TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
INTEROFFICE MEMORANDUM

TO: Chief Clerk

DATE: February 20, 2015

THRU: Caroline Sweeney, Deputy
Office of Legal Services

Robert Martinez, Director
Environmental Law Division

FROM: Robin Smith, Attorney
Environmental Law Division

SUBJECT: Lower Colorado River Authority
Docket No. 2015-0220-WR
CN600253637; RN104252267
Consideration of a request from the Lower Colorado River Authority for an emergency order to amend its 2010 Water Management Plan, Permit No. 5838 Colorado River, Colorado River Basin, Travis, Burnet, and Llano Counties

The Commission received an application on December 23, 2014, from the Lower Colorado River Authority (LCRA) for an emergency order to temporarily amend its 2010 Water Management Plan (WMP) under Sections 5.501, 11.138, and 11.139 of the Texas Water Code and the Governor's Emergency Disaster Proclamation related to drought. LCRA requests the authority to suspend all releases of interruptible water to Gulf Coast, Lakeside, and Pierce Ranch irrigation operations for the duration of the order. LCRA filed this request for an emergency order to amend its 2010 Water Management Plan to change requirements for the release of water to irrigation operations downstream in 2015 due to persistent drought conditions in LCRA's five Highland Lakes (Lakes Buchanan, Inks, LBJ, Marble Falls, and Travis).

Tex. Water Code § 11.139 provides that the Commission can grant an emergency order to amend an existing permit after notice to the Governor if the Commission finds that emergency conditions exist which present an imminent threat to the public health and safety and which override the necessity to comply with established statutory procedures and there are no feasible practicable alternative to the emergency authorization.

Additionally under Section 11.139, if an imminent threat to the public health and safety exists which requires emergency action before the Commission can take action and there are no feasible alternatives, the Executive Director may issue the emergency order after notice to the Governor. In such case, the Commission must hold a hearing to

affirm, modify or set aside the Executive Director's order as soon as practicable but not later than 20 days after the emergency authorization is granted.

Notice was sent to the Governor on February 17, 2015. The Executive Director issued an Emergency Order on February 18, 2015. Mailed notice of the Executive Director's Emergency Order was sent to all water right holders in the Colorado River Basin.

The Executive Director finds that LCRA has shown that an imminent threat to public health and safety exists if the emergency order is not issued, that there are no feasible practicable alternatives, and that the requirements for an emergency order in Section 11.139 have been met. Inflows to LCRA's Highland Lakes have been extremely low for the past few years and weather forecasts do not show significant improvement. If stored water is released and water to LCRA's firm customers is reduced before arrangements for alternative supplies can be developed, LCRA will have difficulty in meeting its firm customers' water needs; hence the need for emergency relief.

If any further releases to its interruptible customers in the Gulf Coast, Lakeside, and Pierce Ranch irrigation operations occur, the chance of the combined level of Lakes Buchanan and Travis reaching 600,000 acre feet soon is high. If that occurs, LCRA will declare a Drought Worse than the Drought of Record, which will require pro rata curtailment by LCRA's firm customers.

The Executive Director's Emergency Order provides that LCRA is not required to release interruptible water for its interruptible customers in the Gulf Coast, Lakeside, and Pierce Ranch irrigation operations during the duration of this order. That Order is attached to this Executive Summary as Exhibit A. LCRA's application and attached affidavits, which are Attachment A to the Order, may be found at:

http://www.tceq.texas.gov/agency/lcra-emergency-order

Staff's technical summary recommending issuance of the order is attached as Exhibit B.

cc: Kellye Rila, TCEQ; Ron Ellis, TCEQ: Kathy Alexander, TCEQ

EXHIBIT A

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

AN ORDER granting an emergency authorization to the Lower Colorado River Authority to amend its Water Management Plan, Permit No. 5838, pursuant to Section 11.139 of the Texas Water Code

On February 18, 2015, the Executive Director of the Texas Commission on Environmental Quality considered an application from the Lower Colorado River Authority (LCRA) for an emergency order to amend its 2010 Water Management Plan (WMP), Permit No. 5838, under Texas Water Code Sections 5.501, 11.138, and 11.139, and the Governor's Emergency Disaster Proclamation relating to drought.

The Executive Director has jurisdiction to consider this matter and makes the following Findings of Fact and Conclusions of Law:

I. FINDINGS OF FACT

1. On December 23, 2014, LCRA filed a request for an emergency order suspending any obligation LCRA might have under the 2010 WMP to release interruptible stored water to customers in the Gulf Coast, Lakeside, and Pierce Ranch irrigation operations for the duration of the order. The reason for requesting the emergency order is the persistent drought conditions in and around LCRA's five Highland Lakes (Lakes Buchanan, Inks, LBJ, Marble Falls, and Travis). LCRA's request is attached hereto as Attachment A and incorporated herein by reference.

LCRA'S Water Rights and 2010 Water Management Plan

2. LCRA has the right to divert and use up to 1.5 million acre-feet (AF) from Lakes Buchanan and Travis under Certificates of Adjudication Nos. 14-5478 and 14-5482. By court order, LCRA has developed a WMP, Permit No. 5838, currently dated 2010, which is part of these certificates.

3. The Certificates of Adjudication and the 2010 WMP govern LCRA's operation of Lakes Buchanan and Travis and dictate how LCRA makes water available from these lakes to help meet "firm" water customer needs, downstream interruptible irrigation demands, and environmental flow needs of the lower Colorado River and Matagorda Bay.

4. 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 certificate pursuant to all firm, uninterruptible water commitments." The WMP further describes how LCRA will manage and curtail supplies from the lakes during times of drought including through a repeat of the Drought of Record.

5. As established in the 2010 WMP, the combined firm yield of Lakes Buchanan and Travis is 535,812 acre-feet per year (AFY). Of this amount, 90,546 AFY is committed to O.H. Ivie Reservoir, making 445,266 AFY of firm water supply available from Lakes Buchanan and Travis for LCRA's firm water customers.

6. As established in the 2010 WMP, until firm demand for water equals the combined firm yield, LCRA can supply water for irrigated agriculture on an interruptible basis. To manage the supply, LCRA's 2010 WMP imposes several trigger points keyed to the total combined storage capacity of Lakes Buchanan and Travis that are intended to ensure the firm water supply is protected during droughts. The most relevant trigger points are set out in the following table:

Combined Storage of Lakes Buchanan and Travis	**Date on Which Trigger is Decided**	**Action Taken**
1.4 million acre feet	At any time	Request firm customers to implement voluntary drought response measures.
1.4 million acre feet	On Jan. 1	Environmental releases for instream flows reduced to meet critical needs for ecosystems for following year. Begin gradual curtailment of interruptible supply to four major irrigation operations.
900,000 acre feet	At any time	Request firm customers to implement mandatory water restrictions; develop firm customer curtailment plan.
600,000 acre feet	At any time	If criteria indicate a drought worse than the Drought of Record, then cease interruptible supply and begin curtailment of firm supply.

7. LCRA's 2010 WMP defines "Drought of Record" as "the drought that occurred during the critical drought period." "The Critical Drought Period" is defined as "the period of time during which the reservoir was last full and refilled, and the storage content was at its lowest minimum value."

8. Under the 2010 WMP, the LCRA Board may declare a Drought Worse than the Drought of Record (DWDR) if it finds that the following three conditions are simultaneously met:

   a. Duration of drought is more than 24 months, which is determined by counting the number of consecutive months since both Lakes Buchanan and Travis were last full;

   b. Inflows to the lakes are less than inflows during the drought of record; and

   c. Lakes Buchanan and Travis combined storage has less than 600,000 AF of water.

9. Under the 2010 WMP, once a drought has lasted more than 36 months and a DWDR has been declared by the LCRA Board, the interruptible stored water would be fully and immediately curtailed – making no stored water available for agricultural irrigation or other interruptible uses until lake levels recover or the inflows into the lakes increase substantially. Moreover, LCRA will implement pro rata curtailment of its firm water users once a DWDR is declared and after interruptible stored water (agriculture) uses have been curtailed.

10. Prior to a declaration of a DWDR, LCRA is obligated by the 2010 WMP to provide at least some interruptible water to its four major irrigation operations. Under the WMP, LCRA is to make a preliminary determination in November of its interruptible water releases based on projections of storage on January 1 of the upcoming year.

11. The first and second criteria for a DWDR have been met. The drought has lasted for more than 24 months. Duration of drought is determined by counting the number of consecutive months since both Lakes Buchanan and Travis were last full, which was February 13, 2005. The cumulative inflow deficit has also been met. The last criteria, storage below 600,000 AF has not yet occurred, but could occur in the next few months.

12. Under the 2010 WMP, there is not significant difference in how much stored water will be available for diversion by the four downstream irrigation operations at different lake levels. At 1,150,000 AF, 195,000 AF would be released, and with storage just over 600,000 AF, 172,000 AF would be available.

13. If LCRA had followed the 2010 Water Management Plan in 2014, it would have had to make available as much as 160,000 AF of stored water to downstream irrigators. Considering 20 percent for delivery losses, this could have resulted in LCRA releasing up to an additional 190,000 AF in 2014.

Current Conditions

14. The combined storage of Lakes Buchanan and Travis on December 1, 2014 was 691,132 acre feet, which is the lowest December 1 level in LCRA's history. On February 17, 2015 the combined storage was 715,368 acre feet or 36% full.

15. In May 2012, the lakes refilled to an amount close to 1.1 million AF (to 1.033 million AF on May 22, 2012) and yet without any release to Lakeside, Gulf Coast and Pierce Ranch, the lakes dropped to 637,123 AF on September 19, 2013, the second lowest level on record.

