

APPLICATION OF THE
LOWER COLORADO RIVER
AUTHORITY FOR EMERGENCY
AUTHORIZATION

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BEFORE THE
TEXAS COMMISSION ON
ENVIRONMENTAL QUALITY

AFFIDAVIT OF RYAN ROWNEY

THE STATE OF TEXAS

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COUNTY OF TRAVIS

Before me, the undersigned authority, personally appeared Ryan Rowney, a person known by me to be competent and qualified in all respects to make this affidavit, who being by me first duly sworn, deposed as follows:

1. I am over 21 years of age, of sound mind, and have never been convicted of a felony or crime of moral turpitude. I am fully competent and qualified in all respects to make this affidavit.
2. The facts stated in this affidavit are within my personal knowledge and are true and correct.
3. I, Ryan Rowney, am an individual residing in Burnet, Texas.
4. A true and correct copy of my resume, detailing my prior work history, is attached hereto under Tab 1.
5. I have worked for LCRA for 31 years. For the last 31 years, I have worked in LCRA's Water Operations. My current title is Vice President, Water Operations.
6. As part of my duties at LCRA, my department provides planning services for the water utility and I am responsible for all operations within Water Operations including operations of the dams forming the Highland Lakes and operations of LCRA's Gulf Coast, Lakeside, and Garwood irrigation divisions. In addition, staff under my supervision is responsible for ensuring compliance with LCRA's instream flow and freshwater inflow obligations under the Water Management Plan.
7. My opinions stated herein are based on my familiarity with LCRA's operations, as well as my understanding of LCRA's contractual obligations to the farmers within LCRA's Garwood division and to Pierce Ranch, a wholesale interruptible irrigation customer. I also have a general familiarity with LCRA's firm customers' operations. I have also relied upon a variety of information provided to me by LCRA staff, which is of a nature typically relied upon in my profession, as described below and for which true and correct copies are either attached or referenced to other portions of LCRA's emergency request and incorporated by reference herein:

- a. Affidavit of Ron Anderson, including attachments
- b. Affidavit of Bob Rose, including attachments
- c. Affidavit of David Wheelock, including attachments
- d. Affidavit of Nora Mullarkey Miller, including attachments

8. IMPACTS OF DROUGHT ON IRRIGATION OPERATIONS.

- a. Over the past three years, LCRA has significantly cut back the water supply available to downstream irrigation customers who rely on interruptible water supplies. In 2012, 2013 and 2014, consistent with emergency relief granted by TCEQ, LCRA did not supply any water from the Highland Lakes to the Gulf Coast and Lakeside irrigation divisions. These actions preserved a significant amount of supply in lakes Buchanan and Travis. For example, if LCRA had followed the 2010 WMP in 2014, LCRA would have made available for diversion about 160,000 acre-feet of additional stored water from lakes Buchanan and Travis for the downstream irrigation operations at diversion points from the river. To make such water available, assuming an additional 20 percent would need to be released to account for delivery losses, following the 2010 could have resulted in LCRA releasing up to an additional 190,000 acre-feet in 2014.
- b. LCRA typically begins supplying water for downstream irrigation operations in March.
- c. Each of LCRA's irrigation divisions (Gulf Coast, Lakeside, and Garwood) and Pierce Ranch need to know the amount of water that will be made available to determine the amount of acreage that can be supported and to make crop choices.
- d. To the best of my knowledge, our customers have very few, if any, alternative sources of water readily available. Though some irrigation customers have drilled groundwater wells in recent years, this is not a feasible option for all customers due to various factors, such as costs, water quality or permitting issues.
- e. Management and operation of a canal system used for irrigated agriculture depends heavily on a reliable, continuous supply of water. These systems cannot be operated based on a sporadic supply of water, such as that which is available based only on run-of-river supplies. For LCRA's operations, LCRA needs to be able to operate at least one pump at each pumping facility at all times to ensure a dependable supply. Moreover, without a continuous flow of water, LCRA cannot maintain canal levels, the accuracy of water measurement would be adversely affected, and some of our customers' crops would be in jeopardy.

