

Volumetric and Sedimentation Survey of LAKE TRAVIS

April – July 2008 Survey



Prepared by:

The Texas Water Development Board

May 2009

Texas Water Development Board

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Prepared for:

Lower Colorado River Authority

With Assistance provided by:

U.S. Army Corps of Engineers, Fort Worth District

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Executive Summary

In February of 2008, the Texas Water Development Board (TWDB) entered into agreement with the U.S. Army Corps of Engineers, Fort Worth District, for the purpose of performing a volumetric and sedimentation survey of Lake Travis. The U.S. Army Corps of Engineers, Fort Worth District, contributed 50 percent of the funding for this survey through their Planning Assistance to States Program, while the Lower Colorado River Authority (LCRA) contributed the remaining 50 percent. This survey was performed using a multi-frequency (200 kHz, 50 kHz, and 24 kHz) sub-bottom profiling depth sounder. In addition, sediment core samples were collected at selected locations and used in interpreting the depth sounder signal returns to derive sediment accumulation estimates.

Lake Travis is located on the Colorado River 13 miles northwest of Austin, Texas. The lake is owned and managed by the LCRA and is considered full at elevation 681.6 feet (NAVD88).¹ TWDB conducted the Lake Travis survey between April 22, 2008 and July 18, 2008, while the water surface elevation ranged between 680.7 feet (NAVD88) and 665.6 feet (NAVD88). To augment the survey data collected by TWDB, the LCRA provided high-resolution LiDAR data collected on January 7, 2007 when the water surface elevation in Lake Travis was approximately 645.1 feet (NAVD88). Reservoir capacities were computed based on a combination of the TWDB survey data, TWDB interpolated data, and LiDAR data.

The results of the TWDB 2008 Volumetric Survey indicate Lake Travis has a total reservoir capacity of 1,134,863 acre-feet and encompasses 19,199 acres at conservation pool elevation (681.6 feet NAVD88). Due to differences in the methodologies used in calculating areas and capacities from this 2008 survey and previous Lake Travis surveys, comparison of these values is not recommended. The TWDB considers the 2008 survey to be a significant improvement over previous surveys and recommends that a similar methodology be used to resurvey Lake Travis in approximately 10 years or after a major flood event.

The results of the TWDB 2008 Sedimentation Survey indicate Lake Travis has accumulated 16,974 acre-feet of sediment since impoundment. Based on this measured sediment volume and assuming a constant sediment accumulation rate, Lake Travis loses approximately 250 acre-feet of capacity per year. The thickest sediment deposits are in the submerged river channel throughout the main lake body. The maximum sediment thickness observed in Lake Travis was 7.1 feet.

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Lake Travis General Information

With recurring drought and devastating flooding, early-day residents of Central Texas recognized the value of building dams on the Colorado River. Through the passage of the LCRA Act by the Texas Legislature in 1934, the Lower Colorado River Authority (LCRA) was established as a “conservation and reclamation district” responsible for harnessing the Colorado River and its tributaries and making them productive for the people within its water service area. By 1951, the Lower Colorado River Authority had completed six dams on the Colorado River. The string of lakes is known as the Highland Lakes, and includes (from upstream to downstream) Lake Buchanan, Inks Lake, Lake Lyndon Baines Johnson (LBJ), Lake Marble Falls, Lake Travis, and Lake Austin. All of these lakes are owned and operated by the LCRA with the exception of Lake Austin, which is owned by the City of Austin but operated by the Lower Colorado River Authority.² The Lower Colorado River Authority’s service area originally consisted of the ten counties that comprise the watershed of the lower Colorado River: Blanco, Burnet, Fayette, Colorado, Llano, Travis, Bastrop, Wharton, San Saba, and Matagorda. Several amendments to the LCRA Act expanded the service area to its current extent (Figure 1).

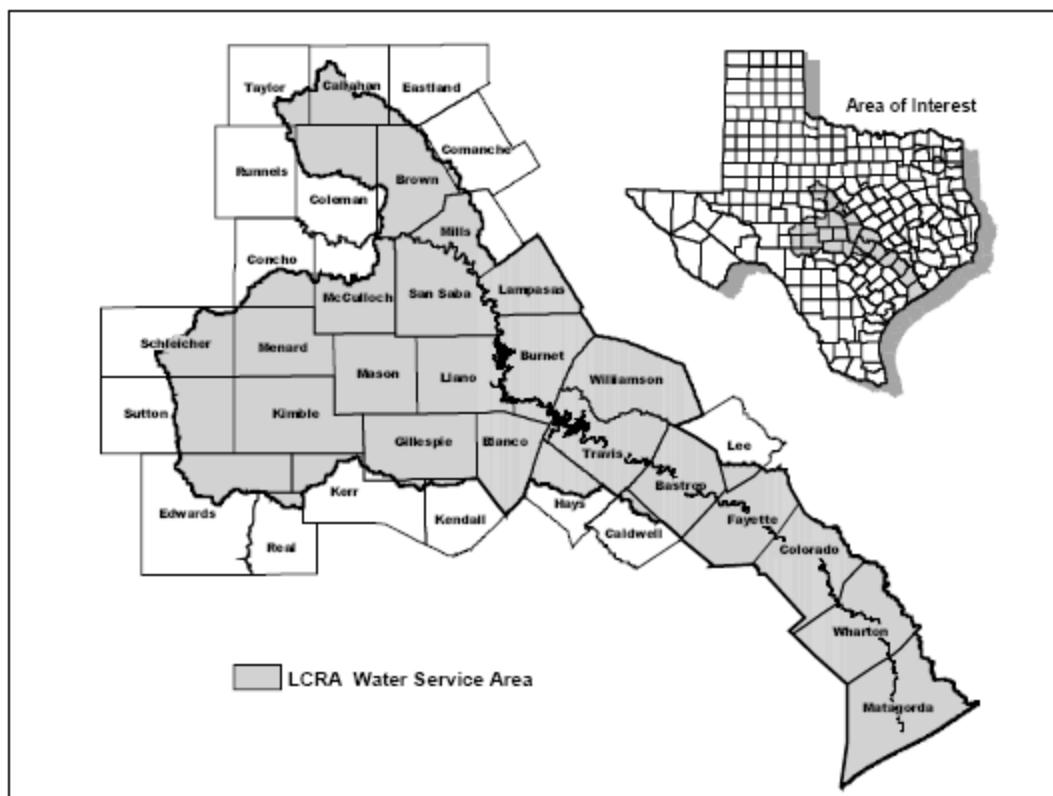


Figure 1. Lower Colorado River Authority Water Service Areas as of January 1, 2003.
Source: Lower Colorado River Authority Water Management Plan 2003³.

The Lower Colorado River Authority operates the Highland Lakes as a system. Lakes Buchanan and Travis are water storage reservoirs, while Inks Lake, Lake LBJ, Lake Marble Falls, and Lake Austin are pass-through reservoirs. Lake Travis is the only lake in the system truly designed for flood control purposes, and can store up to 260 billion gallons of floodwaters, preventing downstream destruction.^{3,4}

The Lower Colorado River Authority maintains a Water Management Plan³ as a blueprint for how it will operate the Highland Lakes System. Water availability is based on the “combined firm yield” of Lakes Buchanan and Travis. The combined firm yield is the annual dependable water supply that can be obtained from Lakes Buchanan and Travis during a repetition of the drought of record. Any water available for use in excess of the combined firm yield is considered interruptible water, is used mainly for irrigation, and is sold on an interruptible basis subject to annual availability. Availability of interruptible water is projected by the Lower Colorado River Authority each November. The projected supply depends on the amount of expected combined water storage in Lakes Buchanan and Travis on January 1, anticipated inflows for the subsequent months through the irrigation season, and the current demands for firm water.³

The Water Management Plan and a system-operations approach to their water rights and reservoirs allows the Lower Colorado River Authority to optimize and conserve available water to meet existing and future water needs while being a steward of the water and land of the lower Colorado River.⁵ The complete Lower Colorado River Authority Water Management Plan is available through the Lower Colorado River Authority website at <http://www.lcra.org/water/wmp.html>.