16. The combined storage fell to the lowest level in the current drought on September 19, 2013, which was 637,123 AF or 31.7% full.

17. The inflows into the lakes are at record lows. The years 2011, 2013, and 2014 are the three lowest inflow years on record. Five of the last six years have been among the ten lowest years of inflow on record. Inflows into the lakes in 2011 were the lowest annual inflows on record, about 10% of average inflows. Inflows in 2012 were the seventh lowest on record, and inflows in 2013 were the third lowest on record. As of December, 2014, monthly inflows have been below average in 54 of the past 55 months. Inflows in 2014 from January through November were the second lowest inflows on record.

18. Extraordinary drought conditions have existed in much of Texas, including the Colorado River Basin for more than four years, dating back to October 2010. State Climatologist, Dr. John Nielsen-Gammon, recognized 2011 as the worst one year statewide drought on record dating back to 1895.

19. The inflow deficit has been as much as 90% more than the inflow deficit for a similar period of inflows experienced during the Drought of Record for the lower Colorado River Basin, which occurred from 1947 to 1957.

20. The inflows into Lakes Buchanan and Travis during the current drought have been lower for time periods ranging from 12 months to 84 months than the lowest inflows for periods of similar duration during the historic Drought of Record, including the 1950's. The total inflows for the 84 months prior to the filing of LCRA's application were only about half of the lowest 84 month inflow period in the Drought of Record.

21. After adjusting inflows to account for the fact that O.H. Ivie Reservoir did not exist in the 1950's, the recent inflows are much lower than the inflows for the first six years of the Drought of Record. Inflows since 2008 are at about half of the inflows for the first six years of the Drought of Record.

22. High temperatures have been unprecedented. The summer of 2011 was the hottest on record in Texas, and 2011 was also the hottest in Austin. Year 2012 tied with 1921 as the hottest on record statewide. Summer temperatures for Austin in 2013 were the fifth hottest on record. The summer temperatures in 2014 were not as extreme in Austin, but were still above normal, ranking the 34th warmest since 1895.

23. The firm water use in 2012 from Lakes Buchanan and Travis was about 148,000 AF. An amount of 31,000 AF was supplied for the environment, and 9,000 AF of water was supplied to farmers in the Garwood Irrigation Division. The total use

of water from the lakes for 2012 was approximately 188,000 AF. In 2013, firm use from the lakes was approximately 173,000 AF; 33,500 AF was supplied for environmental flow needs, and about 22,000 AF of water was supplied to Garwood Irrigation Division. LCRA's total use of water from the lakes in 2013 was approximately 229,000 AF.

24. The maximum historical annual amount of reported firm water use from the firm supplies of Lakes Buchanan and Travis during 2000 through 2013 was 247,000 AF in 2011. The maximum interruptible water released from Lakes Buchanan and Travis during this same period occurred in 2011 and totaled approximately 433,000 AF. The maximum total amount released or used from the Highland Lakes, about 714,000 AF, occurred in 2011.

25. The lakes have not been able to recover in any significant manner even with an emergency suspension of nearly all water supply for downstream irrigation in 2012, 2013, and 2014.

26. Rainfall in 2014 has been sporadic. Although rain fell above the Highland Lakes in November, 2014, the rain failed to provide the type of inflows needed for lake levels to improve. Two to three inches of rainfall only produced about 4,000 AF of inflow to the lakes in early November, and one to three inches failed to provide more than 17,000 AF of inflow in late November. Rainfall in September averaged two to three inches, but only yielded approximately 24,000 AF of inflow to the lakes. The limited amount of inflows shows the severity of the ongoing drought and the dry soil conditions.

27. Recent weather forecasts provide some hope for relief during the period covered by this emergency order, including an El Niño developing this winter and continuing into early spring. For that period, forecasters expect a pattern of above normal rainfall in Central and South Texas. After early spring the forecast is uncertain. Even if normal to above normal rainfall materializes in the near term, significant drought improvement is not expected.

28. The 2010 WMP was developed using simulations of a repetition of the hydrologic period from 1940 to 1965. While that period includes the 1950s Drought of Record, the recent severe low inflows of 2011 and 2013 are less than half of the lowest annual inflow in the 1950s and the multi-year inflows are also worse than any multi-year inflows which were simulated during the development of the WMP. This trend continued January to November 2014.

29. The current drought conditions are outside the range of hydrologic conditions that were considered during formulation of the 2010 WMP.

30. The conditions are similar or worse than conditions in place when TCEQ issued its earlier emergency orders for the 2012, 2013, and 2014 irrigation seasons.

31. Based on recent lake levels and the forecast, there is a chance of reaching conditions triggering a declaration of a DWDR in March 2015. If a DWDR is

declared, all interruptible stored water will be cut off, potentially jeopardizing any crops that were not yet harvested.

32. As of December 1, 2014, if LCRA were to follow the 2010 WMP in 2015, there is about a 33 percent chance of triggering a DWDR declaration by the end of 2015.

33. As of December 1, 2014, if LCRA obtains emergency relief suspending the requirement to release stored water to the irrigators, and to reduce the amount of water released for the Blue Sucker, the chance of triggering a DWDR declaration by the end of 2015 is reduced to about 8%.

34. The U.S. Drought monitor (February 10, 2015) shows that most of the Texas Hill Country is within the "moderate drought" or "abnormally dry" category and Central Texas and the coastal plains are either in "moderate drought" or "abnormally dry". However, some portions of the Texas Hill Country are in worse drought conditions ranging from "severe" to "exceptional" in areas that contribute inflows to Lakes Buchanan and Travis. The Drought Monitor does not specifically show hydrologic drought, which is worse than the depicted conditions.

35. The Governor of Texas issued an Emergency Disaster Proclamation on July 5, 2011, certifying that exceptional drought conditions posed a threat of imminent disaster in specified counties in Texas. This proclamation has been renewed monthly, most recently on January 18, 2015, and includes counties that contribute inflow to the Highland Lakes.

LCRA's Firm Customers

36. The 2010 WMP requires that firm customers (mainly cities and industries) be curtailed on a pro rata basis and that LCRA cease all releases for interruptible stored water (regardless of the impact on the crops) when a DWDR is declared.

37. LCRA provides raw water out of the combined firm yield of Lakes Buchanan and Travis to over 60 retail and wholesale potable water suppliers that together serve over one million people. In addition, LCRA provides water to several electric utilities from the firm water supply of Lakes Buchanan and Travis. These electric utilities provide electricity into the electrical grid in Texas operated by the Electric Reliability Council of Texas (ERCOT) and provide electricity to customers in Texas. LCRA also provides firm raw water to several industries located downstream.

38. LCRA-adopted water use reduction targets including mandatory pro rata curtailment of firm water supplies for customers of 20% or more will be implemented when combined storage levels fall below 600,000 AF and other criteria are met for a DWDR.

39. Some LCRA customers, such as the City of Austin, have already seen significant water savings through reductions in outdoor water use. Industrial customer will

have to implement the full 20% reduction more quickly and these reductions, especially for power plants, could impact production.

40. At the time of this order, the public water systems that rely on the Highland Lakes or that draw from the tributaries that typically contribute significant inflow to the Highland Lakes are already in some form of drought restrictions and are at risk of water supply shortages.

41. If LCRA is required to follow the 2010 WMP and the drought continues, LCRA and its firm customers may need to acquire or develop large quantities of alternative water supplies to meet essential needs of their respective potable water systems. LCRA's firm customers are working on plans to implement curtailment and secure alternate supplies; however many of LCRA's firm customers do not have any readily available alternative sources of water supply that could substitute for their reliance on the Colorado River, and these projects could take years to develop. Following the 2010 WMP under current drought conditions could pose an imminent threat to firm customers served by LCRA from Lakes Buchanan and Travis.

42. LCRA has 18 customers that actively take raw water for municipal purposes from Lake Travis. The lowest pumping elevations of the intakes range from 545 feet mean sea level (msl) to 645 feet msl on Lake Travis. As lake levels drop, retail water suppliers are unable to pump water from the lakes. This causes wholesale raw water customers to either move intakes to reach the water, or obtain alternate sources. Smaller systems will likely have to haul water from a water utility with a viable source. Firm customers are actively spending or planning to spend funds to allow their intakes to operate at lower elevations or making plans to haul water.

43. If the lake levels drop more quickly than arrangements for alternative intakes or supplies can be implemented, the situation presents an imminent threat to public health and safety for the LCRA water systems and for its customers' water systems.

Water Conservation and Drought Contingency Plan

44. LCRA's water conservation plan complies with TCEQ rules. LCRA has required its municipal customers to adopt conservation plans before there was a state requirement.

45. LCRA provides conservation program planning support for its customers. In 2012, LCRA began a rebate program for certain irrigation technologies and a wholesale customer cost-share program focused on conservation. LCRA has supported significant improvements in water use efficiency in rice irrigation systems, including volumetric pricing and canal rehabilitation.

46. LCRA was originally required to develop a Drought Contingency Plan (DCP) as a direct result of the court order adjudicating LCRA's water rights and the Texas Water Commission 1989 WMP Order.

47. When TCEQ adopted the Chapter 288 rules for DCPs, LCRA adopted separate stand-alone DCPs relating to irrigation, municipal, and industrial operations that more specifically addressed the requirements of the Chapter 288 rules. LCRA incorporated all of the same triggers and criteria from the WMP into its Chapter 288 DCP. These DCPs were incorporated into Chapter 4 of the WMP.

48. In August 2011, LCRA called on its firm water customers to voluntarily implement mandatory water use restrictions under their DCPs to reduce water use by 10 to 20%.