- f. If releases of interruptible stored water are suspended in the middle of the growing season, the farmers will likely sustain losses to their crops.
- g. It is my opinion that LCRA will be able to operate the Garwood irrigation division at some level, depending on run-of-river water, with some interruptible stored water available to Garwood consistent with LCRA's prior agreements with the Garwood Irrigation Company.
- h. Based on my experience with the irrigation operations, including under emergency orders in 2012, 2013 and 2014, it is my opinion that it is appropriate to wait to establish the amount of interruptible stored water supply based on the March 1 combined storage in lakes Buchanan and Travis for the 2014 crop year:
 - (1) LCRA has determined that it can wait until as late as March 1 to determine the amount of interruptible stored water to be made available and still provide irrigators sufficient time to make planting decisions.
 - (2) If interruptible stored water is available for diversion to the Gulf Coast, Lakeside and Pierce Ranch operations, LCRA will allocate the available interruptible stored water to the irrigation operations and work with its customers to allocate the available interruptible stored water within each irrigation operation on a pro rata basis consistent with the procedures set forth in the 2010 Water Management Plan.
- i. To conserve water and create efficiencies to maximize the amount of acreage that can be served given the limited amount of water available, LCRA has made changes to some of its contracting processes, as follows:
 - (1) If interruptible stored water is available, each irrigation division will be limited to a 145 day period for the first crop irrigation season. This fixed period will reduce the potential for canal and delivery losses.
 - (2) Deliveries of interruptible stored water to customers within a given irrigation operation will cease the earlier of: (A) 145 days from the start of deliveries within that customer's irrigation operation; (B) diversion of interruptible stored water to the customer's irrigation operation reaches that operation's allocation of interruptible stored water; (C) deliveries of water to the customer are in an amount that exceeds the acre-foot per acre duty limit specified in customer's contract; or (D) combined storage reaches 600,000 acre-feet. Rice fields requiring a longer growing season or more water will be subject to cut-off and are planted at the producers' own risk.
 - (3) During the contracting period, if interruptible stored water is available LCRA will initially only commit to providing water for first crop. If interruptible stored water becomes available for second crop, LCRA

will enter into separate contracts or contract amendments for second crop.

- (4) LCRA has established in its contracts a surcharge structure based upon the water use amount or duty (acre-feet per acre) to grow first crop. High water use will be subject to higher rates.
 - (5) LCRA requires that all privately owned laterals be cleaned to LCRA's specifications or water service will not be delivered down those laterals.
- j. If combined storage on Jan. 1, 2014 is at about the current level (about 690,000 acre-feet), the 2010 WMP requires that LCRA make available about 175,000 acre-feet for the downstream irrigation operations at diversion points from the river. To make such water available, an additional 20 percent would need to be released to account for losses in delivering water from Lake Travis to the irrigation operations. Thus for the storage levels above, the 2010 WMP could result in the need to release up to about 210,000 acre-feet of water.