Mansfield Dam, which impounds Lake Travis, is built across a deep canyon of the Colorado River at Marshall Ford. The site was once a river crossing and settlement and is located 13 miles northwest of Austin, Texas (Figure 2). Originally the dam was named Marshall Ford Dam, but in 1941 it was renamed for U.S. Rep. J.J. Mansfield, who assisted in the project’s development.⁴ Construction of the dam began on February 19, 1937. Deliberate impoundment began on September 9, 1940, and the dam was completed in May of 1942.⁶ The first power production unit began operation on January 27, 1941.⁶ Lake Travis is considered full at elevation 681.6 feet (NAVD88),¹ and its normal operating range is at or below 681.6 feet (NAVD88).⁴ Additional pertinent data about Mansfield Dam and Lake Travis can be found in Table 1.^{3,4}

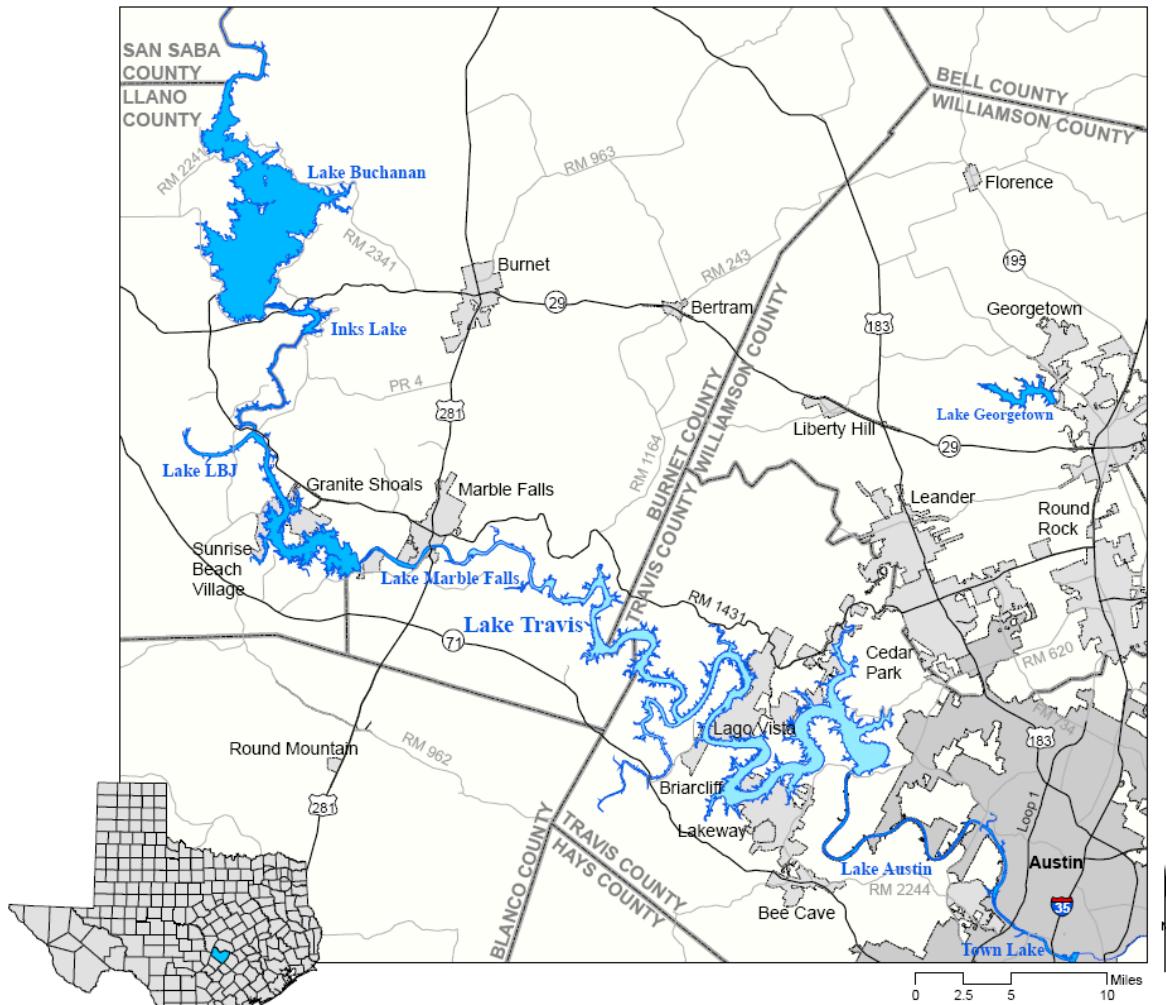


Figure 2. Location of Lake Travis relative to the other lakes in the Highland Lakes System.

Table 1: Pertinent Data for Mansfield Dam and Lake Travis

Owner: Lower Colorado River Authority

Engineer: (Design): U.S. Bureau of Reclamation for the flood control and conservation features, Lower Colorado River Authority for the power generating features.

Location: On the Colorado River in Travis County, 13 miles northwest of Austin, 318 river miles from the Gulf of Mexico.

Drainage Area: 38,130 square miles; Runoff is partly regulated by upstream storage.

Dam:

Type	Concrete gravity, earth and rock fill
Length	7,098 feet
Height to roadway	266 feet
Top Width	20 feet
Roadway Width	28.5 feet

Spillway:

Type	Concrete ogee
Length (net)	700 feet
Crest Elevation	714.7 feet (NAVD88)**
Control	None

Outlet Works:

Type	8.5-foot diameter conduits
Number	24
Control	Double gated ring-follower type gates
Invert Elevation	536.5 feet (NAVD88)**

Power Features: Three units with a total generating capacity of 85,000 kw

*** Elevations converted to NAVD88 datum*

Water Rights

The Lower Colorado River Authority was granted the water rights for Lake Travis through Certificate of Adjudication No. 14-5482 and its amendments. A brief summary of each follows. The complete certificates are on file in the Records Department of the Texas Commission on Environmental Quality.

Certificate of Adjudication: 14-5482 Priority Dates: March 29, 1926 and March 7, 1938

This certificate authorizes the Lower Colorado River Authority to maintain an existing dam and reservoir (Mansfield Dam and Lake Travis) and impound therein a maximum of 1,170,752 acre-feet of water. The owner may use the water for recreational purposes, as well as divert and use a maximum of 1,500,000 acre-feet of water per annum from Lakes Travis and Buchanan for municipal, industrial, irrigation, and mining purposes.

Amendment to Certificate of Adjudication: 14-5482A Granted: September 7, 1989

This amendment authorizes the Lower Colorado River Authority to use the water authorized for diversion and use for the purposes of municipal, industrial, irrigation, and mining uses, to also be diverted, used, and released from Lake Travis for domestic, recreation, instream flows, and bay/estuary purposes. The owner is also required to follow the provisions of the Water Management Plan as approved by Order of the Commission on September 7, 1989, and the terms and conditions of that Order.

Amendment to Certificate of Adjudication: 14-5482B Granted: February 21, 1990

This amendment authorizes the Lower Colorado River Authority to divert, use, and release water in Lake Travis for livestock and recharge purposes. This authorization is in addition to the authorization specified in amendment 14-5482A. .

Amendment to Certificate of Adjudication: 14-5482C Granted: October 9, 1991

This amendment authorizes the Lower Colorado River Authority to divert and use 1,470 acre-feet of water per annum for industrial and irrigation purposes at the owner's proposed office complex. The diversion point location is specified as the eastern end of Tom Miller Dam and a maximum diversion rate of 4.0 cubic feet per second is specified.

Volumetric and Sedimentation Survey of Lake Travis

The Texas Water Development Board (TWDB) Hydrographic Survey Program was authorized by the state legislature in 1991. The Texas Water Code authorizes TWDB to perform surveys to determine reservoir storage capacity, sedimentation levels, rates of sedimentation, and projected water supply availability.

In February of 2008, the Texas Water Development Board (TWDB) entered into agreement with the U.S. Army Corps of Engineers, Fort Worth District, for the purpose of performing a volumetric and sedimentation survey of Lake Travis. The U.S. Army Corps of Engineers, Fort Worth District, contributed 50 percent of the funding for this survey through their Planning Assistance to States Program, while the Lower Colorado River Authority (LCRA) contributed the remaining 50 percent. This survey was performed using a Specialty Devices, Inc. multi-frequency (200 kHz, 50 kHz, and 24 kHz) sub-bottom profiling depth sounder. In addition, sediment core samples were collected at selected locations and used in interpreting the depth sounder signal returns to derive sediment accumulation estimates. This report presents the results of the Lake Travis volumetric and sedimentation survey.

To augment the survey data collected by TWDB, the Lower Colorado River Authority provided high-resolution LiDAR data, collected on January 7, 2007 when the water surface elevation in Lake Travis was approximately 645.1 feet (NAVD88). Reservoir capacities were computed based on a combination of the TWDB survey data, TWDB interpolated data, and the LiDAR data.

