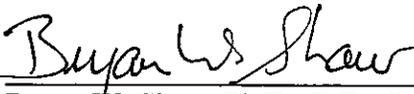
- f. LCRA shall initiate a process to update the Water Management Plan on the earlier of January 1, 2018, or one year from any of the following occurrences:
 - i. The March 1, when water use reports are filed, following the calendar year in which Lakes Travis and Buchanan reach a combined capacity of 98%;
 - ii. Firm water use, as reported in LCRA's annual water use reports and annual Water Management Plan report filed with the TCEQ, reaches a level that is 90% or greater of the demands considered in the modeling for the 2014 WMP amendment for a period of two consecutive years;
 - iii. LCRA has begun operating the off-channel reservoir authorized under Certificate of Adjudication No. 14-5476C;
 - iv. LCRA has begun using one or more of its downstream water rights based on non-temporary amendments to those rights obtained after the effective date of this Order, unless LCRA has demonstrated, and the Executive Director agrees, that modeling of such operations in combination with this Water Management Plan does not result in combined storage dropping below 600,000 acre-feet in a repeat of the hydrology considered in this WMP.
 - g. LCRA shall submit an application to amend its WMP no later than two years from the date it initiates a process to update the WMP under Ordering Provision 1.f. If one or more of the events described in Ordering Provision 1.f occurs after a revision process has been initiated, and upon written request by LCRA, the time period to submit an application may be extended by a maximum of six months per occurrence by the Executive Director to allow those changed circumstances to be included in the revision process.
 - h. LCRA's application to amend the WMP required by this Order must include naturalized streamflow data as follows:
 - i. an update initiated prior to January 1, 2018 shall use data updated through 2015; or
 - ii. an update initiated on January 1, 2018 shall use data updated through 2016.
- 2) For the period between the effective date of this Order and the next Evaluation Date under the Water Management Plan for environmental flow criteria (March 1, 2016), the following environmental flow criteria shall apply:
- i. For the period from the effective date of this Order to the end of the month in which this order is issued, LCRA shall comply with the environmental flow criteria in the Water Management Plan as approved on January 27, 2010.

- ii. For the period from the first day of the month following issuance of this order until February 29, 2016, the environmental flow criteria shall be determined consistent with the revised Water Management Plan approved by this order, relying on the July 1, 2015 combined storage in lakes Buchanan and Travis, and in accordance with item 1 on page 4-17, Section 4.4.3, of LCRA's proposed Water Management Plan document submitted in May 2015, which provides:

Any time releases of Interruptible Stored Water for agricultural operations in Gulf Coast, Lakeside, and Pierce Ranch are cut off, the only freshwater inflow criteria in effect is Threshold. However, if releases of Interruptible Stored Water for agricultural operations in Gulf Coast, Lakeside, and Pierce Ranch are cut off from the Second Crop Season but Combined Storage is greater than 1.3 million acre-feet on July 1, the Operational Criteria shall be in effect pursuant to Table 4-6. In that instance, LCRA's releases of Storable Inflows to meet the Operational Criteria will be limited to no more than 50 percent of the Storable Inflows for the month remaining after the release of Storable Inflows for instream flow criteria and/or Threshold inflow needs, with a maximum release for the Operational Criteria in a single month of 82,000 acre-feet. (LCRA's releases of Storable Inflows to Meet Threshold will not be subject to this limitation).

- 3) The Chief Clerk of the Texas Commission on Environmental Quality shall forward a copy of this Order to all parties.
- 4) If any part of this Order is held to be invalid, the invalidity of any portion shall not affect the validity of the remainder of the Order.
- 5) Nothing in LCRA's Water Management Plan, as amended, or this Order shall be construed to impair, or to authorize LCRA or any other person or entity to impair, senior or superior water rights in the Colorado River Basin.
- 6) This Order is effective on the date that it is final or on January 1, 2016, whichever is earlier.

TEXAS COMMISSION ON
ENVIRONMENTAL QUALITY



Bryan W. Shaw, Ph.D., P.E., Chairman

11-18-15

Date Signed

Appendix C-9

Order Approving Amendments to LCRA's Water Management Plan
(February 3, 2020)

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY



AN ORDER Approving Amendments to Lower Colorado River Authority's Water Management Plan

The Executive Director of the Texas Commission on Environmental Quality (Commission) considered the Lower Colorado River Authority's (LCRA) application (Application No. 5838B) to amend its Water Management Plan (WMP) and, makes the following Findings of Fact and Conclusions of Law:

FINDINGS OF FACT

- 1) LCRA's Application No. 5838B to amend LCRA's Water Management Plan (WMP) was received by the Commission on February 28, 2019 and was declared administratively complete on March 28, 2019. By statute, the technical review must be complete within one year of the administrative complete date. Technical review was completed on September 4, 2019.
- 2) The 2015 TCEQ Order required LCRA to initiate a process to update the Water Management Plan based on the earlier of January 1, 2018, or one year from any of several occurrences. LCRA initiated its process and filed an application in accordance with the timeframes in the 2015 Order. The 2015 Order also required LCRA to include updated naturalized streamflows in its application. LCRA updated the naturalized streamflows in the Colorado Basin through 2016, as required by the Order.
- 3) The WMP for the Lower Colorado River Basin defines LCRA's water management program and policies in accordance with the 1988 Final Judgment and Decree, *In re the Exceptions of the Lower Colorado River Authority and the City of Austin to the Adjudication of Water Rights in the Lower-Colorado River Segment of the Colorado River Basin*; the Enabling Act of the Lower Colorado River Authority; general Law of the State of Texas, particularly the Texas Water Code; LCRA's Certificates of Adjudication Nos. 14-5478 and 14-5482, as amended; the Commission's Orders concerning the WMP; and the policies of the Lower Colorado River Authority's Board of Directors. The LCRA's original application was filed as allowed by these authorities.
- 4) The 1988 Final Judgment and Decree for Certificates of Adjudication Nos. 14-5478 (for Lake Buchanan) and 14-5482 (for Lake Travis) specifically required LCRA to submit a reservoir operations plan for Lakes Buchanan and Travis,

and this requirement is incorporated into the water rights for these lakes. Certificates of Adjudication 14-5478 and 14-5482 state that "LCRA shall interrupt or curtail the supply of water . . . pursuant to commitments that are specifically subject to interruption or curtailment, to the extent necessary to allow LCRA to satisfy all demand for water under such certificates pursuant to all firm, uninterrupted water commitments." The WMP is LCRA's required reservoir operations plan and provides the framework by which LCRA implements this requirement and sets forth the procedures by which LCRA makes water available from these lakes to help meet "firm" water customer needs, downstream interruptible agricultural demands, and environmental flow needs of the lower Colorado River and Matagorda Bay within LCRA's service area. The WMP also sets forth criteria for declaring a Drought Worse than the Drought of Record and includes a calculation of the Combined Firm Yield of Lakes Buchanan and Travis, which is the amount of water that can be supplied annually from Lakes Buchanan and Travis through a repeat of the Drought of Record.

- 5) LCRA's operation of Lakes Buchanan and Travis is subject to the water rights for these lakes, special conditions, and criteria set forth by the court order (1988 Adjudication Order) that adjudicated these and other water rights in the lower Colorado River Basin, and the state statutes and regulations that generally govern use of state water. LCRA's exercise of its water rights pursuant to these requirements is subject to the continuing jurisdiction of the Texas Commission on Environmental Quality (TCEQ), the state agency with primary authority over state water rights.
- 6) Notices of the application to amend the WMP were published in newspapers regularly published and generally circulated in Mason, San Saba, Lampasas, Llano, Burnet, Travis, Bastrop, Gillespie, Williamson, Fayette, Colorado, Wharton and Matagorda Counties, Texas. These counties are the only counties in which persons reside who may be affected by action taken by the Commission on the proposed amendments.
- 7) Notice of the application to amend the WMP was also sent by first-class mail to the water right holders of record in the Colorado River Basin.
- 8) The technical review of the application evaluated the impacts of this amendment to the WMP on existing water rights and the environment. Because this application did not change any authorizations in LCRA's Certificates of Adjudication, a complete technical review under TWC Section 11.134 was not necessary or appropriate. However, the technical review included examination of LCRA's model simulations, LCRA's water use and demand projections, LCRA's proposed changes to the amount of interruptible water available for use, LCRA's proposed changes to help meet environmental needs, and LCRA's recalculation of the combined firm yield of Lakes Buchanan and Travis.
- 9) The amendments to the WMP requested in the application do not impair

existing water rights, consider relevant environmental flow standards for the environment, are not detrimental to the public welfare, comply with TCEQ's rules regarding water conservation and drought contingency plans, and are consistent with the Regional Water Plan.

- 10) LCRA solicited input from interested participants to develop this amendment to the WMP. Participants in this revision process included communities, industries and other firm water customers, interruptible agricultural customers, lake area interests, recreational interests, environmental interests, and elected officials. Throughout 2018, LCRA held numerous meetings to present staff-proposed changes to the WMP, present modeling results, and solicit input from participants. Following each meeting, participants had the opportunity to submit written comments, and LCRA developed written responses to the comments. LCRA staff was also available for individual and small group meetings. Additionally, LCRA presented updates to the Board of Directors throughout 2018, leading to action by the Board directing LCRA staff to prepare the WMP revision for TCEQ approval.
- 11) Some of the key changes made in the 2015 WMP included separate determinations of the supply available for the First and Second Agricultural Seasons and defined volumetric limits on the amount of Interruptible Stored Water available to the Gulf Coast, Lakeside, and Pierce Ranch operations for each season. The determination of available interruptible supply was based on water supply conditions and a look-ahead test under certain conditions. The 2015 WMP also incorporated the best available scientific studies into new criteria to help meet environmental flow needs of the lower Colorado River and Matagorda Bay.
- 12) LCRA's proposed substantive revisions for the proposed WMP amendment retain the basic framework of the 2015 WMP and include changes to: (i) the period of record used in the evaluation; (ii) Interruptible Stored Water Availability; (iii) the Combined Firm Yield of Lakes Buchanan and Travis; (iv) the test for declaring a Drought Worse than the Drought of Record; and (v) procedures to help meet Environmental Flow needs.
- 13) The revisions to the WMP are based on updated hydrology, updated demand projections through year 2025 and updated assumptions about LCRA's use of its other water rights, including Certificate of Adjudication No. 14-5476, as amended, which authorizes Arbuckle Reservoir.
- 14) The hydrologic Period of Record in the WAM used for this WMP revision is 1940-2016.
- 15) Under the WMP, firm demands take precedence over all other uses; therefore, this amendment to the WMP requests changes to Interruptible Stored Water Availability for interruptible customers and procedures to help meet Environmental Flow Needs that are intended to compensate for increases in firm demands and an extended Period of Record.