9. IMPACTS OF DROUGHT ON FIRM WATER CUSTOMERS.

- a. Ensuring adequate supply for LCRA's firm customers is critical. The maximum historical annual amount of reported water use to meet firm customer demands from the firm supplies of lakes Buchanan and Travis during 2000 through 2013 was approximately 247,000 acre-feet in 2011. In addition, about 33,000 acre-feet of firm water was supplied to help meet environmental flow needs in 2011. The maximum amount of interruptible water released from lakes Buchanan and Travis during this same period occurred in 2011 and totaled about 433,000 acre-feet. The maximum total amount released or used from the Highland Lakes, about 714,000 acre-feet, occurred in 2011. In 2012, firm water use from lakes Buchanan and Travis by LCRA customers was about 148,000 acre-feet; about 31,000 acre-feet was supplied to help meet environmental flow needs; and about 9,000 acre-feet of interruptible water was supplied to farmers in the Garwood irrigation division. Total use of water from lakes Buchanan and Travis in 2012 was about 188,000 acre-feet. In 2013, water use from lakes Buchanan and Travis by LCRA's firm water customers was about 173,148 acre-feet; about 33,465 acre-feet was supplied to help meet environmental flow needs; and about 22,346 acre-feet of interruptible water was released to supply farmers in the Garwood irrigation division. Total use of water from lakes Buchanan and Travis in 2013 was about 228,959 acre-feet. Water use for 2014 is expected to be similar to 2013, with the notable exception that the amount of water supplied to help meet environmental flow needs has been lower in part due to the emergency relief granted by TCEQ in April 2014 which reduced the instream flow requirement associated with the blue sucker fish from 500 cubic feet per second to 300 cubic feet per second. That relief preserved about 17,000 acre-feet in storage in lakes Buchanan and Travis that otherwise would have been released.

- b. Under permits that allowed LCRA to use its downstream Gulf Coast water right to meet some needs of LCRA firm water customers downstream of the Highland Lakes, LCRA was able to divert about 7,000 acre-feet and 1,000 acre-feet in 2012 and 2013 respectively. Under a permanent amendment to the Gulf Coast water right, LCRA was also available to divert for industrial customers located in the Gulf Coast canal system about 9,800 acre-feet and 10,200 acre-feet in 2012 and 2013 respectively.
- c. Until earlier this year, LCRA owned four water treatment plants whose raw water supply is Lake Travis or Lake Buchanan as noted in Table 1

**Table 1. Water Treatment Plants Previously Owned by LCRA
Supplied from Lakes Buchanan or Travis**

| System Name | Intake Location | Estimated Population Served | Service Area |
|------------------------------|-----------------|-----------------------------|---|
| Paradise Point Water System | Lake Buchanan | 350 | Paradise Point |
| Lake Buchanan Water System | Lake Buchanan | 1,410 | Service area around the south and west sides of Lake Buchanan |
| Smithwick Mills Water System | Lake Travis | 160 | Smithwick Mills |
| Ridge Harbor Water System | Lake Travis | 400 | Ridge Harbor |

- d. LCRA also owned the Spicewood Beach Water System. This system had relied on groundwater influenced by the water levels in Lake Travis. As a result of the low lake levels, the production of the groundwater wells had diminished significantly and the system is now supplied with surface water from Lake Travis.
- e. Based on my knowledge of the treatment systems in and around lakes Buchanan and Travis, these systems are representative of the types of potable water systems that obtain raw water from the lakes.
- f. LCRA has 18 customers that currently take raw water for municipal purposes from Lake Travis. I reviewed information maintained by LCRA that identifies what LCRA believes to be the elevations of our customers' intake structures. The depth of those intakes ranges from about 545 feet mean sea level (msl) to 645 feet msl on Lake Travis.
- g. If the levels in Lake Travis or Lake Buchanan drop below the current lowest pumping elevations, temporary measures would likely need to be taken by

LCRA's raw water customers to extend their intake facilities to reach water at lower elevations. It is my understanding that firm customers are actively spending or planning to spend funds to allow their intakes to operate at lower elevations.

- h. Based on this information, it is my opinion that the current drought presents an imminent threat to public health and safety for several of LCRA's raw water customers if the lake levels or releases drop more quickly than arrangements for alternative intakes or supplies can be implemented.

10. IMPACT OF DROUGHT ON HIGHLAND LAKES INFLOWS.

- a. Inflows to the Highland Lakes over the past several years are among the lowest on record. The average annual inflows over the past six years, from 2008 through 2013, have been about 416,336 acre-feet per year, or about 33.8 percent of the long-term average from 1942 through 2013.
- b. Shown in Table 2 is a comparison of the lowest ten years of gauged inflows into lakes Buchanan and Travis with the 2014 year-to-date inflows through November and the average annual inflows since 1942. Inflows for 2011 into the lakes were the lowest annual inflows on record, about 10% of average inflows. Calendar years 2008, 2009, 2011, 2012 and 2013 are all among the lowest 10 years of inflows to the Highland Lakes and 2014 is on pace to be among the three lowest on record. Inflows from just one year from the historic Drought of Record (1950) fall within the 10 years of lowest inflows.