Datum

The vertical datum used during this survey is North American Vertical Datum 1988 (NAVD 88), as requested by the LCRA. Water surface elevations cited in this report were obtained from the United States Geological Survey (USGS) for the reservoir elevation gage TX071 08154500 LCRA Lake Travis nr Austin, TX.⁷ The datum for this gage is reported as 700 feet above mean sea level per the National Geodetic Vertical Datum 1929 (NGVD 29), which is 0.6 feet below the NAVD88 datum as determined by LCRA.¹ **Water surface elevations reported here were derived by adding 0.6 feet to the elevations recorded at the USGS gage TX071 08154500.** This datum conversion is

only valid for water levels recorded at Mansfield Dam. The horizontal datum used for this report is the North American Datum of 1983 (NAD83), and the horizontal coordinate system is State Plane Texas Central Zone (feet).

TWDB Bathymetric Data Collection

Bathymetric data collection for Lake Travis occurred between April 22 and July 18 of 2008. During the time data was collected the water surface elevation in Lake Travis decreased from 680.7 feet (NAVD88) to 665.1 feet (NAVD88). The conservation pool elevation (CPE) for Lake Travis is 681.6 feet (NAVD88). Data collection began in the upper reaches of the lake near Starke Dam before decreasing water levels made portions of the reservoir inaccessible.

For data collection, TWDB used a Specialty Devices, Inc. multi-frequency (200 kHz, 50 kHz, and 24 kHz) sub-bottom profiling depth sounder integrated with Differential Global Positioning System (DGPS) equipment. Data collection occurred while navigating along pre-planned range lines oriented perpendicular to the assumed location of the original river channels and spaced approximately 500 feet apart. The depth sounder was calibrated daily using a velocity profiler to measure the speed of sound in the water column and a weighted tape or stadia rod for depth reading verification. During the 2008 survey, team members collected nearly 340,000 data points over cross-sections totaling nearly 511 miles in length. Figure 3 shows where data points were collected during the TWDB 2008 survey.

Data Processing

Upon completion of data collection, the raw data files collected by TWDB were edited using HydroEdit and DepthPic to remove any data anomalies. HydroEdit is used to automate the editing of the 200 kHz frequency and determine the current bathymetric surface. DepthPic is used to display, interpret, and edit the multi-frequency data and to manually interpret the pre-impoundment surface. The water surface elevations at the times of each sounding are used to convert sounding depths to corresponding bathymetric elevations. For processing outside of DepthPic, the sounding coordinates (X,Y,Z) are exported as a MASS points file. A similar MASS points file was created from the LCRA-provided LiDAR data. TWDB also created a MASS points file of interpolated data located

in-between surveyed cross sections. This points file is described in the section entitled “Self-Similar Interpolation.”

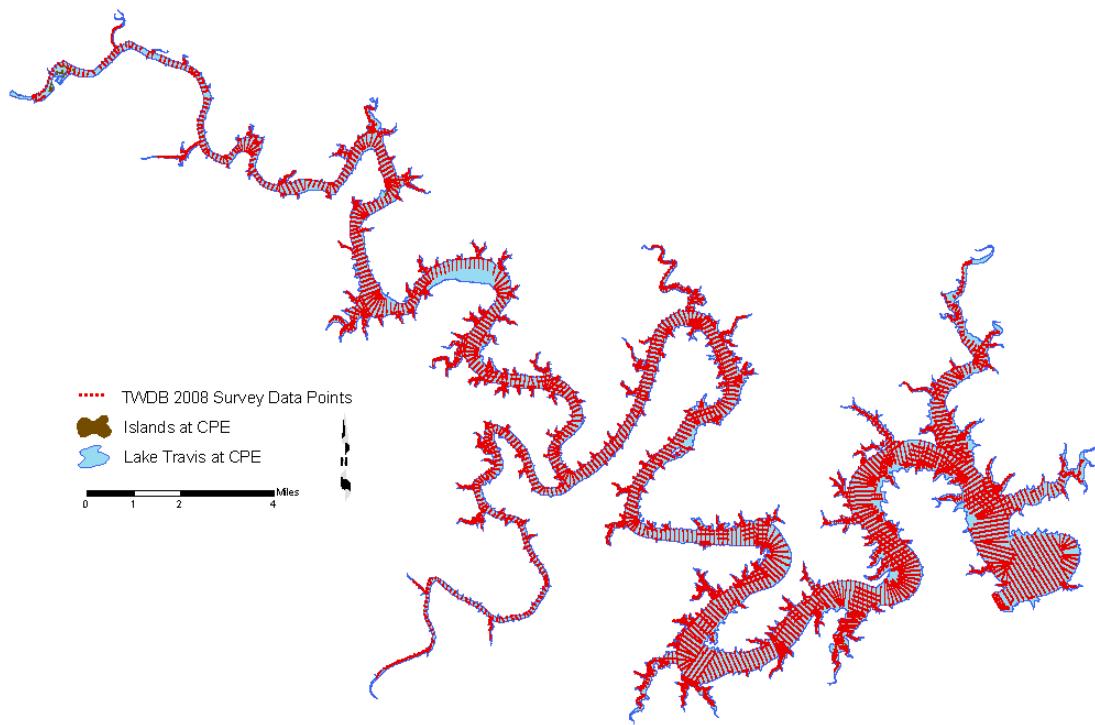


Figure 3 – Sounding data collected during the 2008 Lake Travis survey

Surface Modeling - Triangular Irregular Network (TIN) Models

To create a surface representation of Lake Travis and its vicinity, the 3D Analyst Extension of ArcGIS (ESRI, Inc.) is used. This extension creates a triangulated irregular network (TIN) model of the surface, where each MASS point and boundary node becomes the vertex of a triangular portion of the surface.⁸ From the TIN model, surface areas and capacities are computed using ArcInfo scripts developed by TWDB.

At the request of the LCRA, surface areas and capacities were calculated to elevation 745 feet (NAVD88), or 63.4 feet above CPE. In order to estimate surface areas and capacities above and below CPE, four surface models were developed. The “bathymetric” TIN model describes only the land surface with elevations below CPE within the area of Lake Travis when the water level is at CPE. The three “topographic” TIN models describe only the land surface outside of Lake Travis when the water level is

at CPE. Multiple TIN models were needed to accurately describe the vicinity of Lake Travis due to the large amounts of LiDAR data, TWDB survey data, and TWDB interpolated data included in this analysis.

The topographic TIN models were each derived from over 14 million LiDAR data points located outside of the boundary of the bathymetric TIN model or on islands within the bathymetric TIN model. These data points are a subset of the entire LiDAR data points available outside of the bathymetric TIN model boundary, as the entire LiDAR dataset (42 million points) may not be incorporated into a single ArcGIS TIN model. Subsets of LiDAR data points were extracted from the entire LiDAR dataset using an “every-third point” query algorithm in MATLAB scripts developed by TWDB. TWDB developed a separate topographic TIN model from each LiDAR data subset.

The bathymetric TIN model was derived from TWDB sounding data, TWDB interpolated data (See section titled “Self-Similar Interpolation”), and LiDAR data points located within the bathymetric TIN model boundary.

Model Boundaries

The model boundary for the topographic TIN model was developed from the 760.6-foot (NAVD88) contour from available digital hypsography (1:24,000 scale).⁹ For modeling purposes only, the 760.6-foot (NAVD88) contour was closed across the tops of the both Mansfield and Starke Dam, and therefore does not reflect the true elevations near the dam crests. These incorrect elevations near the dam crests will not affect the final capacity or area calculations made on the Lake Travis topographic surface, which are computed only to elevation 745 feet (NAVD88).

For use in the bathymetric model, the Lake Travis boundary at CPE (681.6 feet NAVD88) was derived from a combination of LCRA provided LiDAR data and aerial photography. Environmental Systems Research Institute’s (ESRI) ArcGIS 9.1 software was used to create a triangulated irregular network (TIN) model based upon only the LiDAR point elevations. The contouring function within ArcGIS was then used to determine the 681.6-foot contour about the lake, and the contour was converted to a bounding polygon using the tracing features within ArcMap. LCRA provided processed LiDAR data for the entire vicinity of Lake Travis with the exception of the area around the Pedernales River nearly 9 miles upstream from the confluence with the Colorado

River (Figure 4 – DOQQ Area 1). In this area the lake boundary was digitized from aerial photographs, or digital orthophoto quarter-quadrangle images¹⁰ (DOQQs) photographed on December 7, 2004, while the water surface elevation at Lake Travis measured 684.7 feet (NAVD88). To derive a boundary at CPE for the area in the vicinity of the Pedernales River, a temporary TIN model was created using TWDB sounding data, interpolated data (See the section titled “Self-Similar Interpolation”), data derived through application of the line-extrapolation technique,¹¹ and the digitized lake boundary at elevation 684.7 feet (NAVD88). The contour at elevation 681.6 feet (NAVD88) derived from this temporary TIN model was used as the CPE boundary in the vicinity of the Pedernales River. An identical process was used to adjust the LiDAR-derived boundary in the area labeled “DOQQ Area 2” (Figure 4) where the LiDAR-derived CPE boundary did not encompass all of the measured TWDB sounding points.