- 16) LCRA's proposed revisions to its curtailment policies and procedures are intended to ensure that LCRA can satisfy current and projected firm demands during drought conditions, and to ensure that, in model simulations performed in support of this WMP, LCRA's release of interruptible stored water does not result in combined storage dropping to the Drought Worse than Drought of Record storage trigger (600,000 acre-feet).
- 17) LCRA's curtailment methods have been found to be an acceptable approach in earlier Commission orders. The use of various rule curves and procedures continues to be an acceptable approach for addressing the allocation of stored water because this approach will allow LCRA to be responsive to changes in water supply conditions over the course of the year.
- 18) Evaluation of demands and the curtailment of Interruptible Stored Water for Garwood and Pierce Ranch under this WMP revision will be accomplished pursuant to the terms of specific agreements related to the supply of interruptible water to those operations.
- 19) For purposes of this WMP, Combined Storage has been defined as the total volume of water stored in Lakes Buchanan and Travis at a given point in time. For purposes of making various determinations under this WMP, the Combined Storage means the total of the daily average volume of water in Lake Buchanan and the daily average volume of water in Lake Travis, estimated to the nearest acre-foot. This determination excludes any water in Lake Buchanan above elevation 1,018 feet above mean sea level (feet msl) in the months of May through October or above 1,020 feet msl in the months of November through April and any water in Lake Travis above elevation 681 feet msl. A determination that relies on Combined Storage will not be based on a single reading during the day, but instead is the average for the day.
- 20) For purposes of this WMP, Water Supply Condition has been defined as a condition based upon Combined Storage and Inflows into Lakes Buchanan and Travis that is used to determine availability of Interruptible Stored Water and environmental flow criteria. The three Water Supply Conditions are: Normal, Less Severe Drought and Extraordinary Drought.
- 21) LCRA proposes to revise the annual interruptible water supply curtailment policy for the three Water Supply Conditions as described in Chapter 4 of the WMP. The curtailment policy includes the following revisions to the policies set out in the 2015 WMP:
 - a. The combined storage criteria for the inflow test for entering Less Severe Drought Conditions from the Normal Condition or exiting Less Severe Drought Conditions and returning to the Normal Condition has been revised from 1,600,000 acre-feet of combined storage to 1,500,000 acre-feet of combined storage.
 - b. The criteria for entering Extraordinary Drought has been revised and restated as meeting one of the following two sets of criteria:

1. Criteria 1
 - A. Combined Storage is below 1.3 million acre-feet; and,
 - B. The drought duration (as described below) is at least 18 months; and,
 - C. The cumulative Inflows in Lakes Buchanan and Travis since the initiation of the drought are equal to or less than the cumulative inflows over the same number of months from an inflow curve representing the 1950s drought (Figure 4-1 in the WMP).
 2. Criteria 2
 - A. Combined Storage on the July 1 Evaluation Date is below 1.4 million acre-feet; and,
 - B. Combined Storage for the period from March 1 to July 1 has decreased by more than 300,000 acre-feet.
- 22) For purposes of this WMP, drought duration is measured in whole months. "Drought" begins the first whole month following the last month during which Combined Storage was full at any time. "Full" is defined as when either of the following criteria are met:
- a. Combined Storage is at or above 98 percent of the combined managed conservation storage capacity (consisting of storage in Lake Travis up to elevation 681 ft. msl. and storage in Lake Buchanan up to seasonal operational limits or other constraints on storage); or
 - b. Lakes Buchanan and Travis have each been at their respective managed conservation storage capacity within 30 days of each other.
- 23) For purposes of measuring drought intensity relative to the 1950s drought, the cumulative Inflows into Lakes Buchanan and Travis since the beginning of the drought will be compared to a drought inflow envelope curve that reflects the cumulative inflows in the 1950s drought. The envelope curve is demonstrated in Figure 4-1 in the WMP.
- 24) For purposes of this WMP, First Agricultural Season is defined as the first part of the annual irrigation season when LCRA may be providing water to the downstream agricultural operations for agricultural purposes; this part of the irrigation season normally runs from March through about July and is coincident with growing of the first or main crop of rice. During the First Agricultural Season, water may be supplied for various types of agricultural uses.
- 25) For purposes of this WMP, Second Agricultural Season is defined as the second part of the irrigation season when LCRA may be providing water to the downstream agricultural operations for agricultural purposes; this part of the irrigation season normally runs from about August through about mid-October and is coincident with growing of the second or "ratoon" crop of rice. The ratoon crop is the crop of rice that re-grows from the rice plant's root

system following harvest of the main or first crop of rice. The ratoon crop matures more quickly than the main crop since it is supported by an established root system. During the Second Agricultural Season, water may be supplied for various types of agricultural uses.