49. LCRA adopted water use reduction targets including the following: water use reduction goals for firm water supply customers of 5% by asking firm customers to implement their voluntary water use reduction measures when the combined storage of Lakes Buchanan and Travis is less than 1.4 million AF; 10 to 20% reduction goals by asking firm customers to implement their own mandatory water use reduction measures when combined storage levels fall below 900,000 AF; and a mandatory pro rata curtailment of firm water supplies for customers of 20% or more will be implemented when combined storage levels fall below 600,000 AF and other criteria are met for a DWDR .

50. LCRA has pending or final pro rata plans for all of its firm water customers who are actively diverting water.

51. LCRA has adopted additional changes to LCRA's raw water contract rules that include the procedures for implementing a pro rata curtailment of firm water customers. The rules also provide a surcharge to be set by the LCRA Board for unauthorized use of water (taking more water than authorized under a mandated curtailment of firm water supplies) and clarifying the drought contingency requirements related to golf course irrigation and recreational use.

52. LCRA's WMP requires LCRA to develop a firm water curtailment plan to be approved by the LCRA Board and TCEQ. The WMP provides that the curtailment will be in response to combined storage dropping below 600,000 AF. TCEQ approved that plan for LCRA's firm customers in December of 2011.

53. LCRA has fully implemented its DCP. All of LCRA's firm customers that currently divert and purchase water from LCRA have a DCP. Most of these firm customers have stayed in some form of mandatory water restrictions, significantly limiting landscape irrigation. LCRA's industrial customers have worked to reduce non-essential water uses. Also, LCRA has had several meetings with firm customers in preparation for pro rata curtailment.

54. Except for a six-week period in the summer of 2012, the City of Austin customers have had once a week outdoor watering restriction for the past two years. In November 2013, the LCRA Board approved the no more than once per week watering restriction that took effect in March 2014. The Board re-affirmed this watering restriction in November 2014. The restriction applies if combined storage is below 1.1 million AF and interruptible stored water has been cut off.

The Executive Director has not been asked to approve this restriction and expresses no opinion on this restriction.

Alternatives

55. LCRA has evaluated many alternatives to address the emergency conditions that the drought presents. Alternatives explored include: Utilizing water from LCRA's other lakes, aggressive conservation, interbasin transfers, an off-channel reservoir, and trucking in water from other sources. LCRA has evaluated many other alternatives to address the emergency conditions that the drought presents.

56. None of the alternatives LCRA has identified would avert the projected water supply shortage because most of the supplies identified would produce insufficient or uncertain quantities of supply, would create other operational issues for customers, may involve a lengthy permitting process (if not implemented on an emergency basis), or would take years to develop. None of the alternatives identified are feasible or practicable alternatives to the emergency authorization.

57. Amending downstream run of the river rights to allow diversion for new uses and at new locations would provide some supply, but the use of these rights alone is not – by itself – a feasible and practicable alternative to the emergency relief related to the 2010 WMP. All of the rights would require amendments to add diversion points, additional places of use, and possible storage. Also, the downstream run-of-river water rights are highly variable in terms of availability and quantity, and do not provide by themselves a sufficient quantity of water to eliminate the need for the emergency relief from the 2010 WMP as requested herein.

58. Using the downstream water rights to supply the downstream industrial and municipal users kept about 7,000 and 1,000 AF of water in the lakes in 2012 and 2013, respectively. Using a permanent amendment to the Gulf Coast water right allowed LCRA to divert from the river for industrial customers in the Gulf Coast Canal System about 9,800 AF and 10,200 AF in 2012 and 2013 respectively. This water would otherwise have been released from Lakes Buchanan and Travis. LCRA is seeking other temporary permits in 2015. While this was beneficial, temporary permits are not sufficient replacement for water lost if releases are required.

59. Reductions in water use will not result in preventing the emergency that would be created by falling reservoir levels due to the releases of stored water to irrigators under the 2010 WMP. Implementing reduced water use will likely take considerable time before the water savings identified in LCRA's DCP would be seen.

60. Aggressive municipal conservation requires solid partnerships with customers, a good method for calculating water savings and a strong education and enforcement program; measures that are costly and take time. And, the result would be an insufficient amount of water.

61. Although groundwater appears to be available in many areas, the uncertainty associated with the long-term availability of groundwater supplies makes this a high-risk alternative for water supply. Many areas have Groundwater Conservation Districts (GCD) that regulate use and permitting of groundwater. Obtaining written agreements with landowners takes approximately 9 to 12 months and obtaining permits often takes several years.

62. LCRA has a permit for an off-channel reservoir in the lower basin that will add 90,000 AF of firm water for the region. LCRA is moving forward with constructing this reservoir, but it is not expected to be on-line until 2017.

63. The use of other LCRA lakes is not a viable option at this time. Lakes Inks, LBJ and Marble Falls are not currently authorized for municipal use. If LCRA quit refilling these lakes but allowed the lakes to be maintained at levels that would not have significant impacts to cities and industries around them, it estimates that perhaps a one-time supply of about 34,000 AF could be made available. However, lowering the storage of these lakes could also significantly impact hydroelectric generation capabilities.

64. Several LCRA-managed lakes are cooling water reservoirs with operational constraints. Any released surface water from Lake Bastrop would need to be replenished with either surface water (including releases from Lakes Travis and Buchanan) if there is no rain, or from a limited supply of groundwater. There are operational and timing issues related to releasing and replenishing water in the lake on a schedule needed for generation reliability. Releases from other intervening lakes could raise operational issues for LCRA's firm customers over a timeframe that cannot be readily addressed.

65. LCRA is pursuing a formal amendment to its 2010 WMP but that process will not be completed in time to address LCRA's requested relief. LCRA filed an application to amend its 2010 WMP on March 12, 2012. TCEQ prepared a draft permit for LCRA comment on October 12, 2012. Notice of the application was sent to all water right holders in the Colorado River Basin and published in local newspapers in April 2013. May 28, 2013 was the last date to request a public meeting or a contested case hearing, or comment on the application. On June 3, 2013, the TCEQ Executive Director advised LCRA that he would not be forwarding the application to the Commission at that time, and his staff would be conducting further review on the application. The Executive Director's staff issued a draft report with recommendations on curtailments of interruptible water on May 16, 2014. LCRA submitted a revised application on October 31, 2014, with similar curtailments to those recommended by the Executive Director.

66. LCRA is also seeking an Emergency order under Texas Water Code Section 11.148 in an application dated December 23, 2014, to reduce the release requirement for the Blue Sucker fish under the 2010 WMP. This request is identical to LCRA's request for relief granted in spring 2014. While beneficial, this relief will not replace the water that would be released to irrigators under the 2010 WMP.

67. This emergency order is the only means by which LCRA can obtain timely relief to make a significant impact on its remaining storage in a workable manner.

68. The conditions at the time of this emergency order create an emergency situation which presents an imminent threat to the public health and safety and justifies the issuance of this emergency order.

Relief Requested

69. LCRA seeks an emergency order to suspend any obligation LCRA might have under the 2010 WMP to provide interruptible stored water to any landowners or customers within the Gulf Coast, Lakeside, and Pierce Ranch irrigation operations if the TCEQ determines that conditions have not changed substantially by March 1, 2015, compared to conditions in mid-November 2014. If conditions have changed substantially, following the 2010 WMP will still likely create an emergency situation, but a less restrictive curtailment of interruptible stored water may be appropriate.

Notice

70. Notice was provided to the Governor of Texas regarding the Executive Director's consideration of this emergency order by letter dated February 17, 2015. The date and time of the hearing at which the Commission will consider whether to affirm, modify, or set aside this order is included in this emergency order under the Ordering Provisions. Notice of this emergency order and of the Commission hearing will be mailed to all water right holders in the basin.

II. CONCLUSIONS OF LAW

1. The Executive Director may issue an emergency order under Texas Water Code Section 11.139 to amend a certificate of adjudication after notice to the Governor if the Executive Director finds that emergency conditions exist which present an imminent threat to the public health and safety and override the necessity to comply with established statutory procedures which requires immediate action before the Commission can take action and there are no feasible practicable alternatives to the emergency authorization.

2. The Findings of Fact show that the requirements of Conclusion of Law No. 1 have been met. Following the 2010 WMP with the ongoing drought and its effect on the water supply constitutes an emergency that presents an imminent threat to the public health and safety and there are no feasible, practicable alternatives to this action. The Executive Director of the Commission has the authority to issue this emergency order.

3. The Commission must consider whether to affirm, modify, or set aside an emergency order issued by the Executive Director under Section 11.139 of the Texas Water Code no later than 20 days after the Executive Director issues the order.

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

1. LCRA's 2010 WMP is amended to alleviate LCRA from any obligation to provide interruptible stored water to customers within the Gulf Coast, Lakeside, and Pierce Ranch irrigation operations for the duration of this emergency order.

2. This emergency order is final and effective on February 18, 2015.

3. This emergency order terminates in 120 days, which is on June 18, 2015.

4. This emergency order may be renewed once for no more than 60 days.

5. This order only addresses the specific relief requested from LCRA and is not meant as precedent for amendments to LCRA's WMP or future emergency relief.

6. The Commission will consider whether to affirm, modify, or set aside this emergency order on March 4, 2015 at 9:30 a.m. at:

   Texas Commission on Environmental Quality
   12100 Park 35 Circle
   Building E, Room 201S
   Austin, Texas

7. If any provision, sentence, clause, or phrase of this emergency order is for any reason held to be invalid, the invalidity of any portion shall not affect the validity of the remaining portions of this emergency order.