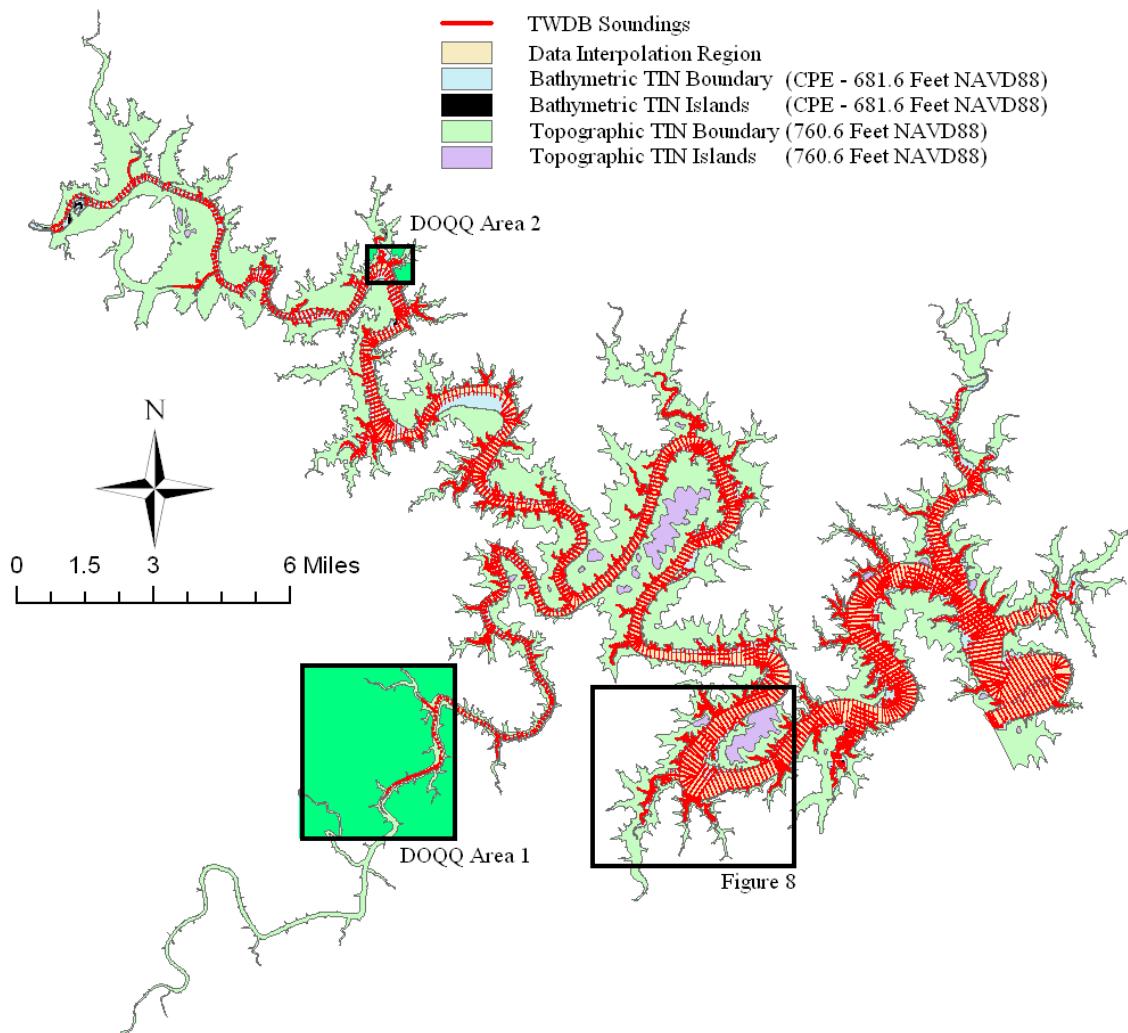


Figure 4 – Spatial extent of data used in developing the bathymetric and topographic TIN models for Lake Travis.

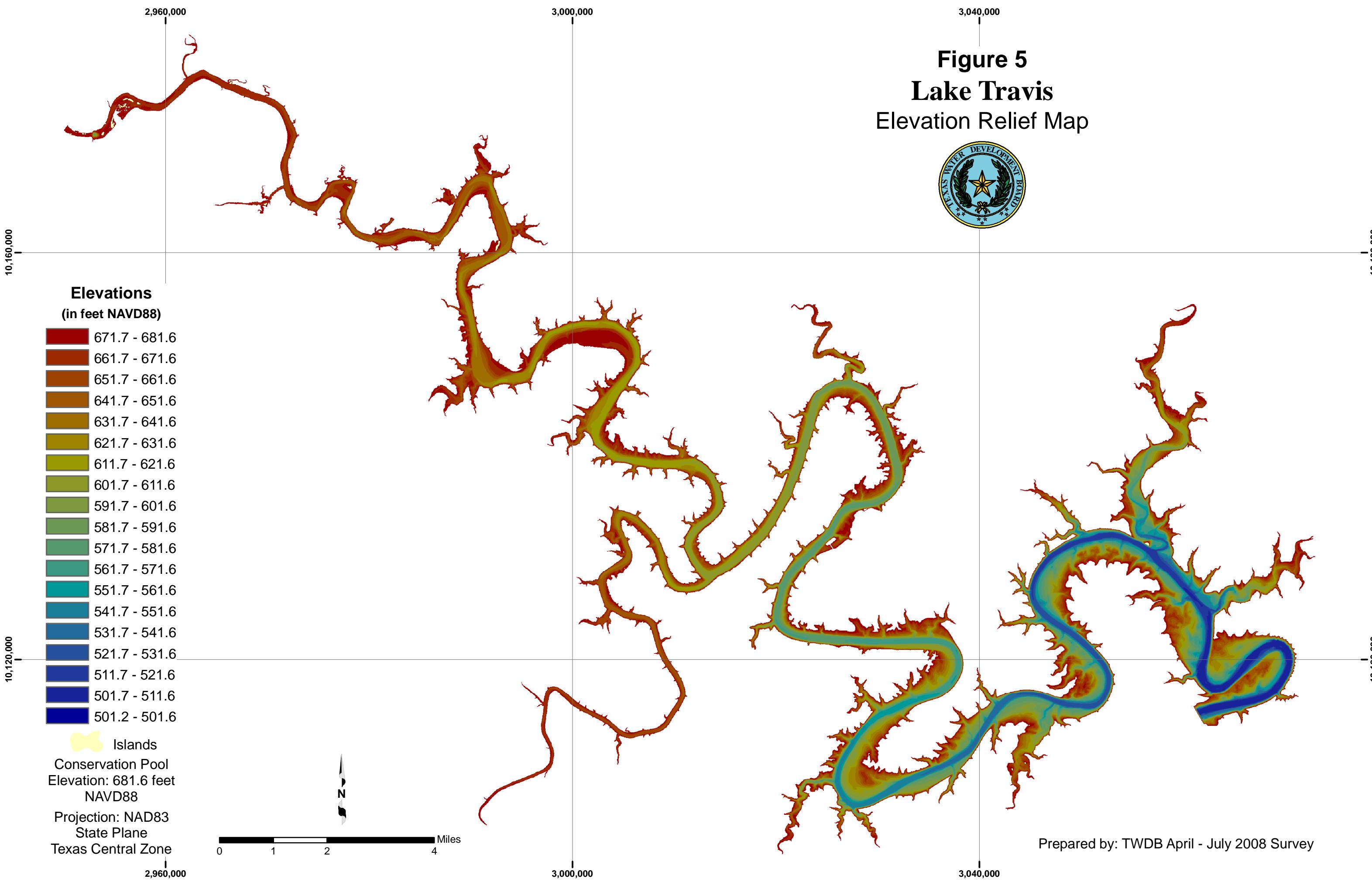
Model Output

Using TWDB developed ArcInfo scripts, capacity and area values may be computed at any specified elevation in the TIN model. For the bathymetric TIN model, results were calculated at one-tenth of a foot (0.1 foot) intervals from elevation 501.0 feet (NAVD88) to elevation 681.6 feet (NAVD88). The Bathymetric Elevation-Capacity and Bathymetric Elevation-Area Tables for Lake Travis, updated for 2008, are presented in Appendices A and B, respectively. A Bathymetric Elevation-Capacity graph and a Bathymetric Elevation-Area graph are presented in Appendix C.