**Table 2. Ten Lowest Annual Inflows into the Highland Lakes
(acre-feet per calendar year)**

| Year | Amount |
|---------------------|--------------|
| 2014 (Jan.-Nov.) | 197,339 |
| 2011 | 127,802 |
| 2013 | 215,138 |
| 2008 | 284,462 |
| 2006 | 285,229 |
| 1963 | 392,589 |
| 2012 | 393,163 |
| 1983 | 433,312 |
| 1999 | 448,162 |
| 2009 | 499,732 |
| 1950 | 501,926 |
| Average (1942-2013) | 1.23 million |

- c. The total combined storage in lakes Buchanan and Travis on December 1, 2014 was the lowest combined storage on December 1 since the reservoirs

were constructed, lower than on December 1 in any of the previous three years as shown in Table 3.

Table 3. Recent December 1 Combined Storage Levels

| Year | Combined Storage in Lakes Buchanan and Travis on December 1 (acre-feet) |
|-------------|--|
| 2011 | 736,046 |
| 2012 | 845,060 |
| 2013 | 746,279 |
| 2014 | 691,132 |

- d. Monthly inflows have been below average in 54 of the past 55 months as shown in Table 4.

**Table 4. Monthly Inflows to Lakes Buchanan and Travis
from May 2010 to November 2014**

| Month | Inflows (acre-feet) | Percent of Monthly Average | Month | Inflows (acre-feet) | Percent of Monthly Average |
|--------------|--------------------------------|---|--------------|--------------------------------|---|
| May 2010 | 95,821 | 47.2% | Sept 2012 | 12,006 | 11.8% |
| June 2010 | 33,517 | 20.6% | Oct 2012 | 19,338 | 16.0% |
| July 2010 | 59,905 | 70.6% | Nov 2012 | 6,042 | 8.7% |
| Aug 2010 | 10,783 | 17.0% | Dec 2012 | 6,854 | 10.0% |
| Sept 2010 | 86,952 | 85.7% | Jan 2013 | 15,117 | 23.3% |
| Oct 2010 | 14,385 | 11.9% | Feb 2013 | 8,792 | 10.4% |
| Nov 2010 | 13,899 | 20.0% | Mar 2013 | 10,741 | 11.9% |
| Dec 2010 | 16,845 | 24.7% | Apr 2013 | 11,127 | 10.7% |
| Jan 2011 | 21,158 | 32.6% | May 2013 | 29,265 | 14.4% |
| Feb 2011 | 16,306 | 19.3% | June 2013 | 5,608 | 3.4% |
| Mar 2011 | 13,811 | 15.3% | July 2013 | 17,423 | 20.5% |
| Apr 2011 | 9,175 | 8.9% | Aug 2013 | 1,593 | 2.5% |
| May 2011 | 11,182 | 5.5% | Sept 2013 | 30,161 | 29.7% |
| June 2011 | 1,340 | 0.8% | Oct 2013 | 48,444 | 40.1% |
| July 2011 | 734 | 0.9% | Nov 2013 | 18,092 | 26.1% |
| Aug 2011 | 403 | 0.6% | Dec 2013 | 18,775 | 27.5% |
| Sept 2011 | 922 | 0.9% | Jan 2014 | 12,270 | 18.9% |
| Oct 2011 | 29,927 | 24.8% | Feb 2014 | 9,505 | 11.2% |
| Nov 2011 | 6,874 | 9.9% | Mar 2014 | 8,376 | 9.3% |
| Dec 2011 | 15,969 | 23.4% | Apr 2014 | 6,183 | 6.0% |
| Jan 2012 | 35,178 | 54.2% | May 2014 | 74,274 | 36.6% |
| Feb 2012 | 74,699 | 88.2% | June 2014 | 23,542 | 14.5% |
| Mar 2012 | 112,517 | 124.7% | July 2014 | 13,893 | 16.4% |
| Apr 2012 | 19,477 | 18.8% | Aug 2014 | 4,478 | 7.1% |
| May 2012 | 83,699 | 41.2% | Sept 2014 | 12,180 | 12.0% |
| June 2012 | 12,599 | 7.7% | Oct 2014 | 9,242 | 7.7% |
| July 2012 | 8,712 | 10.3% | Nov 2014 | 23,396 | 33.7% |
| Aug 2012 | 2,041 | 3.2% | | | |