Issue Date:

February 18, 2015

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Richard A. Hyde, P.E.
Executive Director

Attachment A

LCRA
ENERGY • WATER • COMMUNITY SERVICES

December 22, 2014

Richard Hyde, P.E.
Executive Director
Texas Commission on Environmental Quality
P.O. Box 13087, MC-109
Austin, TX 78711-3087

Dear Mr. Hyde:

For the past three years, in response to the worst one-year drought on record and continuing and severe drought conditions, the Lower Colorado River Authority (LCRA) sought and obtained from the Texas Commission on Environmental Quality (TCEQ) emergency relief to reduce the amount of interruptible stored water it was otherwise obligated to supply under its state-approved 2010 Water Management Plan (2010 WMP). LCRA also sought and obtained temporary amendments to several of its downstream water rights to use those rights to meet firm customer demands.

Unfortunately, notwithstanding the unprecedented actions taken by the Commission and LCRA, the water supply for over a million people in Central Texas has failed to recover in any significant manner and the lower Colorado River basin continues to suffer from a prolonged drought that poses virtually the same risks faced by LCRA and the communities it serves as when LCRA has sought prior relief.

On November 19, 2014, the LCRA Board of Directors directed staff to prepare and file the attached request for emergency relief from the 2010 WMP for the 2015 first crop irrigation season. The requested emergency relief, if granted, would help preserve the supply in lakes Buchanan and Travis for essential firm customer needs should drought conditions persist. LCRA recognizes that drought recovery is a goal to which all customers must contribute. To that end, LCRA has implemented aggressive drought measures among its firm customers, many of whom have already achieved significant water savings.

As you will note, to assist with review and expedite the processing of the application, LCRA has included in its application the information needed to support TCEQ's processing of this application under any or all of TCEQ's emergency authorities it may deem most appropriate, including Texas Water Code §§ 5.501, 11.138, 11.139, as well as the Governor's Emergency Disaster Proclamation related to drought. LCRA requests that TCEQ process this request under whatever authority it deems most appropriate in light of the exceptional drought. To the extent the Commission deems appropriate, and consistent with the Governor's Proclamation, LCRA requests that

procedural requirements associated with this request, or any portion thereof, be waived to expedite the processing of this request.

A check to cover the application and filing fees is included. Please advise if additional fees are required.

We look forward to hearing from you regarding this LCRA application. To the extent that TCEQ has questions or concerns, we stand ready to promptly respond and are willing, of course, to meet with you and your staff to review the application materials and address any questions. For questions or a meeting, please contact David Wheelock, Manager of Water Supply and Conservation, at (512) 730-6822 and Lyn Clancy, Managing Associate General Counsel and Senior Water Policy Advisor at (512) 578-3378.

Sincerely,

Phil Wilson
General Manager

cc: Kellye Rila, TCEQ

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

P.O. Box 13087 MC-160, Austin, Texas 78711-3087
Telephone (512) 239-4691, FAX (512) 239-4770

APPLICATION FOR A TEMPORARY WATER USE PERMIT FOR MORE THAN 10 ACRE-FEET OF WATER, AND/OR FOR A DIVERSION PERIOD LONGER THAN ONE CALENDAR YEAR

This form is for an application for a temporary permit to divert water under Section 11.138, Texas Water Code. Any permit granted from this application may be suspended at any time by the applicable TCEQ Office if it is determined that surplus water is no longer available.

Notice: This form will not be processed until all delinquent fees and/or penalties owed to the TCEQ or the Office of the Attorney General on behalf of the TCEQ are paid in accordance with the Delinquent Fee and Penalty Protocol.

1. **Data on Applicant and Project:** Social Security or Federal ID No. CN 600253637

   A. Name: Lower Colorado River Authority (LCRA); Attn: David Wheelock, P.E., Manager, Water Supply and Conservation

   B. Mailing Address: P.O. Box 220, L200, Austin, TX 78767

   C. Telephone Number: 512-730-6822 Fax Number: 512-473-4026 E-mail Address: david.wheelock@lcra.org

   D. Applicant owes fees or penalties? ☐ Yes ☑ No

   If yes, provide the amount and the nature of the fee or penalty as well as any identifying number:

   N/A

   E. Describe Use of Water Temporary emergency authorization to allow LCRA to deviate from the 2010 Water Management Plan as it relates to release of interruptible stored water for the 2015 growing season, as described more fully in LCRA's Brief and Attachments provided with this application.

   F. Description of Project (TDH Project No. if applicable) N/A

   G. Highway Designation No. N/A Counties Llano, Burnet, Travis, Bastrop, Fayette, Colorado, Wharton, and Matagorda

2. **Type of Diversion (check one):**

   ☑ From Stream ☑ From Reservoir

3. **Rate of Diversion:**

   A. Maximum _____ gpm
   (capacity of pump)

4. **Amount and Source of Water:**

   See Supplemental Brief and Attachments provided with this application.

   _____ acre-feet of water within a period of _____ (specify term period not to exceed a three year term). The water is to be obtained from _____, tributary of _____, tributary of _____, tributary of _____, _____ Basin.

5. **Location of Diversion Point:** Provide Latitude and Longitude in decimal degrees to at least six decimal places, and indicate the method used to calculate the diversion point location.

   At Latitude _____°N, Longitude _____°W, ((at) or (near) the stream crossing of), (at a reservoir in the vicinity of) _____(R-O-W) (Highway), located in Zip Code _____, located _____ miles in a _____ direction from _____ (County Seat), _____ County, and _____ miles in a _____direction from _____, a nearby town shown on County road map. Note: Distance in straight line miles.

   Enclose a USGS 7.5 minute topographic map with the diversion point and/or the return water discharge points labeled. Owner's written consent is required for water used from any private reservoir, or private access to diversion point.

6. **Access to Diversion Point (check one):**

   ____ Public right-of-way
   ____ Private property
   (A letter of permission from landowner is attached)
   ____ Other (Explain)

7. **Fees Enclosed:**

	10 ac-ft or less	greater than 10 ac-ft
Filing	$ 100.00	$ 250.00
Recording.....	$ 1.25	$ 1.25
Use ($1.00 per ac-ft or fraction thereof)	$ _____	$ 500.00
(Note: 1 ac-ft = 325,851 gals. 1 ac-ft = 7758.35 bbls.) Total	$ _____	$ 751.25

Upon completion of any project for which a temporary water permit is granted, the Permittee is required by law to report the amount of water used. This document must be properly signed and duly notarized before it can by accepted or considered by the Texas Commission on Environmental Quality.

Name (sign)

Phil Wilson
Name (print)

Subscribed and sworn to me as being true and correct before me this 22nd day of December, 20 14

Notary Public, State of Texas

TABETHA JASKE
Notary Public, State of Texas
My Commission Expires
January 11, 2018

The attachments to LCRA's Emergency Order application can be found at https://www.tceq.texas.gov/agency/lcra/lcra-emergency-order

EXHIBIT B

TCEQ Interoffice Memorandum

To: Commissioners **Date:** February 16, 2015

Thru: Bridget Bohac, Chief Clerk
Richard Hyde, P.E., Executive Director
L'Oreal W. Stepney, P.E., Deputy Director, Office of Water
Kellye Rila, Director, Water Availability Division

From: Kathy Alexander, Ph.D., Technical Specialist, Water Availability Division

Subject: Technical summary of the application by the Lower Colorado River Authority for an Emergency Order to amend its 2010 Water Management Plan, Permit No. 5838, Colorado River, Colorado River Basin, Travis, Burnet, and Llano Counties

Background

LCRA has received several emergency orders relating to its Water Management Plan (WMP). Due to persistent drought conditions in the lower Colorado River Basin, on December 23, 2014, the Lower Colorado River Authority (LCRA) requested emergency relief related to its 2010 WMP. LCRA requested an emergency order to suspend any obligations it might have under the 2010 WMP to release interruptible stored water to customers in the Gulf Coast, Lakeside, and Pierce Ranch irrigation operations for the duration of the order.

LCRA's Certificates of Adjudication and WMP

LCRA has the right to divert and use up to 1.5 million acre feet (AF) from Lakes Buchanan and Travis under Certificate of Adjudication Nos. 14-5478 and 14-5482. By court order, LCRA has developed a WMP, currently dated 2010, which is part of these certificates yet identified by its own permit number (Permit No. 5838). The Certificates of Adjudication and the 2010 WMP govern LCRA's operation of Lakes Buchanan and Travis and dictate how LCRA makes water available from these lakes to help meet firm customer needs, downstream interruptible irrigation demands, and environmental flow needs of the lower Colorado River and Matagorda Bay. 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 certificate pursuant to all firm, uninterruptible water commitments." The WMP further describes how LCRA will manage and curtail supplies from the lakes during times of drought including through a repeat of the Drought of Record.

As established in the 2010 WMP, the combined firm yield of Lakes Buchanan and Travis is 535,812 acre-feet per year (AFY). Of this amount, 90,546 AFY is committed to O.H. Ivie Reservoir, making 445,266 AFY of firm water supply available from Lakes Buchanan and Travis for LCRA to help meet the firm water needs of its customers. Under the WMP, until firm demand for water equals the combined firm yield, LCRA can supply water for irrigated agriculture on an interruptible basis.

The maximum historical annual amount of reported firm water use from the firm supplies of Lakes Buchanan and Travis from 2010 to 2013 was approximately 247,000 AF in 2011. The maximum interruptible water released from Lakes Buchanan and Travis during this same period occurred in 2011 and totaled about 433,000 AF. The maximum total amount released or used from the Highland Lakes, about 714,000 AF, occurred in 2011. The firm water use in 2012 from Lakes Buchanan and Travis was about 148,000 AF. An amount of 31,000 acre feet was supplied for the environment, and 9,000 AF feet of interruptible water was supplied to the Garwood Irrigation Division. The total use for 2012 was about 188,000 AF. The total use for 2013 was 228,959 acre-feet, and use of water in 2014 is expected to be similar, although the amount of water supplied to help meet environmental flow needs has been lower in 2014 (See LCRA's December 23, 2014 Application, Attachment G, pg. 4).