For each of the topographic TIN models, results were calculated at one-tenth of a foot (0.1 foot) intervals from elevation 681.7 feet (NAVD88) to elevation 745.0 feet (NAVD88). Calculated areas and capacities were then compared to assess inaccuracies due to the use of data subsets in developing the TIN models. From this comparison, TWDB estimates that the capacity and area calculated at elevation 745 feet (NAVD88) is within +/- 10,433 acre-feet (0.5%) and +/- 37 acres (< 0.1 %), respectively. The Topographic & Bathymetric Elevation-Capacity and Topographic & Bathymetric Elevation-Area Tables for Lake Travis, updated for 2008, are presented in Appendices D and E, respectively. The values presented in Appendices D and E are averaged values derived from each of three topographic TIN models. Capacities listed in Appendix D for elevations greater than CPE (681.6 feet NAVD88) were computed by adding the averaged capacity calculated from the topographic TINs at the specified elevation to the capacity of the bathymetric TIN model at CPE. As portions of the topographic TIN model have elevations less than CPE at locations outside of the CPE boundary, areas and capacities reported in Appendix D and E for elevations below CPE may not equal those reported in Appendix A and B.

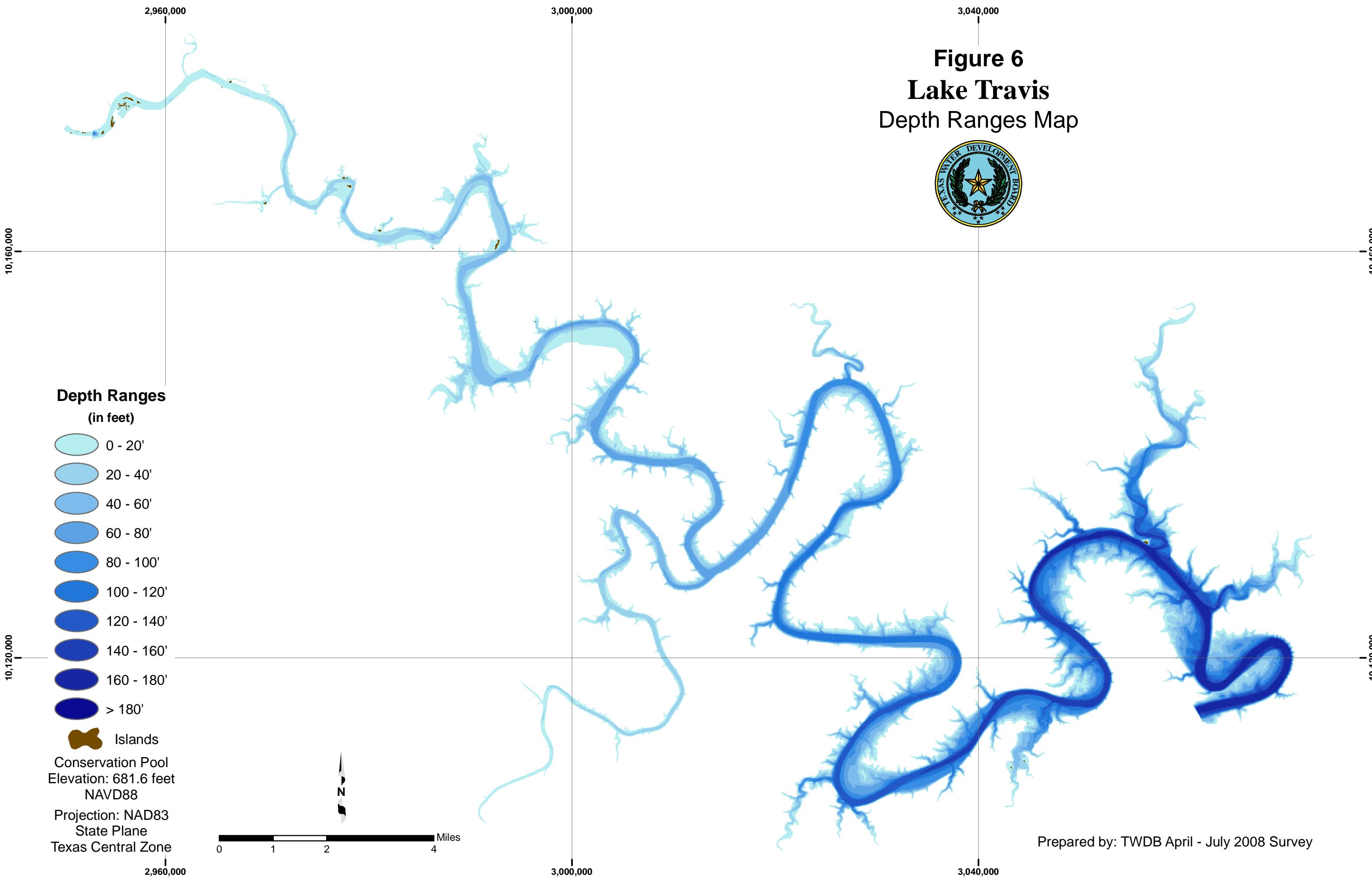
The bathymetric TIN model was interpolated and averaged using a cell size of 2 feet by 2 feet and converted to a raster. The raster was used to produce an Elevation Relief Map representing the reservoir bathymetry (Figure 5), a map showing shaded depth ranges for Lake Travis (Figure 6), and a 10-foot contour map (Figure 7, attached). The reservoir extent depicted in these figures is that corresponding to the conservation pool elevation (681.6 feet NAVD88).

Figure 5
Lake Travis
Elevation Relief Map



Prepared by: TWDB April - July 2008 Survey

Figure 6
Lake Travis
Depth Ranges Map



Self-Similar Interpolation

A limitation of the Delaunay method for triangulation when creating TIN models results in artificially-curved contour lines extending into the reservoir where the reservoir walls are steep and the reservoir is relatively narrow. These curved contours are likely a poor representation of the true reservoir bathymetry in these areas. Also, if the surveyed cross sections are not perpendicular to the centerline of the submerged river channel (the location of which is often unknown until after the survey), then the TIN model is not likely to represent the true channel bathymetry very well.

To ameliorate these problems, a “Self-Similar Interpolation” (SSI) routine (developed by TWDB) was used to interpolate the bathymetry in between many survey lines. The SSI technique effectively increases the density of points input into the TIN model, and directs the TIN interpolation to better represent the reservoir topography.¹¹ In developing the bathymetric TIN for Lake Travis, the SSI technique was applied between adjacent lines of survey data and was limited to the extent of the conservation pool (elevation 681.6 Feet NAVD88). In areas where LiDAR data were available, data derived with the SSI technique were not used. Therefore in the bathymetric TIN model for Lake Travis, data interpolation was limited to portions of the reservoir which were submerged at the time of the LiDAR data collection (Figures 4, 8).