- e. Additionally, the inflows in the current drought over periods ranging from 12 months to 84 months are lower than lowest such periods within the historical Drought of Record as shown in Table 5.

Table 5. Comparison of inflows in current drought to Drought of Record

| Time Period | Lowest inflows for time period in ongoing drought | | Lowest inflows for time period in 1950s Drought of Record | |
|-------------|---|---------------------|---|---------------------|
| | Period ending | Inflows (acre-feet) | Period ending | Inflows (acre-feet) |
| 12 months | Sept. 2011 | 120,160 | Apr. 1951 | 408,784 |
| 24 months | May 2014 | 393,337 | Mar. 1952 | 1,006,681 |
| 36 months | Sept. 2013 | 695,920 | Aug. 1952 | 1,636,088 |
| 48 months | Oct. 2014 | 940,789 | Aug. 1952 | 3,035,846 |
| 60 months | Nov. 2014 | 1,952,879 | Aug. 1952 | 4,128,806 |
| 72 months | Apr. 2014 | 2,374,126 | Apr. 1955 | 5,193,016 |
| 84 months | Nov. 2014 | 2,738,953 | Aug. 1952 | 6,050,804 |

- f. As a result of extremely low inflows into the lakes, record high temperatures, high evaporation rates, and higher than anticipated interruptible demands, the combined storage in the lakes dropped significantly in 2011, and in a very short timeframe. In 2012, 2013, and 2014 even with interruptible stored water cut off from the Gulf Coast, Lakeside and Pierce Ranch irrigation divisions, the lake levels have not recovered. (See Tab 2.) The combined storage in lakes Buchanan and Travis fell to the lowest level in the current drought, 637,123 acre-feet or 31.7 percent capacity on Sept. 19, 2013. As of December 1, 2014, combined storage was 691,132 acre-feet or 34 percent capacity. The last time both lakes Buchanan and Travis were simultaneously at their maximum allowable conservation storage was February 13, 2005.
- g. Recent low inflows to the Highland Lakes even with widespread rain events are symptomatic of the drought's severity which has included dry soils that absorb most of the rainfall that does occur.
- (1) Heavy, widespread rainfall in the Llano River and San Saba River watersheds above the Highland Lakes on Sept. 19 and 20, 2013 averaged two to three inches, with some rain gages reporting totals as high as six or seven inches. (See Affidavit of Bob Rose.) However, this rain event only yielded approximately 24,000 acre-feet of inflow to the lakes.
 - (2) A widespread, light to moderate intensity rain event on November 4, 5 and 6, 2014 included rainfall totals averaging two to three inches above the Highland Lakes but only yielded about 4,000 acre-feet of inflow to the lakes. (See Affidavit of Bob Rose.)