- 26) LCRA proposes revisions to the annual amount of interruptible stored water and the associated combined storage levels at which interruptible stored water will be made available for the First Agricultural Season as follows:

Normal Condition		Less Severe Drought Condition	
Combined Storage on March 1 (acre-feet)	Interruptible Stored Water (acre-feet)*	Combined Storage on March 1 (acre-feet)	Interruptible Stored Water (acre-feet)*
Below 1,100,000	0	Below 1,100,000	0
1,100,000 to 1,300,000	107,100 to 178,000**	1,100,000 to 1,499,999	88,200 to 155,000**
Above 1,300,000	178,000	1,500,000 or above	Not Applicable
Anytime cutoff* if storage drops to or below 1 million acre-feet		Anytime cutoff* if storage drops to or below 1 million acre-feet	

* Non-Garwood operations.

** For Combined Storage within the specified ranges, the Interruptible Stored Water available follows a linear scale between the values shown.

- 27) LCRA will make available for diversion in First Agricultural Season the total amounts shown in Finding of Fact No. 26 at the Gulf Coast, Lakeside, and Pierce Ranch agricultural operations based on the effective Water Supply Condition (Normal or Less Severe Drought). These amounts are limits on the total supply of Interruptible Stored Water available for diversion during the season. If the total diversions of Interruptible Stored Water in the First Agricultural Season for the Gulf Coast, Lakeside, and Pierce Ranch agricultural operations reach the total available amount, no additional Interruptible Stored Water will be made available for diversion for those operations. If all available Interruptible Stored Water has been diverted in the First Agricultural Season, but there will be Interruptible Stored Water available for the Second Agricultural Season, then all or part of the Interruptible Stored Water available for the Second Agricultural Season can be used to finish the First Agricultural Season.
- 28) The maximum supply of Interruptible Stored Water to be released to the Gulf Coast, Lakeside, and Pierce Ranch operations in the First Agricultural Season is 210,000 acre-feet as measured at Mansfield Dam and is inclusive of all Interruptible Stored Water releases for those operations, regardless of whether the water is diverted at those operations. However, if 210,000 acre-feet of Interruptible Stored Water has been released for those operations in the First Agricultural Season and there will be Interruptible Stored Water available for the Second Agricultural Season, then all or part of the maximum

supply of Interruptible Stored Water available for release in the Second Agricultural Season can be used to finish the First Agricultural Season.

- 29) If Combined Storage falls below 1 million acre-feet at any time during the First Agricultural Season, all releases of Interruptible Stored Water to the Gulf Coast, Lakeside, and Pierce Ranch operations will be cut off for the remainder of the season. If releases of Interruptible Stored Water are cut off in the middle of the season (due to the diversions reaching the total Interruptible Stored Water available, releases of Interruptible Stored Water from Mansfield Dam reaching the maximum, or Combined Storage falling to the cutoff level), LCRA will not provide to the Gulf Coast, Lakeside, or Pierce Ranch operations any Pass-Through run-of-river water under LCRA's downstream water rights that originates upstream of Lake Travis unless and until Combined Storage is above 1.3 million acre-feet. During the remainder of the season, if Combined Storage exceeds 1.3 million acre-feet, LCRA will make these Pass-Through run-of-river supplies available, limited to the amounts needed to finish the season.
- 30) LCRA proposes revisions to the annual amount of interruptible stored water and the associated combined storage levels at which interruptible stored water will be made available for the Second Agricultural Season as follows:

Normal Condition		Less Severe Drought Condition	
Combined Storage on July 1 (acre-feet)	Interruptible Stored Water (acre-feet)*	Combined Storage on July 1 (acre-feet)	Interruptible Stored Water (acre-feet)*
Below 1,100,000	0	Below 1,100,000	0
1,100,000 to 1,400,000	39,700 to 66,000**	1,100,000 to 1,499,999	39,700 to 55,000**
Above 1,400,000	66,000	1,500,000 or above	Not Applicable
Anytime cutoff* if storage drops to or below 1 million acre-feet		Anytime cutoff* if storage drops to or below 1 million acre-feet	

* Non-Garwood operations.

** For Combined Storage within the specified ranges, the Interruptible Stored Water available follows a linear scale between the values shown.

- 31) LCRA will make available for diversion in Second Agricultural Season the total amounts shown in Finding of Fact 30 at the Gulf Coast, Lakeside, and Pierce Ranch agricultural operations based on the effective Normal or Less Severe Drought conditions. These amounts are limits on the Interruptible Stored Water available for diversion during the season. If the total diversions of Interruptible Stored Water in the Second Agricultural Season for Gulf Coast, Lakeside, and Pierce Ranch agricultural operations and any amounts of Second Agricultural Season water that may have been used to finish the previous First Agricultural Season reach the total available amount, no additional Interruptible Stored Water will be made available for diversion in those operations.