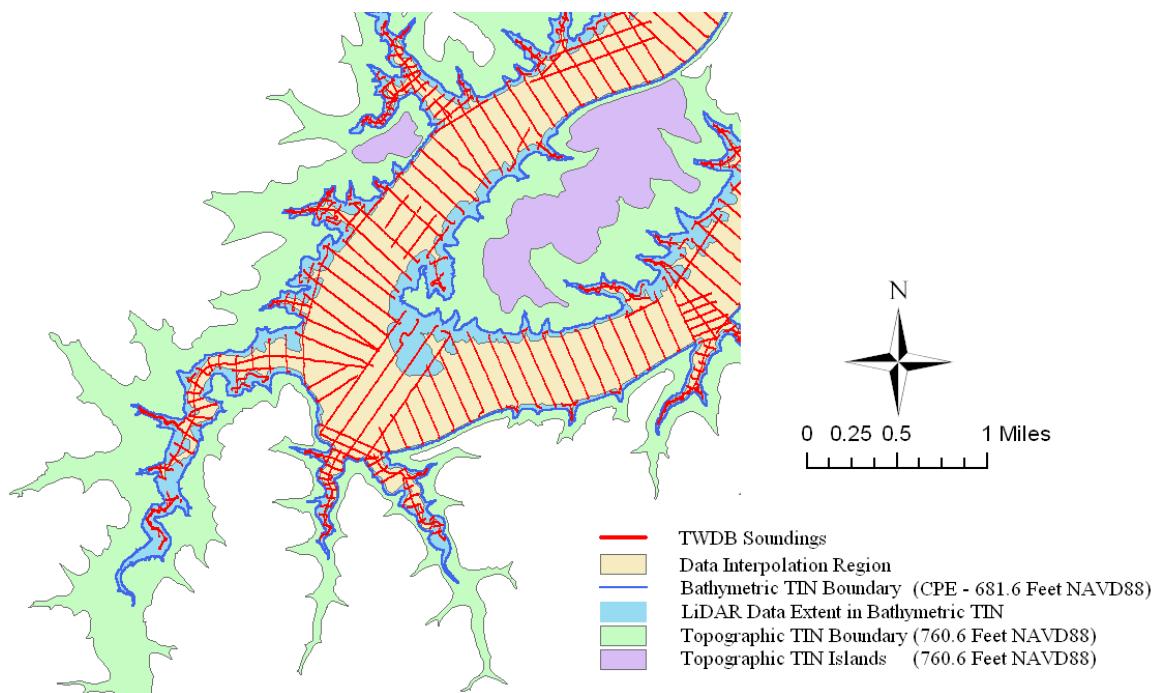


Figure 8 – Sample Map of Data Interpolation and LiDAR Data Extents in the Lake Travis bathymetric TIN model. Map location shown in Figure 4.

For Lake Travis, the application of SSI helped represent the lake morphology near the edges of the data interpolation region (Figures 4, 8) and improved the representation of the submerged river channel (Figure 5). In areas where obvious geomorphic features indicate a high-probability of cross-section shape changes (e.g. incoming tributaries, significant widening/narrowing of channel, etc.), the assumptions used in applying the SSI technique are not likely to be valid; therefore, interpolation was not used in areas of Lake Travis where a high probability of change between cross-sections exists.¹¹ Figure 9 illustrates typical results of the application of the SSI routine in Lake Travis. The bathymetry shown in Figure 9C was used in computing reservoir Bathymetric Elevation-Capacity and Bathymetric Elevation-Area tables (Appendix A, B).

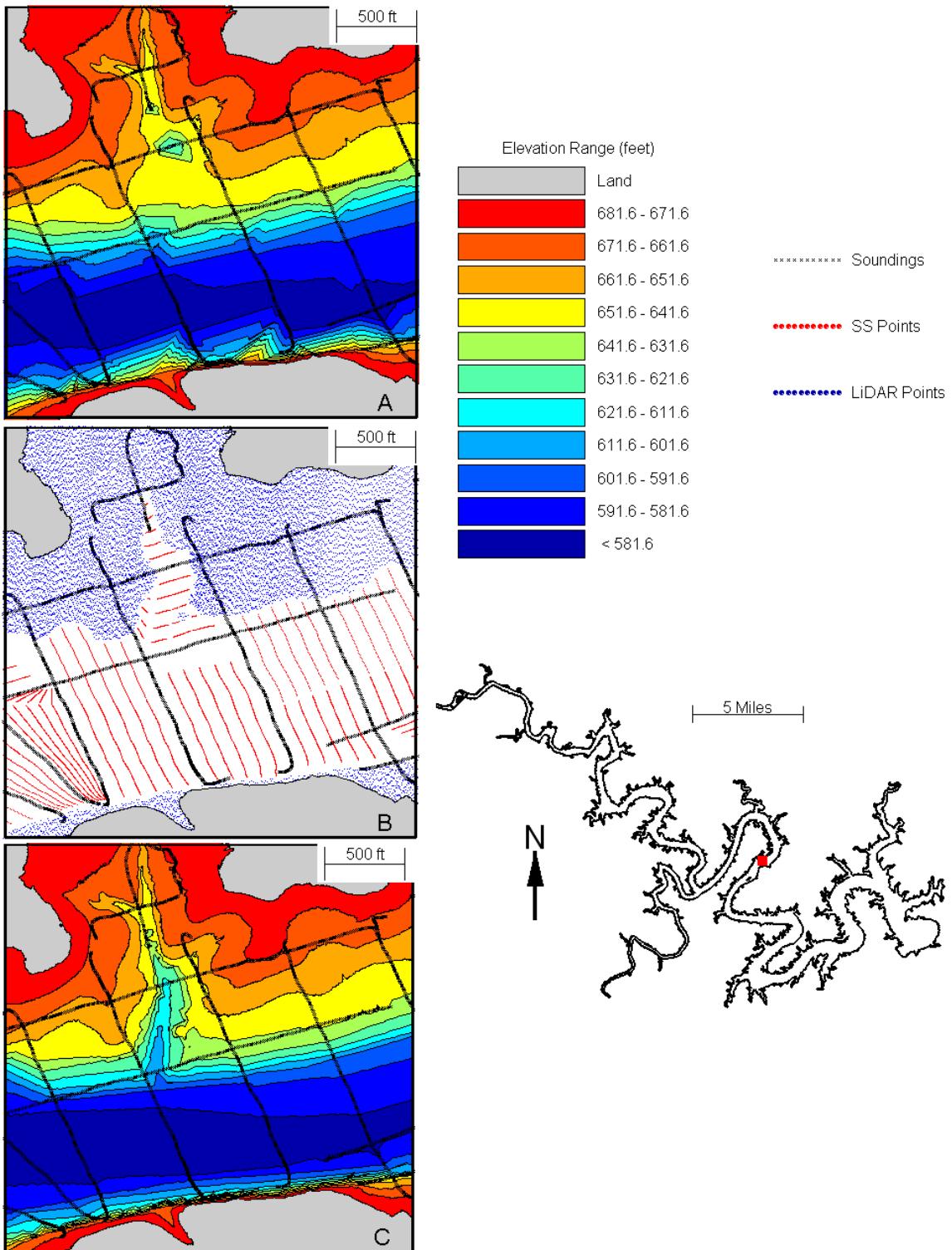


Figure 9 - Application of the Self-Similar Interpolation technique to Lake Travis sounding data – A) bathymetric contours without interpolated points, B) Sounding points (black), LiDAR points (blue), and interpolated points (red) with reservoir boundary shown at elevation 681.6 feet (black), C) bathymetric contours with the interpolated points. Note: In 9A the contours along the southern shore are angular and extend into the lake. The incoming tributary along the northern shore is also not connected to the main channel. Both of these features are artifacts of the TIN generation routine and are eliminated through use of the SSI technique as shown in 9C.