- (3) An rain event on November 21 and 22, 2014 included rainfall totals averaging one to three inches above the Highland Lakes but only yielded about 17,000 acre-feet of inflow to the lakes. (See Affidavit of Bob Rose.)
- (4) By comparison, an event in March 2007 with two to four inches of widespread moderate to heavy rainfall yielded almost 100,000 acre-feet of inflows to lakes Buchanan and Travis. A later event in March 2007 with another two to four inches of widespread moderate to heavy rainfall produced about 275,000 acre-feet of inflows to the lakes. (See Affidavit of Bob Rose.)
- h. Two large rain events occurred in the lower Colorado River Basin watershed in October 2013. However the majority of rainfall and runoff occurred below the watersheds of lakes Buchanan and Travis. Gauged inflows to lakes Buchanan and Travis for October and November totaled about 69,000 acre-feet, as compared to flow that originated downstream and went past Bay City, totaling 355,000 acre-feet for those two months.

11. EVAPORATION FROM THE HIGHLAND LAKES

- a. Annual evaporation from the six Highland Lakes (lakes Buchanan, Inks, LBJ, Marble Falls, Travis and Austin) during 2010, 2011, 2012 and 2013 are presented below:

| Year | Total Evaporative Loss (acre-feet per year) |
|-------------|--|
| 2010 | 183,923 |
| 2011 | 192,404 |
| 2012 | 144,759 |
| 2013 | 120,899 |

12. LCRA’S RELEASES FOR INSTREAM FLOW NEEDS

- a. The 2010 Water Management Plan includes an obligation to make storable inflows and previously stored water from lakes Buchanan and Travis available to help meet instream flow needs below Lady Bird Lake. The current obligation is to maintain instream flows of 120 cubic feet per second (cfs), with a six-week requirement of 500 cfs, from Bastrop to Eagle Lake. (See 2010 Water Management Plan at 2-17, 4-12.)
- b. In 2012, LCRA released 31,285 acre-feet of water from lakes Buchanan and Travis for environmental flow needs. This included 28,235 acre-feet to meet instream flow obligations and 3,050 acre-feet to meet bay and estuary inflow obligations. Of the 28,235 acre-feet for instream flow obligations, 22,991 acre-feet was released to meet the 500 cfs requirement.

- c. In 2013, LCRA released 33,465 acre-feet of water from lakes Buchanan and Travis for environmental flow needs. This included 18,779 acre-feet to meet instream flow obligations and 14,686 acre-feet to meet bay and estuary inflow obligations. Of the 18,779 acre-feet for instream flow obligations, 15,678 acre-feet was released to meet the 500 cfs requirement.
 - d. In 2014, LCRA obtained emergency relief from TCEQ which reduced the required flow for the blue sucker from 500 cfs to 300 cfs. In 2014 through November, LCRA has released about 4,600 acre-feet of water from lakes Buchanan and Travis for environmental flow needs. This includes about 4,400 acre-feet to meet instream flow obligations and about 200 acre-feet to meet bay and estuary inflow obligations. The amount released for instream flow obligations was all released to meet the 300 cfs requirement. If the requirement had been 500 cfs, about 17,000 acre-feet of additional water would have been released.
 - e. A 500 cfs requirement for the Blue Sucker in 2015 could result in a release of up to about 21,000 acre-feet if conditions are similar to the past three years. Reducing the requirement to 300 cfs could reduce the amount released by about 17,000 acre-feet.
 - f. The 2010 WMP includes annual and multi-year caps on the amount of firm water to be made available for instream flow needs. The one year cap is 51,100 acre-feet; the two year cap is 85,700 acre-feet; the three year cap is 114,200 acre-feet; and the four year cap is 147,700 acre-feet. (See 2010 WMP at 3-5.) Based on the amount of dedicated releases for instream flows in 2012 and 2013, and estimated for 2014, the operative cap is the one year cap.
13. EFFICIENCY IMPROVEMENTS. In 2012, LCRA implemented process improvements that have improved the efficiency of releases from the Highland Lakes for downstream water needs. These include: 1) a smaller increment of instantaneous releases from Tom Miller Dam, which allows for more precisely meeting instream flow requirements as well as other demands; and 2) improvements to models and procedures for determining the downstream demand and the estimated amount of flows originating downstream.
14. It is my opinion that the current drought continues to present an imminent threat to public health and safety because the lake levels could drop more quickly than arrangements can be made to extend intakes or obtain alternate water supplies. In light of the ongoing drought conditions and lack of recovery in the Highland Lakes, it is my opinion that it is prudent to seek relief from the provisions of the 2010 WMP regarding releases of interruptible stored water for downstream irrigation customers and to reduce the instream flow requirement for the Blue Sucker from 500 cfs to 300 cfs.