The 2010 WMP was developed using a repetition of the hydrologic period from 1940-1965. The period includes the Drought of Record (DOR); however the current drought conditions are outside the range of hydrologic conditions considered during the formulation of the 2010 WMP.

To manage its water supply, LCRA's 2010 WMP imposes several trigger points based on the total combined storage capacity of Lakes Buchanan and Travis that are intended to ensure that firm water supply is protected during droughts. The 2010 WMP includes, in addition to others, the following triggers:

Combined Storage of Lakes Buchanan and Travis	**Date on Which Trigger is Decided**	**Action Taken**
1.4 MAF	At any time	Request firm customers to implement voluntary drought response measures.
1.4 MAF	On Jan. 1	Environmental releases for instream flows reduced to meet critical needs for ecosystems for following year. Begin gradual curtailment of interruptible supply to four major irrigation operations.
900,000 acre-feet	At any time	Request firm customers to implement mandatory water restrictions; develop firm customer curtailment plan.
600,000 acre-feet	At any time	If criteria indicate a Drought Worse than the Drought of Record, then cease interruptible supply and begin curtailment of firm supply.

LCRA's 2010 WMP defines "Drought of Record" as "the drought that occurred during the critical drought period." "The Critical Drought Period" is defined as "the period of time during which the reservoir was last full and refilled, and the storage content was at its lowest minimum value." Under the 2010 WMP, the LCRA Board may declare a Drought Worse than the Drought of Record (DWDR) if it finds that the following three conditions are simultaneously met:

a. Duration of drought is more than 24 months, which is determined by counting the number of consecutive months since both Lakes Buchanan and Travis were last full;
b. Inflows to the lakes are less than inflows during the drought of record; and
c. Lakes Buchanan and Travis combined storage has less than 600,000 acre feet of water.

Under the 2010 WMP, once a drought has lasted more than 36 months and a DWDR has been declared by the LCRA Board, the interruptible stored water would be fully and immediately curtailed – making no stored water available for agricultural irrigation or other interruptible uses until lake levels recover or the inflows into the lakes increase substantially. Moreover, LCRA will implement pro rata curtailment of its firm water users once a DWDR is declared and after interruptible stored water uses have been curtailed.

Prior to a declaration of a DWDR, LCRA is obligated by the 2010 WMP to provide at least some interruptible water to its four major irrigation operations. Under the 2010 WMP, the LCRA Board would make a preliminary decision in December based on projections of storage on January 1 of the following year. The available amounts of interruptible stored water follow a curtailment curve ranging from 195,000 AF at a combined storage of 1.15 MAF to 172,000 AF at a combined storage just over 600,000 AF. Total curtailment of interruptible stored water would occur at 600,000 AF because the first and second criteria for a DWDR have been met.

Drought Conditions in the Colorado Basin

LCRA's brief, supporting affidavits, and additional information show that:

- The combined storage of the Lakes Buchanan and Travis on February 16, 2015, was 717,663 AF, or 36% full;
- The December 1, 2014 combined storage level of 691,132 AF is the lowest recorded storage on that date since Lakes Buchanan and Travis were constructed (See LCRA's December 23, 2014 Application, Attachment G, pp. 6-7);
- In May of 2012, Lakes Buchanan and Travis refilled to 1.033 MAF and without any releases for Lakeside, Gulf Coast, and Pierce Ranch, the lakes dropped to the lowest level in the current drought; 637,123 AF on September 19, 2013 (See LCRA's December 23, 2014 Application, Attachment G, pg. 9);
- The inflows to the lakes over the past several years are among the lowest on record. Average annual inflows into Lakes Buchanan and Travis over the past six years are around 33.8% of the long term average from 1942-2013. Inflows into the lakes in 2011 were the lowest on record. Inflows in 2012 were the sixth lowest on record, and inflows in 2013 were the second lowest on record. Inflows for 2014 (based on calculated inflows from January through November) are projected to be among the three lowest on record (See LCRA's December 23, 2014 Application, Attachment G);
- The total inflows for the past 84 months were only about half of the lowest 84 month inflow period in the Drought of Record (See LCRA's December 23, 2014 Application, Attachment G);
- The inflow deficit has been as much as 90% more than the standard for the DOR for the lower Colorado River Basin, which occurred from 1947 to 1957 (See LCRA's December 23, 2014 Application, Attachment K, pg. 2 and Tab 2);
- Inflows into Lakes Travis and Buchanan during the current drought have been lower for time periods ranging from 12 months to 84 months than the lowest inflows during similar periods within the historical Drought of Record. A comparison of inflows in the

current drought to inflows during the historical Drought of Record is shown below; (See LCRA's December 23, 2014 Application, Attachment G, pg. 9);

	Lowest Inflows in Current Drought		Lowest Inflows in Historical Drought of Record	
Time Period (months)	Period Ending	Inflows (AF)	Period Ending	Inflows (AF)
12	September 2011	120,160	April 1951	408,784
24	May 2014	393,337	March 1952	1,006,681
36	September 2013	695,920	August 1952	1,636,088
48	October 2014	940,789	August 1952	3,035,846
60	November 2014	1,952,879	August 1952	4,128,806
72	April 2014	2,374,126	April 1955	5,193,016
84	November 2014	2,738,953	August 1952	6,050,804

- LCRA's most recent cumulative inflow deficit curve (Figure 1.) also indicates the magnitude of inflow deficits during this drought. (See LCRA's December 23, 2014 Application, Attachment K, Tab.2).

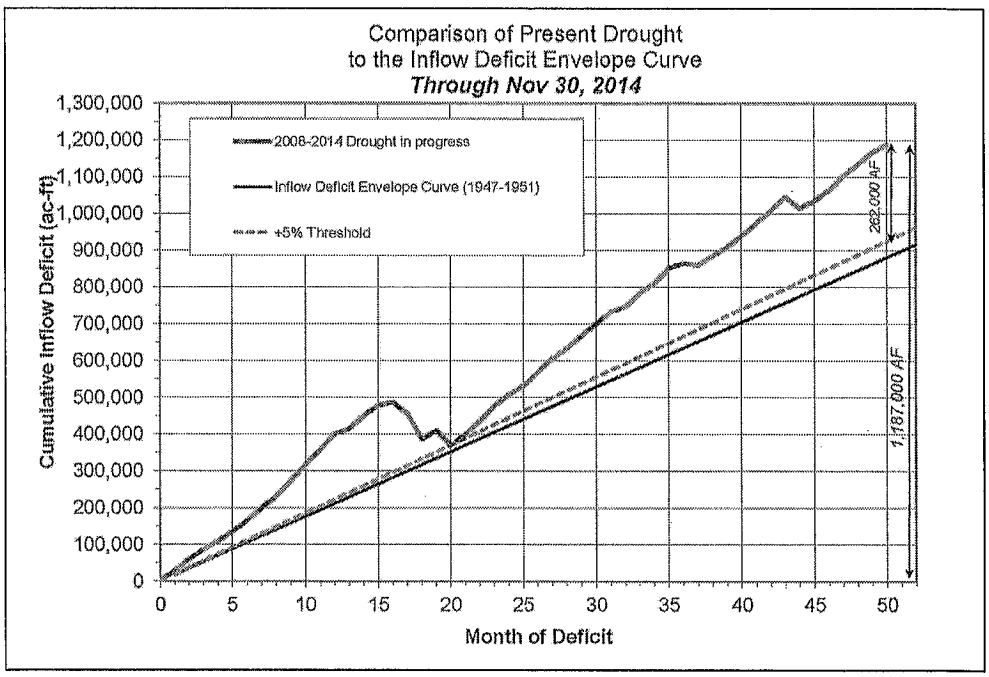

Figure 1. Comparison of Present Drought to the Inflow Deficit Envelope Curve through November 30, 2014

Extraordinary drought conditions in the form of rainfall and extreme heat have existed in much of Texas, including the Colorado River Basin for over four years. State Climatologist, Dr. John Nielsen-Gammon, recognized 2011 as the worst one year statewide drought on record and that rainfall during the period from October 2010 to September 2011 was the lowest recorded dating back to 1895 (See LCRA's December 23, 2014 Application, Attachment L, pg. 2). The summer of 2011 was the second hottest on record in Texas, and 2011 was the hottest on record in Austin (See LCRA's December 23, 2014 Application, Attachment L, pg. 4). The summer of 2012 was

the tenth hottest summer on record statewide and the 11th hottest summer on record for Austin. Statewide, 2012 tied with 1921 as the warmest year on record. Summer temperatures recorded for Austin in 2013 were the fifth warmest on record and those for 2014 were the 34th warmest on record (See LCRA's December 23, 2014 Application, Attachment L, pg. 4).