Survey Results

Volumetric Survey

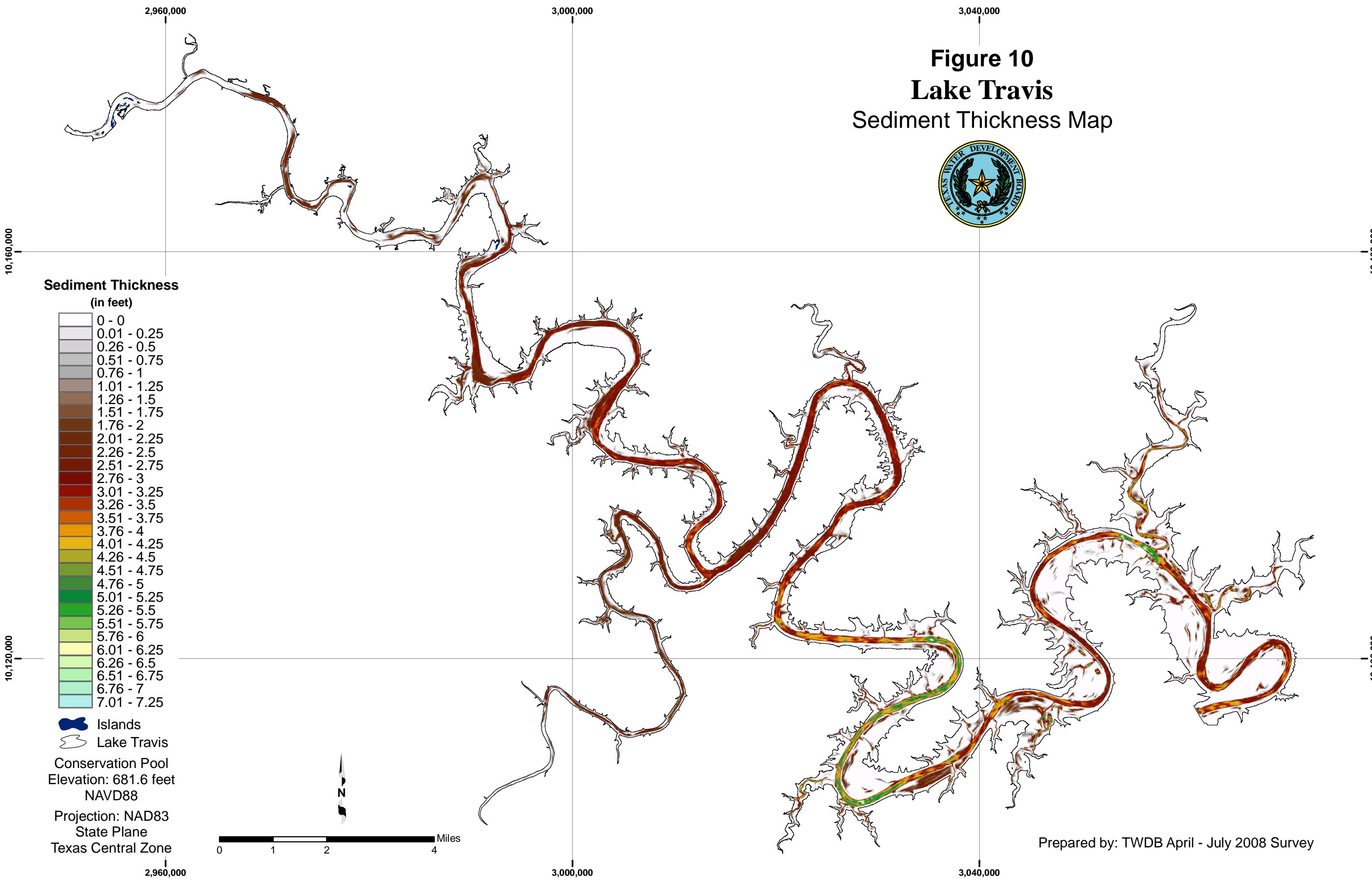
The results of the TWDB 2008 Volumetric Survey indicate Lake Travis has a total reservoir capacity of 1,134,863 acre-feet and encompasses 19,199 acres at conservation pool elevation (681.6 feet NAVD 88). Per data provided by LCRA^{13,14}, the capacity of Lake Travis in 1936 was estimated at 1,170,752 acre-feet and in 1995 at 1,132,172 acre-feet. Due to differences in the methodologies used during this 2008 survey and previous Lake Travis surveys, comparison of these values is not recommended. TWDB acknowledges that the 1995 volume estimate provided by LCRA was derived using similar survey methods. Direct comparisons between the 1995 and 2008 results were not made, however, because self-similar interpolation was not applied to the data used in computing the results reported in 1995.

Sedimentation Survey

The 200 kHz, 50 kHz, and 24 kHz frequency data were used to interpret the distribution and accumulation of sediment throughout Lake Travis. Figure 10 shows the thickness of sediment throughout the reservoir. To assist in the interpretation of post-impoundment sediment accumulation, ancillary data was collected in the form of five core samples. Sediment cores were collected on November 6th, 2008 by TWDB staff. Cores were collected using a Specialty Devices, Inc. VibraCore system and their content was analyzed by TWDB staff.

The results of the TWDB 2008 Sedimentation Survey indicate Lake Travis has accumulated 16,974 acre-feet of sediment since impoundment began in 1940. Based on this measured sediment volume and assuming a constant sediment accumulation rate, Lake Travis loses approximately 250 acre-feet of capacity per year. The thickest sediment deposits are in the submerged river channels throughout the lake. The maximum sediment thickness observed in Lake Travis was 7.1 feet. A complete description of the sediment measurement methodology and sample results is presented in Appendix F.

Figure 10
Lake Travis
Sediment Thickness Map



Sediment Thickness

(in feet)

0 - 0
0.01 - 0.25
0.26 - 0.5
0.51 - 0.75
0.76 - 1
1.01 - 1.25
1.26 - 1.5
1.51 - 1.75
1.76 - 2
2.01 - 2.25
2.26 - 2.5
2.51 - 2.75
2.76 - 3
3.01 - 3.25
3.26 - 3.5
3.51 - 3.75
3.76 - 4
4.01 - 4.25
4.26 - 4.5
4.51 - 4.75
4.76 - 5
5.01 - 5.25
5.26 - 5.5
5.51 - 5.75
5.76 - 6
6.01 - 6.25
6.26 - 6.5
6.51 - 6.75
6.76 - 7
7.01 - 7.25

Islands
Lake Travis

Conservation Pool
Elevation: 681.6 feet
NAVD88

Projection: NAD83
State Plane
Texas Central Zone

0 1 2 4 Miles

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Recommendations

The TWDB considers the 2008 survey to be significantly more accurate than previous surveys and recommends that a similar methodology be used to resurvey Lake Travis in approximately 10 years, or after a major flood event. Results from such a survey would allow the sediment accumulation rate for Lake Travis to be quantified with greater accuracy. Additional point estimates of sediment accumulation rates may also be obtained through assessment of the cesium-137 and lead-210 content within sediment cores.¹² To provide further evidence of sediment accumulation rates for Lake Travis, TWDB also recommends that the Self Similar Interpolation technique be applied to the 1995 Lake Travis survey dataset maintained by LCRA. The TIN model resulting from such an SSI application could then be directly compared to the bathymetric TIN model described herein as both TIN models would be derived from data collected and processed using similar methods.

TWDB Contact Information

More information about the Hydrographic Survey Program can be found at:

<http://www.twdb.state.tx.us/assistance/lakesurveys/volumetricindex.asp>

Any questions regarding the TWDB Hydrographic Survey Program may be addressed to:

Barney Austin, Ph.D., P.E.
Director of the Surface Water Resources Division
Phone: (512) 463-8856
Email: Barney.Austin@twdb.state.tx.us

Or

Jason Kemp
Team Leader, TWDB Hydrographic Survey Program
Phone: (512) 463-2465
Email: Jason.Kemp@twdb.state.tx.us

References

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Appendix A
Lake Travis
RESERVOIR BATHYMETRIC CAPACITY TABLE