- 32) The maximum supply of Interruptible Stored Water to be released to the Gulf Coast, Lakeside, and Pierce Ranch operations in the Second Agricultural Season is 82,000 acre-feet as measured at Mansfield Dam and is inclusive of all Interruptible Stored Water releases for those operations, regardless of whether the water is diverted at those operations. The amount available for Second Agricultural Season will be reduced by the amount of the Second Agricultural Season maximum supply that is used to finish the First Agricultural Season.
- 33) If Combined Storage falls below 1.0 million acre-feet at any time during the Second Agricultural Season, then all releases of Interruptible Stored Water to Gulf Coast, Lakeside, and Pierce Ranch will be cut off for the remainder of the season. If releases of Interruptible Stored Water are cut off in the middle of the season (due to the diversions reaching the volumetric limit, releases of Interruptible Stored Water from Mansfield Dam reaching the maximum, or Combined Storage falling to the cutoff level), then LCRA will not provide to the Gulf Coast, Lakeside, or Pierce Ranch operations any Pass-Through run-of-river water under LCRA's downstream water rights that originates upstream of Lake Travis unless and until Combined Storage is above 1.3 million acre-feet. During the remainder of the season, if Combined Storage exceeds 1.3 million acre-feet, LCRA will make these Pass-Through run-of-river supplies available, limited to the amounts needed to finish the season.
- 34) If releases of Interruptible Stored Water for the First Agricultural Season were cut off for the entire season, then releases of Interruptible Stored Water also are cut off for the Second Agricultural Season. Garwood operations will be provided Interruptible Stored Water consistent with the Garwood Purchase Agreement.
- 35) If LCRA operates Lakes Buchanan and Travis in accordance with the basic goals and guidelines in the WMP, there should be no impact to water rights in the Colorado River Basin as a result of LCRA's requested amendments to the WMP greater than if the water rights for Lakes Buchanan and Travis were fully exercised.
- 36) The modeled simulations of the proposed changes to Interruptible Water Availability demonstrate that firm customer demands can be met through a repeat of the entire period of record, 1940 – 2016, including a repeat of the Drought of Record for the LCRA system, and combined storage in Lakes Travis and Buchanan is maintained above 600,000 acre-feet.
- 37) For purposes of this WMP, the Combined Firm Yield is defined as the calculated firm yield of Lakes Buchanan and Travis when operated as a system, incorporating LCRA's agreements and operating assumptions regarding calls on the upper basin. The combined firm yield is based on the 2000s to 2010s historic Drought of Record.

- 38) LCRA updated the period of record for the Colorado WAM to 2016 and modified the method used to calculate the combined firm yield. The revised calculation is based on the critical period for Lakes Buchanan and Travis, defined as the time-period from when Lakes Buchanan and Travis were full to when Lakes Buchanan and Travis are essentially empty (October 2007 – April 2015). Based on the calculations, LCRA proposes that the combined firm yield be reduced from 434,154 acre-feet to 418,848 acre-feet for a reduction of 15,306 acre-feet.
- 39) LCRA’s determination of the Combined Firm Yield for this WMP is consistent with both the 1988 Adjudication Order and the definition of firm yield in TCEQ’s rules.
- 40) Under the 2015 WMP, LCRA committed 33,440 acre-feet of firm water to help meet environmental needs. LCRA does not propose to change this amount and a combination of firm and interruptible water is used to help meet environmental flow needs.
- 41) The proposed WMP amendment includes changes to the operational procedures that LCRA will use to help meet environmental flow needs.
- 42) In the event of a pro rata curtailment of Firm Water supplies, the applicable environmental flow criteria will be subject to the same percentage reduction as LCRA’s Firm Water customers.
- 43) The proposed WMP amendment adds an additional evaluation date, November 1, for environmental flows. The environmental flow criteria in place from November through the following February will be based on the Combined Storage on Nov. 1.
- 44) The WMP continues to include instream flow targets based on the most recent scientific studies. The combined storage triggers at which specific instream flow levels apply are as follows:

Combined Storage on Evaluation Date (acre-feet)	Instream Flow Criteria
Above 1,960,000	Base-Average
1,960,000 to 1,800,000	Base-Dry
Below 1,800,000	Subsistence

- 45) The WMP limits LCRA’s obligation to help meet instream flows at the Base-Average and Base-Dry levels to releasing no more than the Storable Inflows to Lakes Buchanan and Travis. LCRA’s obligation to help meet Subsistence instream flows includes providing Storable Inflows and, when necessary, releasing previously stored water from Lakes Buchanan and Travis.

- 46) The proposed WMP amendment includes an additional provision for instream flows at the Wharton gage when Combined Storage is below 900,000 acre-feet. In the event Combined Storage is below 900,000 acre-feet, LCRA's obligation to provide previously stored water from Lakes Buchanan and Travis for instream flows at the Wharton gage is limited to helping maintain the greater of 50 percent of the Subsistence value for the current month or 107 cubic feet per second (cfs). When Combined Storage is below 900,000 acre-feet, LCRA is obligated to provide Storable Inflows for Wharton up to the full Subsistence value.
- 47) The proposed WMP amendment does not specifically provide for pulse flows; however, LCRA will monitor pulse flows during the time the proposed WMP amendment is in effect to assess whether pulse flows are occurring at the frequency recommended in the 2008 instream flow study of the lower Colorado River.
- 48) The proposed WMP amendment freshwater inflow criteria are also based on the most recent scientific studies and includes five levels of freshwater inflow criteria based upon the Matagorda Bay Health Evaluation (MBHE) study.
- 49) The WMP also includes criteria to guide implementation to help meet a range of freshwater inflow needs. In all months, LCRA will release water to help meet at least the "Threshold" level of 15,000 acre-feet per month, to the extent LCRA has received Storable Inflows.
- 50) For higher flow levels, the operational criteria help achieve seasonal freshwater inflow freshets. Storable Inflows available to help meet freshwater inflow criteria are determined on a monthly basis and exclude any Storable Inflows that have already been released to help meet freshwater inflow or instream flow criteria.
- 51) Under the proposed WMP amendment, LCRA's obligation to help meet freshwater inflow needs is limited to the amount of Storable Inflows to Lakes Buchanan and Travis during the applicable month. LCRA can provide water to help meet freshwater inflow needs from water stored in Arbuckle Reservoir and modeling undertaken to evaluate the proposed Water Management Plan assumes certain releases are made from Arbuckle Reservoir. The proposed WMP amendment includes two-month operational criteria (OP-1, 2, 3, and 4) to help meet a range of freshwater inflow needs, as detailed in the WMP. The combined storage triggers at which specific freshwater inflow levels will apply are as follows:

Combined Storage on Evaluation Date (million acre-feet)	Freshwater Inflow Criteria
1.95 and above for March 1 and July 1; 1.85 and above on Nov. 1	OP-4
1.5 to 1.949 for March 1 and July 1; 1.5 to 1.849 for Nov. 1	OP-3
1.3 to 1.499	OP-2
1.0 to 1.299	OP-1
Less than 1.0	Threshold only

- 52) The proposed WMP amendment also includes additional limitations which may reduce the amount of water LCRA provides to help meet freshwater inflow needs under specific conditions:
- a. Maximum Monthly Release for Bay Inflow Criteria – To the extent that LCRA has received Storable Inflows, the maximum release to meet freshwater inflow criteria is limited based on Combined Storage at the end of the month for which the criteria applies, as shown in the table below:

Combined Storage (million acre-feet)	Maximum Release for Bay Criteria (acre-feet)
1.5 and above	82,000
1.3 to 1.499	56,000
Less than 1.3	25,000

- b. Bay Release Percentage Rule – Releases for freshwater inflow criteria that exceed 15,000 acre-feet for a month are limited to the percentages of Storable Inflows remaining after the release of water for instream flows and the release of 15,000 acre-feet for freshwater inflow criteria, based on Combined Storage at the end of the month for which the criteria applies as shown in the table below:

Combined Storage (million acre-feet)	Bay Release Percentage
Less than 1.5	50 percent
1.5 or greater	60 percent

- c. Bay Criteria Limited to Threshold:
 1. If Combined Storage falls below 1.0 million acre-feet at any time during a month, Threshold is the only freshwater inflow criteria in effect for that month.
 2. If Combined Storage on the Evaluation Date is less than 1.3 million acre-feet and Interruptible Stored Water for the Gulf Coast, Lakeside, and Pierce Ranch agricultural operations is cut off for the season,

Threshold is the only freshwater inflow criteria in effect until the next Evaluation Date. (For the November to February period, determination of whether Interruptible Stored Water is cut off is based on the preceding Second Agricultural Season.)

d. Bay Criteria Deferral Provision:

1. Notwithstanding a bay inflow deficit for a two-month operational criteria and available Storable Inflows under the WMP to help meet the two-month operational criteria, LCRA's obligation to make a release for the bay may be deferred based on certain quantities of additional flow to the bay on the first two days of the following month, or direct rainfall on the bay as set forth below:
 - A. If flow to the bay from the Colorado River in the first two days of the month following a month with a bay inflow deficit for operational criteria is in an amount that is greater than the bay inflow deficit and occurs with an average daily flowrate for the two days (as measured at Bay City) of at least 4,000 cubic feet per second then LCRA's obligation to release water based on the prior month's bay inflow deficit for operational criteria is deferred and tracked as "Deferred Storable Inflows" as set forth in provision C.
 - B. If direct rainfall on the bay (as measured at the Matagorda rainfall gage) in a month with a bay inflow deficit for operational criteria exceeded 10 inches and the average of the salinity readings at the Shell Marker B and West Bay Tripod locations as computed on a seven-day rolling average (the "7-Day SMB/Tripod Salinity") is at or below 15 parts per thousand (ppt) within the first two days of the following month, LCRA's obligation to release water to meet a bay operational criteria is deferred. If the 7-Day SMB/Tripod Salinity increases above 15 ppt before the end of that month, then LCRA shall begin making those deferred releases in a timely manner and shall continue them until either 1) the deferred amount has been released; or 2) the applicable three-month MBHE inflow criterion for the season that includes the preceding month has been met. If the 7-Day SMB/Tripod Salinity does not exceed 15 ppt during that month the releases may be further deferred and tracked as "Deferred Storable Inflows" in accordance with provision C.
 - C. Deferrals and tracking of Deferred Storable Inflows are subject to the following limitations and procedures:
 - i. A deferral under provision (A) or (B) can only be applied once in any 4-month period.
 - ii. A deferral under provision (B) can only be applied during OP-3 or OP-4 conditions.

- iii. A deferral under provision (B) only applies if, during the 3-month period which includes the preceding month, either cumulative inflow to Matagorda Bay from the Colorado River was equal to or greater than 160,000 acre-feet, or inflow to Matagorda Bay from the Colorado River during at least one month was equal to or greater than 80,000 acre-feet.
- iv. If releases are deferred pursuant to provision (A) or (B), the Storable Inflows maintained in storage in Lakes Buchanan and Travis as a result of the deferral shall be tracked as "Deferred Storable Inflows" and, subject to the limitations set out below, released in the event of a bay inflow deficit occurring in either of the two months following the receipt of the Storable Inflows.
- v. The volume of the "Deferred Storable Inflows" that is actually released in any one month is limited to no more than 60 percent of the Deferred Storable Inflows. In determining the volume of available Deferred Storable Inflows to be released in any given month, the volume is reduced by the volume of Deferred Storable Inflows previously released to help meet bay inflows. Releases of Deferred Storable Inflows are not subject to the volume limits applicable to releases of other Storable Inflows and releases of Deferred Storable Inflows are not considered in applying such volume limits.