Although there has been close to normal rainfall in some places in Central Texas since 2011, these events have failed to produce significant inflows into Lakes Buchanan and Travis. The rainfall has been sporadic, and the soils have not remained saturated enough to allow for runoff in substantial amounts. On Sept. 19 and 20, 2013, the watershed upstream of Lakes Buchanan and Travis experienced a widespread event with rain totals averaging two to three inches, with some rain gages reporting as much as seven inches. Although the rainfall amounts were significant, the resulting inflows to lakes Buchanan and Travis were very limited, totaling only about 24,000 AF. A rainfall event on November 4-6, 2014 included rainfall totals up to two to three inches but only resulted in about 4,000 AF of inflows to the lakes. A rainfall event above the lakes on November 21-22, 2014 only resulted in about 17,000 AF of inflows (See LCRA's December 23, 2014 Application, Attachment G, pg. 9). Although 2013 and 2014 have included some periods with near-normal or normal rainfall totals, rainfall has been sporadic, often with several weeks of dry weather between significant rainfall events such that the soils have not remained saturated enough to allow runoff to occur in any substantial amount. Rainfall for the Hill Country and Central Texas Regions from October 2010 to November 2014 ranked in the 2.1 to 5.0 percentile for precipitation (See LCRA's December 23, 2014 Application, Attachment L, pg. 2). The limited inflows are indicative of the severity of the ongoing drought and extremely dry soil conditions (See LCRA's December 23, 2014 Application, Attachment G, pg. 9).

LCRA's application and supporting affidavits indicate that these conditions created a circumstance where the lakes have been unable to recover in any significant manner, even with an emergency cutoff of nearly all water supply for downstream irrigation in 2012, 2013, and 2014. Recent weather forecasts indicate the possibility of some relief. The National Weather Service's 3-month outlook calls for above normal precipitation across Central and South Texas this winter with conditions becoming more uncertain in late winter through early spring (See LCRA's December 23, 2014 Application, Attachment L, pg. 6). Most long range climate forecast models indicate sea surface temperatures will remain above the threshold for El Niño through late spring and possibly through summer; however, the National Weather Service has not declared the arrival of El Niño conditions (See LCRA's December 23, 2014 Application, Attachment L, pp. 7). A pattern of above normal rainfall this winter and early spring should lead to drought improvement across much of Texas but the pattern is not expected to be in place long enough to eliminate the long-term effects of the ongoing drought (See LCRA's December 23, 2014 Application, Attachment L, pg. 9).

The U.S. Drought monitor (February 10, 2015) shows that most of the Texas Hill Country is within the "moderate drought" or "abnormally dry" category and Central Texas and the coastal plains are either in "moderate drought" or "abnormally dry". However, some portions of the Texas Hill Country are in worse drought conditions ranging from "severe" to "exceptional" in areas that contribute inflows to Lakes Buchanan and Travis. The Drought Monitor does not specifically show hydrologic drought, which is worse than the depicted conditions.

The Governor of Texas issued an Emergency Disaster Proclamation on July 5, 2011, certifying that exceptional drought conditions posed a threat of imminent disaster in specified counties in Texas. This proclamation has been renewed monthly, most recently on January 18, 2015, and includes counties that contribute inflow to the Highland Lakes.

The first and second criteria for a Drought Worse than the Drought of Record have been met. The drought has lasted for more than 24 months. Duration of drought is determined by counting the number of consecutive months since both Lakes Buchanan and Travis were last full, which was February 13, 2005. The cumulative inflow deficit criteria have been met.

If severe drought conditions continue, and LCRA follows the requirements in the 2010 WMP, the combined storage could drop to 600,000 acre-feet as early as March 2015 and there is a 33% chance that the combined storage could drop to 600,000 acre-feet by the end of 2015. As of December 1, 2014, if LCRA obtains emergency relief the suspends its obligations to supply interruptible stored water to Lakeside, Gulf Coast, and Pierce Ranch and emergency relief that reduces the instream flow requirement for the Blue Sicker from 500 cfs to 300 cfs, the chance that combined storage could drop to 600,000 AF by the end of 2015 is reduced to about 8% (See LCRA'S December 10, 2013 Brief, Attachment K, pg. 3).

Requested WMP Emergency Authorization

LCRA requests that TCEQ issue an emergency order amending LCRA's 2010 WMP to allow LCRA to suspend LCRA's obligation to release interruptible stored water to LCRA's Gulf Coast and Lakeside agricultural divisions and Pierce Ranch.

LCRA's Firm Customers

The 2010 WMP requires that firm customers (mainly cities and industries) be curtailed on a pro rata basis and that LCRA cease all releases of interruptible stored water (regardless of the impact on the crops) when a DWDR is declared. LCRA provides raw water from the firm supply of Lakes Buchanan and Travis to over 60 retail and wholesale potable water suppliers that together serve over one million people throughout the lower Colorado River Basin and LCRA's water service area. LCRA's municipal raw water customers include, but are not limited to, Austin, Cedar Park, Leander, Burnet, Marble Falls, Pflugerville, Lakeway, Bee Cave, Horseshoe Bay, other Highland Lakes municipalities; water supply corporations, special districts; and investor-owned utilities. In addition, LCRA provides water to several electric utilities-LCRA, Bastrop Energy Partners, Austin Energy, Gen-Tex Corporation, and South Texas Project Nuclear Operating Company-from the firm water supply of Lakes Buchanan and Travis. These utilities provide power into the electrical grid in Texas operated by the Electric Reliability Council of Texas (ERCOT) to meet the electrical needs of customers in Texas. LCRA also provides firm raw water to several industries located downstream, including Oxea Chemical and Underground Services Markham (See LCRA's December 23, 2014 Application, Attachment M, pg. 2).

Over 40 public water systems that rely on the Highland Lakes or that draw water from tributaries that contribute significant inflow to the lakes are in some form of drought restrictions and are at risk of water supply shortages ((See LCRA's December 23, 2014 Application, Attachment A, pg. 16). Currently, LCRA has 18 customers that actively take raw water for municipal purposes from Lake Travis. The lowest pumping elevations of the intakes range from 545 feet mean sea level (msl) to 645 feet msl on Lake Travis (See LCRA's December 23, 2014 Application, Attachment G, pg. 5). The commission's February 2014 Emergency Order found that as lake levels drop, retail water suppliers are unable to pump water from the lakes. This causes wholesale raw water customers to either move intakes to reach the water, or obtain alternative sources. Smaller systems will likely have to haul water from a water utility with a viable source. If the lake levels drop more quickly than arrangements for alternative intakes or supplies can be implemented, LCRA's customers' water systems will have difficulty in meeting firm customers' water needs. (See TEX. COMM'N ENVTL. QUAL., Docket No. 2014-0124-WR, Order affirming in part and modifying in part the Executive Director's emergency order

authorizing the Lower Colorado River Authority to amend its Water Management Plan, Permit 5838, pursuant to section 11.139 of the Texas Water Code (Feb. 27, 2014)).

Water Conservation Plans and Drought Contingency Plans

LCRA's Raw Water Conservation Plan (WCP) and Drought Contingency Plan (DCP) comply with TCEQ rules and are contained in Chapter 4 of the 2010 WMP. LCRA was originally required to develop this part of the WMP as a direct result of the court order adjudicating LCRA's water rights and the Texas Water Commission's 1989 WMP Order, giving initial approval to LCRA of an earlier version of the plan. When LCRA was required under the TCEQ's Chapter 288 rules to develop and implement a DCP, LCRA incorporated all of the same triggers and criteria from the approved WMP into its DCP. The 2010 WMP includes a requirement that LCRA develop a stored water curtailment plan to be approved by the LCRA Board and TCEQ in response to combined storage dropping below 900,000 AF. TCEQ approved LCRA's water curtailment plan for its firm customers in December 2011 (See TEX. COMM'N ENVTL. QUAL., Docket No. 2014-0124-WR, Order affirming in part and modifying in part the Executive Director's emergency order authorizing the Lower Colorado River Authority to amend its Water Management Plan, Permit 5838, pursuant to section 11.139 of the Texas Water Code (Feb. 27, 2014)).

LCRA's DCP establishes the measures LCRA will take in times of drought. LCRA's DCP includes the following: when the combined storage of Lakes Buchanan and Travis is less than 1.4 MAF, LCRA encourages its customers to implement voluntary water conservation measures; when combined storage levels fall below 900,000 AF, LCRA asks firm customers to implement their mandatory water use reduction measures, with a goal of reducing water use by 10-20%; and a mandatory pro rata curtailment of firm water supplies for customers of 20% or more will be implemented when combined storage levels fall below 600,000 AF and other criteria are met for a drought more severe than the DOR (See LCRA's December 23, 2014 Application, Attachment I, pp. 1-2).

In August, 2011, LCRA called on its firm water customers to voluntarily implement mandatory water use restrictions under their DCPs to reduce water use by 10 to 20%. LCRA has adopted additional changes to LCRA's raw water contract rules that include the procedures for implementing a pro rata curtailment of firm water customers. The rules also provide a surcharge to be set by the LCRA Board for unauthorized use of water (taking more water than authorized under a mandated curtailment of firm water supplies) and clarifying the drought contingency requirements related to golf course irrigation and recreational use (See TEX. COMM'N ENVTL. QUAL., Docket No. 2014-0124-WR, Order affirming in part and modifying in part the Executive Director's emergency order authorizing the Lower Colorado River Authority to amend its Water Management Plan, Permit 5838, pursuant to section 11.139 of the Texas Water Code (Feb. 27, 2014)).

LCRA has fully implemented its DCP. It requires all of its customers that currently divert and purchase water from LCRA to have a DCP. Currently, all customers have an approved DCP (See LCRA's December 23, 2014 Application, Attachment I, pg. 2). Most of these firm customers have stayed in some form of mandatory water restrictions, significantly limiting landscape irrigation (See LCRA's December 23, 2014 Application, Attachment I, pg. 2). LCRA has pending or final pro rata plans for all of its firm customers who are actively diverting water (See LCRA's December 23, 2014 Application, Attachment I, pg. 3). LCRA has had several meetings with firm customers in preparation for pro rata curtailment. The LCRA Board approved a no more than once per week watering restriction that took effect in March 2014 and applies if combined storage is below 1.1 MAF and interruptible stored water to the Gulf Coast and Lakeside irrigation divisions and Pierce Ranch has been cut off. (See TEX. COMM'N ENVTL. QUAL., Docket No.