Further affiant sayeth not.



RYAN ROWNEY, AFFIANT

SWORN TO AND SUBSCRIBED before me on the 19th day of
December, 2014.





Notary Public in and for the State of Texas

My Commission Expires: 1-11-2018

Ryan B. Rowney
P.O. Box 220
Austin, TX 78767
(512)730-6874

EXPERIENCE

LOWER COLORADO RIVER AUTHORITY, Austin, TX

October 1983 to Present

Vice President, Water Operations (Sept. 2011 to Present)

Responsible for all areas of Water Operations including Hydro Operations, Irrigation Operations, River Operations, Water and Wastewater Operations, Water Surface Management and Water Customer Support. Provides safety oversight for Water Operations and reports directly to the Executive Vice President of Water.

Responsible for the operations and maintenance of LCRA's six dam and 13 hydroelectric (hydro) generation units, 1,100 miles of irrigation canals, nine irrigation pump stations, LCRA's system of rain and stream gauges, and LCRA water and wastewater systems.

Responsible for the development and reporting of drought and lake conditions to the General Manager and the LCRA Board of Directors on a monthly basis.

Manager of Dam & Hydroelectric Operations (Mar. 2004 to Sept. 2011)

Operate and maintain LCRA's network of dam and hydro generating assets while providing leadership and direction to staff. Manage flood operations. Develop strategic and operating goals and objectives in line with LCRA's overall goals and objectives. Ensure adherence to safety procedures and policies. Provide leadership and direction to dam and hydro related utility maintenance activities.

Superintendent of Dam & Hydroelectric Operations (May 2001 to Mar. 2004)

Supervise, coordinate and direct activities of dam and hydro staff. Act as liaison with the LCRA River Operations Center (ROC), LCRA Generation Desk (GenDesk) and LCRA System Operations Control Center (SOCC) to ensure the most efficient use of Hydro unit operations and flood management. Supervise the overall maintenance of the six Highland Lakes dams, the Lometa reservoir and pump station, thirteen hydroelectric turbine generators and all WWW treatment plants and associated water lines. Supervise the overall maintenance of all LCRA floodgates and related equipment.

Area Supervisor, Wirtz and Starcke Dams (Feb. 1997 to May 2001)

Supervise, coordinate and direct overall activities of staff responsible for monitoring and operating all LCRA dams and hydro generators. Lead and ensure communication and coordination of work activities with LCRA's Generation Desk (GenDesk) and the River Operations Center (ROC) to meet generation demand load requirements. Lead and ensure communication and coordination with the ROC to manage the lake levels of the six Highland Lakes, during normal, emergency and flood conditions.