2. Nothing in the Bay Criteria Deferral Provision shall be interpreted as reducing LCRA's obligation to release water based on Storable Inflows to help meet inflow targets for the month in which the deferred releases occur or to meet the Threshold bay inflow criteria.

- e. In the event more than one of the above limitations applies, the most restrictive limitation on releases for freshwater inflow needs will apply.
- 53) The Bay Criteria Deferral Provision is a new provision for this proposed Water Management Plan and is expected to be revisited in the next Water Management Plan update based on operational experience and additional scientific information, if any.
- 54) The proposed WMP amendment also includes revised annual and multi-year caps, consistent with the amounts simulated in development of the WMP for periods when Combined Storage is below 1.3 million acre-feet. If LCRA releases water from Arbuckle Reservoir to help meet environmental flow needs, these releases will not count against the caps.
- 55) The instream flow and freshwater inflow criteria, exclusive of pulse flows and attainment frequencies, are consistent with those recommended by the Colorado-Lavaca Senate Bill 3 science team and stakeholder group that were

adopted as environmental flow standards by TCEQ on August 8, 2012.

- 56) If LCRA operates Lakes Buchanan and Travis in accordance with the revised WMP, there should be no impact to the instream flows of the lower Colorado River or freshwater inflows to Matagorda Bay greater than if the water rights for Lakes Buchanan and Travis were fully exercised.
- 57) LCRA's amendment to the WMP includes revisions to the criteria and procedures for the declaration and cancellation of a Drought Worse than the Drought of Record. The proposed WMP amendment updates tests for Declaring a Drought Worse than Drought of Record to reflect the intensity and duration of the recent new critical period for Lakes Buchanan and Travis as specified in Sections 4.5 and 4.6 of the WMP.
- 58) LCRA has separate drought contingency plans (DCPs) for its firm customers and for its interruptible agricultural customers. Under current commission rules, DCPs must be reviewed and updated as necessary every five years. Consistent with the requirements of Chapter 288, in February 2019, the LCRA Board approved modifications to the DCP for its firm customers that included no significant changes. The updated Firm Customer DCP did not include any changes to the triggers, amount of curtailment of interruptible stored water supply, or the triggers or criteria related to bay and estuary inflows or instream flows. The updated DCP became effective upon approval by the LCRA Board of Directors and was submitted to the commission on February 28, 2019 as Appendix F to the proposed WMP. LCRA's Firm Customer DCP is incorporated into Chapter 4 of the WMP by reference for all purposes as if set forth in Chapter 4 in full.
- 59) LCRA's DCP for Interruptible Agricultural Customers will be updated to conform to this proposed revised WMP upon approval by the Commission. Further revisions to the Interruptible DCP will be needed to ensure consistency with the amended WMP and prior to LCRA supplying interruptible stored water under the amended WMP. LCRA intends to publish its Interruptible DCP as a stand-alone document, once revised.
- 60) Because accounting for environmental flows under the 2015 WMP and the WMP approved by this Order is month to month, it is reasonable that the provisions of the WMP approved by this Order relating to environmental flow requirements be effective at the beginning of the month after this Order is issued. The evaluation of environmental flow conditions occurs only three times per year. Therefore, in order to transition between the WMPs, the applicable WMP environmental flow criteria for the time between the effective date of this Order and the next evaluation date should be described in the Ordering Provisions of this Order.
- 61) On October 24, 2019, LCRA submitted proposed clarifying edits to the proposed Water Management Plan.

CONCLUSIONS OF LAW

- 1) The Executive Director considered this order under the authority and in accordance with Chapter 11 of the Texas Water Code, as amended and 30 Texas Administrative Code ("TAC") Chapter 295; the 1988 Final Judgment and Decree, *In re the Exceptions of the Lower Colorado River Authority and the City of Austin to the Adjudication of Water Rights in the Lower-Colorado River Segment of the Colorado River Basin*; the Enabling Act of the Lower Colorado River Authority; LCRA's Certificates of Adjudication Nos. 14-5478 and 14-5482, as amended; the Commission's Orders concerning the WMP; and the policies of the Lower Colorado River Authority's Board of Directors.
- 2) By entering this order, the Commission is not construing in any way either the 1987 Agreement or the 1998 Purchase Agreement between LCRA and Garwood Irrigation Company. Nothing in this Order or the WMP approved by this Order shall be considered or construed in any way to support one construction or another of the 1987 Agreement and the 1988 Purchase Agreement between LCRA and Garwood Irrigation Company. Garwood Operations will be provided Interruptible Stored Water consistent with the Garwood Purchase Agreement.
- 3) This order does not alter or construe LCRA's obligation to provide water to STPNOC, to the extent required by their agreements, or STPNOC's right to divert and use water pursuant to Certificate of Adjudication No. 14-5437, as amended. Nothing in this order or the Water Management Plan shall be considered to support one construction or another of such obligations and rights.
- 4) The commission and the Executive Director have jurisdiction to consider and take action on LCRA's application to amend the WMP.