2014-0124-WR, Order affirming in part and modifying in part the Executive Director's emergency order authorizing the Lower Colorado River Authority to amend its Water Management Plan, Permit No. 5838, pursuant to section 11.139 of the Texas Water Code (Feb. 27, 2014)). TCEQ was not asked to approve this restriction, and staff expresses no opinion on this restriction.

Alternatives to the Emergency Authorization

LCRA's application discusses alternatives that might be available to alleviate strain on LCRA's water supply reservoirs caused by persistent drought conditions. These alternatives include, among others (See LCRA's December 23, 2014 Application, Attachment M, Tab 3):

1. Utilizing water from LCRA's other lakes;
2. Conservation initiatives and customer buyouts of nonessential uses;
3. Aggressive municipal conservation;
4. Groundwater;
5. Off-channel reservoir;
6. Wastewater reuse program in the Highland Lakes;
7. Lining or piping high loss canals utilized by industry;
8. Interbasin transfers and trucking in water from other sources; and
9. Desalination

LCRA states that none of the alternatives it identified would avert the projected water supply shortage because most of the supplies identified would produce insufficient or uncertain quantities of supply, are constrained by existing contractual commitments, would create other operational issues for customers, involve a lengthy permitting process (if not implemented on an emergency basis), or would take years to develop. (See LCRA's December 23, 2014 Application, Attachment M, pg. 3-4)

Amending downstream run of the river rights to allow diversion for new uses and at new locations would provide some supply, but the use of these rights alone is not – by itself – a feasible and practicable alternative to the emergency relief related to the 2010 WMP. All of the rights would require amendments to add diversion points, additional places of use, and possible storage. Also, the downstream run-of-river water rights are highly variable in terms of availability and quantity, and do not provide by themselves a sufficient quantity of water to eliminate the need for the emergency relief from the 2010 WMP as requested herein. In 2012 and 2013, LCRA supplied about 7,000 AF and 1,000 AF, respectively, to firm customers downstream of Austin under temporary permits that would otherwise have been released from Lakes Buchanan and Travis. While this was beneficial, temporary permits are not sufficient replacement for water lost if releases are required (See LCRA's December 23, 2014 Application, Attachment M, pg. 4).

There is no feasible practicable alternative for Austin on short order to replace its water supply should it be depleted to the point of drastic shortages. Although Austin has made very earnest efforts to identify alternative water supplies, a replacement water supply for 1 million people cannot be identified and developed in a few years. Austin has identified only very small amounts of water that may be able to be purchased for exorbitantly expensive prices. The small amounts do not sufficiently address the public health, safety, and welfare risks and the exorbitant prices do not make these practicable alternatives (See TEX. COMM'N ENVTL. QUAL., Docket No. 2014-0124-WR, Order affirming in part and modifying in part the Executive Director's emergency order authorizing the Lower Colorado River Authority to amend its Water

Management Plan, Permit 5838, pursuant to section 11.139 of the Texas Water Code (Feb. 27, 2014)).

Reductions in water use will not result in preventing the emergency that would be created by falling reservoir levels due to the releases of stored water to irrigators under the 2010 WMP. Implementing reduced water use will likely take considerable time before the water savings identified in LCRA's DCP would be seen. Aggressive municipal conservation requires solid partnerships with customers, a good method for calculating water savings and a strong education and enforcement program; measures that are costly and take time. And, the result would be an insufficient amount of water (See LCRA's December 23, 2014 Application, Attachment A, pg. 19).

Although groundwater appears to be available in many areas, the uncertainty associated with the long-term availability of groundwater supplies makes this a high-risk alternative for water supply. Many areas have Groundwater Conservation Districts (GCD) that regulate use and permitting of groundwater. Obtaining written agreements with landowners takes approximately 9 to 12 months and obtaining permits often takes several years (See LCRA's December 23, 2014 Application, Attachment M, Tab 3). LCRA has a permit for an off-channel reservoir in the lower basin that will add 90,000 AF of firm water for the region. LCRA is moving forward with constructing this reservoir, but it is not expected to be on-line until 2017 (See LCRA's December 23, 2014 Application, Attachment M, Tab 3).

The use of other LCRA lakes is not a viable option at this time. Lakes Inks, LBJ and Marble Falls are not currently authorized for municipal use. If LCRA quit refilling these lakes but allowed the lakes to be maintained at levels that would not have significant impacts to cities and industries around them, it estimates that perhaps a one-time supply of about 34,000 AF could be made available. However, lowering the storage of these lakes could also significantly impact hydroelectric generation capabilities (See LCRA's December 23, 2014 Application, Attachment M, Tab 3).

Several LCRA-managed lakes are cooling water reservoirs with operational constraints. Any released surface water from Lake Bastrop would need to be replenished with either surface water (including releases from Lakes Travis and Buchanan) if there is no rain, or from a limited supply of groundwater. There are operational and timing issues related to releasing and replenishing water in the lake on a schedule needed for generation reliability. Releases from other intervening lakes could raise operational issues for LCRA's firm customers over a timeframe that cannot be readily addressed.

Amending the WMP is not a viable alternative because the WMP would have to be amended using regular procedures for amending a water right, which would require basin-wide 30 day notice and an opportunity for a hearing. LCRA has applied for formal amendment to its 2010 WMP. TCEQ is currently reviewing that application, which was amended in October 2014, but the process will not be completed in time to address LCRA's requested emergency relief.

Review and Conclusion

The affidavits submitted by LCRA in support of its request for an emergency order discussed and evaluated:

- current and projected drought conditions;
- LCRA's current water conservation efforts and LCRA's actions to implement their Drought Contingency Plan; and

- Hydrologic conditions, the potential impacts of compliance with the 2010 WMP trigger levels, water supply alternatives, and potential changes to the 2010 WMP criteria.

Staff reviewed additional forecast information, and LCRA's application, affidavits, and stochastic models. Staff also considered additional information from the City of Austin, including water availability modeling. This review does not consider recreational uses of the Highland Lakes.

Forecasts

LCRA submitted forecast information from late November and early December (See LCRA's December 23, 2014 Application, Attachment L, pg. 7). Staff reviewed these forecasts as well as the most updated information from the Climate Prediction Center (Figures 2.-4. below).

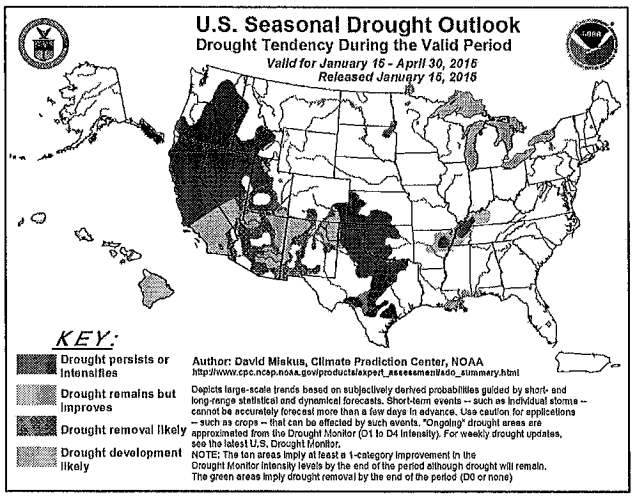

Figure 2. U.S. Seasonal Drought Outlook (released January 15, 2015)

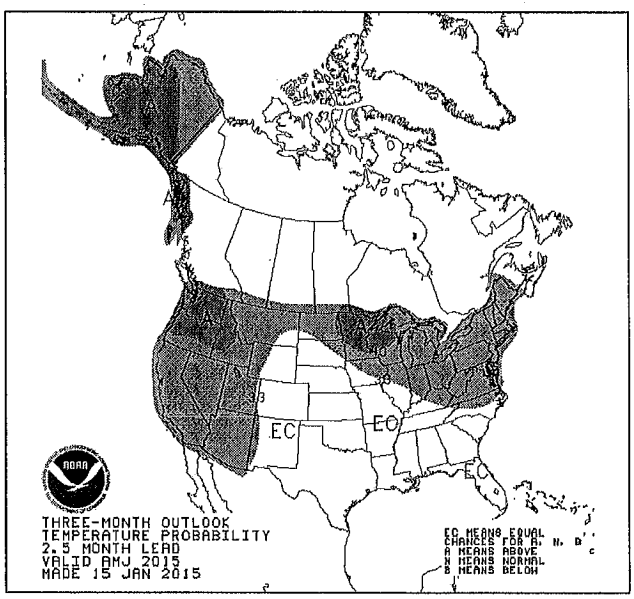

Figure 3. Three Month Outlook Temperature Probability (January 15, 2015)

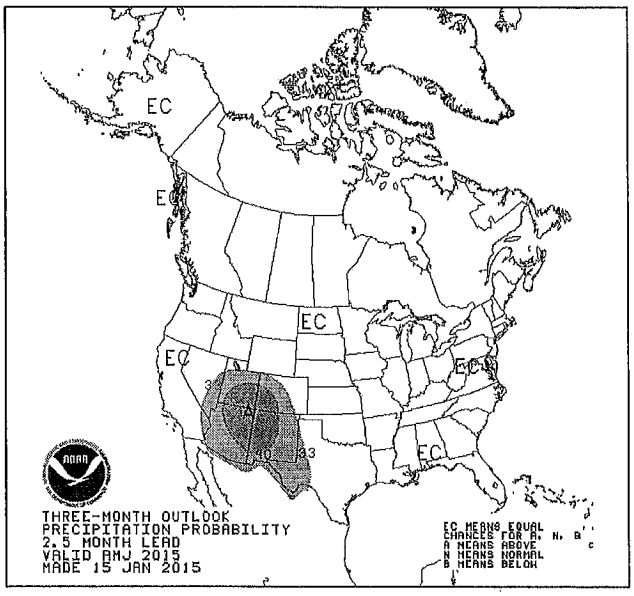

Figure 4. Three Month Outlook Precipitation Probability (January 15, 2015)

The weather forecasts do not indicate significant rainfall in the near future. Recent atmospheric and oceanic observations continue to indicate El Nino/Southern Oscillation (ENSO)-neutral conditions. The latest National Weather Service precipitation forecast indicates that precipitation across the Texas Hill Country is likely to remain normal with equal chances for above, below, or near normal precipitation.