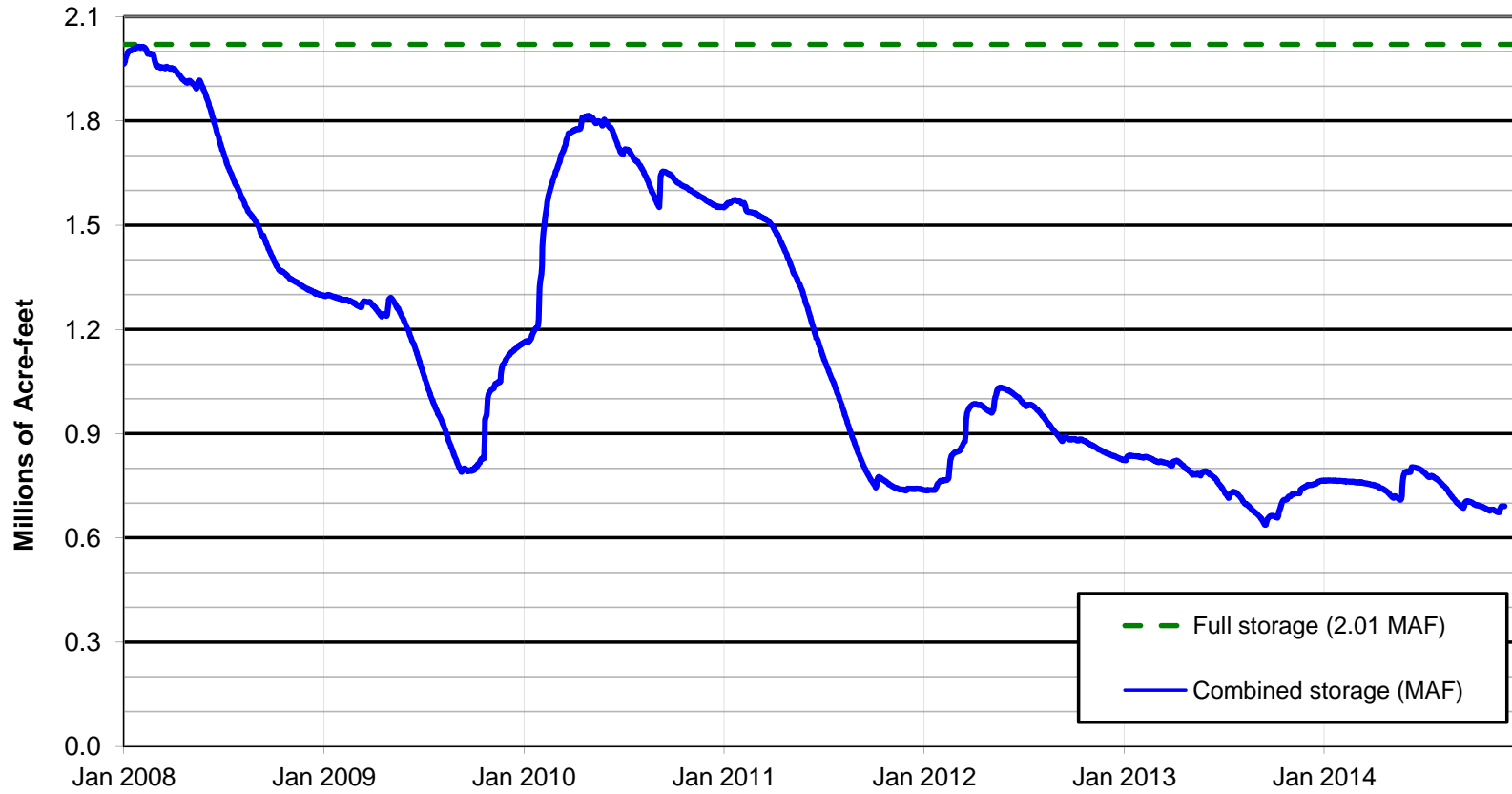
Planner / Scheduler, Dam & Hydroelectric Operations (Aug. 1994 to Feb. 1997)

Develop and maintain departmental work plan and project schedules, time and cost estimates, work orders, work authorizations, requisitions, bid evaluations, pertinent records and logs, including ProCard documentation.

Electrician, Dam & Hydroelectric Operations (Oct. 1983 to Aug. 1994)

Responsible for repair, installation, replacement and testing electrical circuits, equipment and appliances in a facilities or other non-energy services environment. Isolate defects in wiring, switches, motors and other electrical equipment using testing instrument. Replace faulty switches, sockets and other elements of electrical systems. Dismantle electrical machinery and replaces defective electrical or mechanical parts such as gears, brushes and armatures. Mount motors, transformers and lighting fixtures into position and completes circuits according to diagram specifications.

Total Combined Storage in Lakes Buchanan and Travis



January 1, 2008 to December 1, 2014