NOW, THEREFORE, BE IT ORDERED BY THE EXECUTIVE DIRECTOR OF THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY THAT:

- 1) LCRA's amended Water Management Plan is approved with the following conditions:
 - a. LCRA's amended Water Management Plan is subject to all findings, conclusions, and conditions contained in the Commission's Orders dated September 20, 1989, December 23, 1991, December 18, 1992, March 1, 1999, January 27, 2010, and November 18, 2015, approving and amending the WMP, to the extent not inconsistent with this order.
 - b. LCRA's amended Drought Management Plan including LCRA's amended Drought Contingency Plan is subject to all findings, conclusions, and conditions, contained in the Commission's September 20, 1989, December 23, 1991, December 18, 1992, March 1, 1999, January 27, 2010, November 18, 2015, and the LCRA's December 7, 2011 Commission approved Water Curtailment Plan, to the extent not

inconsistent with this order.

- c. LCRA agrees to be bound by the terms, conditions and provisions contained herein and such agreement is a condition precedent to the approval of the proposed amendments.
 - d. LCRA shall conform the text of the Water Management Plan to incorporate the edits identified in Exhibit A to LCRA's comment letter dated October 24, 2019.
 - e. In the event of a conflict between the more general language in the Findings of Fact and the specific language in the WMP document text in LCRA's application, the document text in LCRA's application controls.
 - f. Consistent with 30 Texas Administrative Code Chapter 288, LCRA shall review and update, as appropriate, in accordance with the schedule required by such rules, those portions of its Drought Contingency Plan (for firm and interruptible customers) that do not change the triggers, amount of curtailment of interruptible stored water supply, or the triggers or criteria related to bay and estuary inflows or instream flows. Such changes do not constitute an amendment to the WMP requiring notice and opportunity for contested case hearing but must otherwise comply with the public notice requirements of Chapter 288 of the Commission's rules.
- 2) For the period from the effective date of this Order to the next Evaluation Date under the Water Management Plan for the determination of environmental flow criteria, the following environmental flow criteria shall apply:
- a. For the period from the effective date of this Order to the end of the month in which the order is issued, LCRA shall comply with the environmental flow criteria in the Water Management Plan as approved on November 18, 2015.
 - b. For the period from the first day of the month following issuance of this Order until the next Evaluation Date, the environmental flow criteria shall be determined consistent with the revised Water Management Plan approved by this Order relying on combined storage in Lakes Buchanan and Travis as of the most recent prior Evaluation Date (March 1, July 1, or November 1).
- 3) LCRA shall initiate a process to update the Water Management Plan no later than the earlier of:
- a. The March 1 following five years from the date of this Order.
 - b. One year from the March 1 filing of LCRA's annual water use reports and the Water Management Plan report with TCEQ, in which actual water use by firm customers has exceeded either:

1. The total of the Normal/Average Projected 2025 Firm Customer Water Demand for two calendar years in a row; or,
2. 90 percent of the total of the High/Max Projected 2025 Firm Customer Water Demands for one calendar year.

The total 2025 Firm Customer Demands (acre-feet per year) are as follows:

	Normal/Average	High/Max
Municipal/Manufacturing		
City of Austin	167,300	215,900
Other	109,000	130,100
Steam-electric		
LCRA power plants	10,900	19,700
COA power plants	13,100	18,600
STPNOC	39,400	39,400
Bastrop Energy Partners	2,300	2,300
Total	342,000	426,000

Demands are measured from the Colorado River or Highland Lakes with the exception of STPNOC demand which is forced evaporation from the cooling reservoir.

- c. One year from the March 1 following two consecutive years in which, in LCRA's reasonable judgment, LCRA's operations of Arbuckle Reservoir are substantially different from the assumed operations modeled in developing the Water Management Plan amendment approved by this order if, in the reasonable judgment of LCRA, such different operations: 1) are expected to continue for more than one additional year; and 2) would cause the modeling results relied upon in developing the amendment to no longer be a reasonably accurate representation of the impacts of LCRA's expected operations and demands.
- 4) If the Executive Director determines that significant drought years have occurred since the effective date of this order and further determines that additional hydrology should be added as part of the next update to the Water Management Plan, LCRA shall update the naturalized flows to include additional years of hydrology as specified by the Executive Director. The Executive Director shall notify LCRA of any requirements to update the naturalized flows at least 90 days prior to the date that LCRA initiates the process to update the Water Management Plan.
 - 5) The process to update the Water Management Plan shall be designed to allow for meaningful input from interested participants. LCRA shall submit an application to amend its Water Management Plan no later than two years from the date it initiates the update process.

- 6) The Chief Clerk of the Texas Commission on Environmental Quality shall forward a copy of this Order to all parties.
- 7) If any part of this Order is held to be invalid, the invalidity of any portion shall not affect the validity of the remainder of the Order.
- 8) Nothing in LCRA's Water Management Plan, as amended, or this Order shall be construed to impair, or to authorize LCRA or any other person or entity to impair, senior or superior water rights in the Colorado River Basin.



Executive Director
TEXAS COMMISSION
ON ENVIRONMENTAL
QUALITY

Effective Date: **February 3, 2020**