The most recent U.S. Seasonal Drought Outlook indicates the persistence of drought conditions above Lakes Travis and Buchanan through the end of April 2015. It is not expected that precipitation will be heavy enough to cause significant drought improvement. The forecast information indicates that drought conditions will likely persist at least through the summer of 2015. This supports the need for emergency action.

Predictive Models

LCRA submitted output graphics from their stochastic short range forecast models to support their request for emergency relief. The models include storage conditions in Lakes Travis and Buchanan, evaporation, inflows, a representation of downstream conditions, customer demands, and take climate forecasts into account. The models use this data and information to calculate a large number of possible future outcomes under different conditions. The model output shows the likelihood of future conditions based on historical hydrology.

Given the current drought conditions, following the 2010 WMP would likely result in the combined storage in Lakes Travis and Buchanan dropping to 600,000 AF as early as March 2015. This is an important level under the 2010 WMP because it is the third and only remaining condition to be met before the LCRA Board may declare a DWDR. Such a declaration coupled with the duration of the current drought results in immediate reduction of LCRA's firm customers and cessation of interruptible supply.

LCRA's models indicate that even with emergency relief from the 2010 WMP in place, storage could drop to near 600,000 AF in March of 2015, which supports LCRA's request for emergency relief.

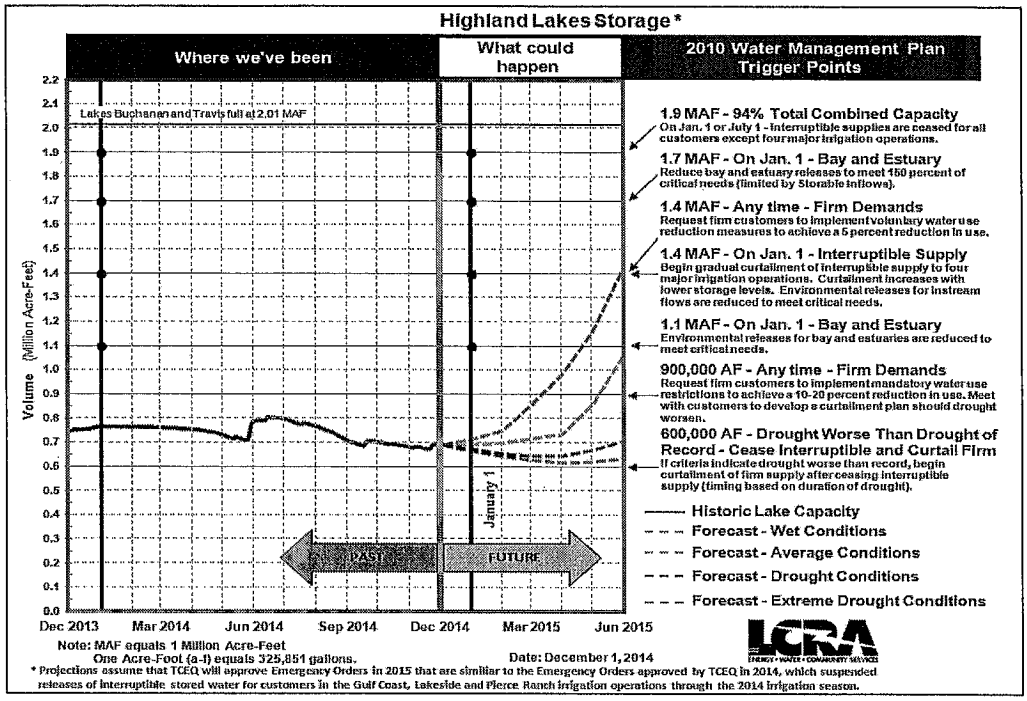

Figure 5. Combined Storage Outlook for Lakes Travis and Buchanan Assuming no Release of Interruptible Stored Water for First Crop in 2015

Figure 5. also shows what the combined storage could be under wetter conditions. However, current storage levels, recent inflows including the cumulative inflow deficit, and a weather forecast that indicates the likely persistence of drought conditions supports a more conservative approach. In addition, as of December 1, 2014, actual inflows into Lakes Buchanan and Travis have trended close to the 99th percentile exceedance trace for extended periods (See LCRA's December 23, 2014 Application, Attachment K, pg. 3).

LCRA's models include simplified accounting for water supply operations and perform the monthly mass balance accounting at three points; Lake Buchanan, Lake Travis, and Bay City. Because there are no control points between Lake Travis and Bay City, LCRA's models do not explicitly account for flow conditions at locations in the lower basin, including the amount of water that could be available from run-of-river supplies in this part of the river.

The City of Austin also submitted predictive modeling for different scenarios of emergency relief. The City's modeling used TCEQ's Water Availability Models (WAM) with options for Conditional Reliability Modeling (CRM). CRM was developed to support short-term drought management. CRM estimates the likelihood of meeting diversion and storage targets during specified time periods into the future given preceding storage levels by developing short term frequency estimates. CRM divides a long hydrologic sequence into multiple shorter sequences and repeats the simulation calculations for each sequence, starting with the same initial storage level. (See Ralph Wurbs, Water Rights Analysis Package (WRAP) Modeling System Reference Manual, TR-255, Texas Water Resources Institute, College Station, Texas, August 2013) CRM uses the same datasets as the WAM, which includes all water rights at their priority dates and specific locations along the river. Therefore, the WAM CRM simulations explicitly account for flow conditions at locations in the lower basin.

Staff reviewed the CRM modeling information submitted by the City of Austin. The results of this modeling, which includes explicit consideration of downstream streamflow conditions, track and support LCRA's stochastic modeling results (Figure 6.). Staff notes that the modeling output depicted below is based on an assumption that the lakes would recover to 1.1 MAF by March 1, 2015. The likelihood that such a recovery would occur is 7% (See LCRA's December 23, 2014 Application, Attachment K, pg. 3).

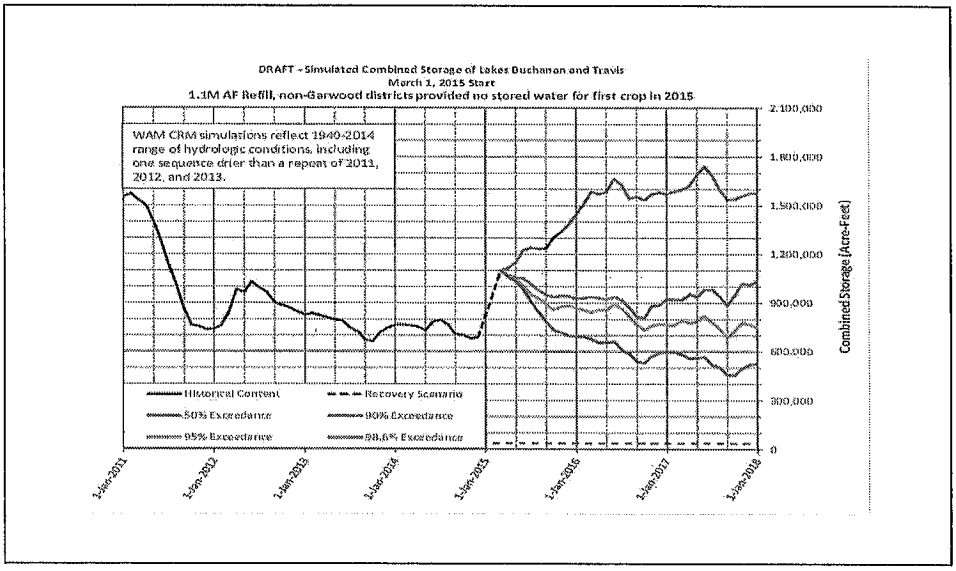

Figure 6. Recover to 1,100,000 Acre-Feet by March 1st and No Non-Garwood Supply for first crop in 2015 (Information provided by the City of Austin)

Conclusion

Based on staff review of LCRA's application, current and forecasted hydrologic conditions, and models provided by LCRA and others, staff concludes that:

- Inflows to LCRA's Highland Lakes have been extremely low for the past few years and weather forecasts do not show that significant improvement is likely;
- The current drought conditions are similar to or worse than the conditions in place when TCEQ issued its earlier orders for the 2012, 2013, and 2014 irrigation seasons;
- If water to LCRA's firm customers is reduced before arrangements for alternative supplies can be developed, LCRA will have difficulty in meeting its firm customers' water needs; hence the need for emergency relief; and
- Declaration of a drought worse than the drought of record could also limit water available for interruptible customers over the next few years because of the lake recovery provisions in the 2010 WMP. After such a declaration, stored water would only be available on an interruptible basis if inflows are high for six consecutive months or the lakes reach a combined storage of 1.4 MAF.

LCRA's affidavits contained sufficient information regarding the current and predicted continuation of drought conditions to show that conditions of emergency exist justifying granting an emergency authorization. There are no practicable alternatives to this action.