TEXAS WATER DEVELOPMENT BOARD

CAPACITY IN ACRE-FEET

ELEVATION INCREMENT IS ONE TENTH FOOT

April-July 2008 Survey

Conservation Pool Elevation 681.6 Feet NAVD88

ELEVATION in Feet	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
501	0	0	0	0	0	0	0	1	1	1
502	1	1	2	3	4	6	8	11	14	17
503	21	25	30	35	40	45	51	57	63	70
504	78	85	93	102	110	119	128	138	148	158
505	169	179	191	203	215	227	241	254	268	283
506	298	313	330	346	364	381	400	418	437	457
507	477	497	518	539	560	582	605	628	652	677
508	702	727	753	779	806	834	862	890	918	947
509	977	1,007	1,037	1,067	1,098	1,129	1,160	1,192	1,223	1,256
510	1,288	1,321	1,354	1,387	1,420	1,454	1,488	1,522	1,557	1,591
511	1,627	1,662	1,698	1,733	1,770	1,806	1,843	1,880	1,917	1,955
512	1,993	2,031	2,070	2,109	2,148	2,188	2,227	2,267	2,308	2,349
513	2,390	2,431	2,473	2,515	2,557	2,599	2,642	2,685	2,729	2,772
514	2,816	2,860	2,904	2,949	2,994	3,039	3,084	3,130	3,176	3,221
515	3,268	3,314	3,361	3,408	3,456	3,504	3,552	3,601	3,650	3,700
516	3,750	3,800	3,850	3,901	3,953	4,004	4,056	4,108	4,161	4,214
517	4,267	4,320	4,374	4,428	4,482	4,536	4,591	4,647	4,703	4,759
518	4,816	4,874	4,931	4,989	5,048	5,107	5,166	5,226	5,286	5,347
519	5,408	5,469	5,531	5,593	5,656	5,719	5,782	5,846	5,910	5,975
520	6,040	6,106	6,172	6,238	6,304	6,371	6,438	6,506	6,574	6,642
521	6,710	6,779	6,848	6,917	6,986	7,056	7,126	7,196	7,266	7,337
522	7,408	7,479	7,551	7,623	7,695	7,768	7,841	7,915	7,990	8,065
523	8,140	8,216	8,292	8,369	8,446	8,524	8,602	8,681	8,760	8,840
524	8,920	9,001	9,082	9,163	9,245	9,328	9,411	9,494	9,578	9,662
525	9,747	9,832	9,917	10,003	10,089	10,175	10,262	10,349	10,436	10,524
526	10,612	10,700	10,788	10,877	10,966	11,056	11,145	11,235	11,326	11,416
527	11,507	11,598	11,689	11,781	11,873	11,966	12,059	12,152	12,246	12,340
528	12,434	12,529	12,624	12,720	12,816	12,912	13,009	13,106	13,203	13,301
529	13,399	13,497	13,596	13,695	13,794	13,894	13,994	14,094	14,194	14,295
530	14,396	14,497	14,599	14,701	14,803	14,906	15,009	15,112	15,216	15,319
531	15,424	15,528	15,633	15,738	15,844	15,949	16,056	16,162	16,269	16,376
532	16,483	16,590	16,698	16,806	16,914	17,023	17,132	17,241	17,350	17,460
533	17,570	17,680	17,790	17,901	18,012	18,123	18,234	18,346	18,458	18,570
534	18,683	18,796	18,909	19,022	19,136	19,250	19,364	19,478	19,593	19,708
535	19,823	19,939	20,055	20,172	20,289	20,406	20,524	20,643	20,762	20,881
536	21,001	21,122	21,243	21,364	21,486	21,608	21,730	21,853	21,977	22,101
537	22,225	22,350	22,475	22,601	22,727	22,854	22,981	23,108	23,236	23,364
538	23,493	23,622	23,751	23,881	24,012	24,142	24,274	24,405	24,537	24,670
539	24,803	24,936	25,069	25,203	25,338	25,473	25,608	25,743	25,879	26,015
540	26,152	26,288	26,426	26,563	26,701	26,840	26,978	27,117	27,257	27,396
541	27,536	27,677	27,818	27,959	28,100	28,242	28,384	28,526	28,669	28,812
542	28,956	29,099	29,244	29,388	29,533	29,678	29,823	29,969	30,115	30,262
543	30,409	30,556	30,704	30,852	31,001	31,150	31,299	31,449	31,599	31,750
544	31,901	32,052	32,204	32,356	32,508	32,661	32,814	32,968	33,122	33,276
545	33,431	33,586	33,742	33,898	34,055	34,212	34,369	34,528	34,688	34,848
546	35,008	35,170	35,331	35,494	35,657	35,820	35,984	36,148	36,313	36,479
547	36,645	36,812	36,979	37,147	37,315	37,484	37,653	37,823	37,993	38,164
548	38,335	38,507	38,679	38,852	39,025	39,198	39,372	39,547	39,722	39,897
549	40,072	40,248	40,425	40,602	40,779	40,956	41,134	41,313	41,492	41,671
550	41,851	42,031	42,212	42,393	42,574	42,756	42,939	43,122	43,306	43,490
551	43,675	43,860	44,046	44,232	44,418	44,606	44,793	44,981	45,170	45,360
552	45,550	45,740	45,931	46,122	46,314	46,507	46,699	46,893	47,087	47,281
553	47,476	47,672	47,868	48,064	48,261	48,458	48,656	48,855	49,054	49,253
554	49,453	49,654	49,855	50,056	50,258	50,461	50,664	50,867	51,071	51,275
555	51,480	51,685	51,891	52,096	52,303	52,510	52,717	52,925	53,133	53,342
556	53,551	53,760	53,970	54,180	54,391	54,602	54,814	55,026	55,238	55,451

Appendix A (Continued)
Lake Travis
RESERVOIR BATHYMETRIC CAPACITY TABLE

TEXAS WATER DEVELOPMENT BOARD

CAPACITY IN ACRE-FEET

ELEVATION INCREMENT IS ONE TENTH FOOT

April-July 2008 Survey

Conservation Pool Elevation 681.6 Feet NAVD88

ELEVATION in Feet	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
557	55,665	55,879	56,093	56,308	56,523	56,738	56,954	57,171	57,388	57,605
558	57,823	58,041	58,260	58,479	58,699	58,919	59,139	59,360	59,582	59,804
559	60,026	60,249	60,472	60,696	60,921	61,147	61,372	61,599	61,826	62,054
560	62,282	62,511	62,741	62,971	63,202	63,433	63,665	63,897	64,130	64,363
561	64,597	64,832	65,067	65,302	65,539	65,776	66,013	66,251	66,490	66,730
562	66,971	67,212	67,454	67,697	67,940	68,184	68,429	68,675	68,921	69,168
563	69,415	69,663	69,912	70,161	70,411	70,662	70,913	71,165	71,418	71,671
564	71,925	72,179	72,434	72,689	72,946	73,202	73,460	73,718	73,976	74,236
565	74,496	74,756	75,017	75,279	75,541	75,804	76,068	76,332	76,596	76,862
566	77,128	77,394	77,661	77,928	78,197	78,465	78,734	79,004	79,275	79,546
567	79,817	80,089	80,362	80,636	80,910	81,185	81,461	81,737	82,014	82,292
568	82,571	82,851	83,131	83,412	83,694	83,977	84,260	84,544	84,829	85,115
569	85,401	85,687	85,975	86,263	86,552	86,842	87,132	87,423	87,715	88,007
570	88,301	88,595	88,889	89,185	89,481	89,778	90,075	90,374	90,673	90,973
571	91,273	91,574	91,877	92,179	92,483	92,788	93,093	93,399	93,706	94,013
572	94,322	94,631	94,941	95,251	95,563	95,875	96,187	96,501	96,816	97,132
573	97,449	97,766	98,085	98,405	98,726	99,047	99,369	99,693	100,017	100,342
574	100,667	100,994	101,322	101,650	101,979	102,309	102,640	102,972	103,305	103,639
575	103,973	104,308	104,644	104,981	105,319	105,657	105,997	106,337	106,679	107,021
576	107,364	107,708	108,052	108,398	108,745	109,092	109,440	109,789	110,139	110,490
577	110,842	111,194	111,548	111,903	112,258	112,614	112,972	113,330	113,690	114,051
578	114,412	114,775	115,139	115,503	115,869	116,236	116,604	116,973	117,344	117,715
579	118,087	118,461	118,836	119,211	119,588	119,965	120,344	120,723	121,104	121,485
580	121,868	122,251	122,636	123,021	123,407	123,794	124,181	124,570	124,960	125,351
581	125,742	126,135	126,528	126,922	127,318	127,714	128,110	128,508	128,907	129,306
582	129,706	130,107	130,509	130,912	131,316	131,720	132,126	132,532	132,939	133,347
583	133,756	134,165	134,575	134,986	135,398	135,811	136,224	136,638	137,053	137,469
584	137,885	138,302	138,720	139,138	139,557	139,977	140,398	140,819	141,241	141,664
585	142,087	142,511	142,937	143,362	143,789	144,215	144,643	145,072	145,501	145,931
586	146,362	146,793	147,225	147,658	148,092	148,526	148,961	149,397	149,834	150,271
587	150,709	151,148	151,588	152,028	152,469	152,911	153,353	153,797	154,241	154,686
588	155,132	155,579	156,028	156,477	156,927	157,378	157,830	158,284	158,738	159,194
589	159,650	160,108	160,567	161,027	161,488	161,951	162,414	162,879	163,344	163,811
590	164,279	164,748	165,218	165,689	166,162	166,635	167,110	167,586	168,063	168,541
591	169,019	169,499	169,980	170,461	170,944	171,427	171,911	172,396	172,882	173,368
592	173,856	174,344	174,833	175,323	175,814	176,306	176,798	177,291	177,785	178,280
593	178,776	179,272	179,770	180,268	180,767	181,267	181,767	182,268	182,770	183,273
594	183,777	184,281	184,787	185,293	185,800	186,307	186,815	187,324	187,834	188,345
595	188,856	189,368	189,882	190,395	190,910	191,425	191,941	192,459	192,977	193,496
596	194,015	194,535	195,057	195,579	196,102	196,626	197,151	197,676	198,203	198,730
597	199,258	199,786	200,316	200,847	201,378	201,910	202,443	202,977	203,512	204,048
598	204,585	205,122	205,661	206,201	206,741	207,283	207,825	208,369	208,913	209,458
599	210,005	210,552	211,100	211,649	212,199	212,750	213,301	213,854	214,408	214,963
600	215,518	216,074	216,632	217,190	217,750	218,310	218,871	219,434	219,997	220,562
601	221,127	221,693	222,261	222,829	223,398	223,968	224,539	225,111	225,684	226,258
602	226,833	227,409	227,986	228,563	229,142	229,722	230,303	230,885	231,469	232,054
603	232,640	233,228	233,817	234,407	234,999	235,591	236,185	236,780	237,375	237,973
604	238,571	239,170	239,771	240,372	240,975	241,579	242,184	242,791	243,398	244,007
605	244,616	245,227	245,840	246,453	247,068	247,683	248,300	248,919	249,539	250,160
606	250,782	251,406	252,031	252,657	253,285	253,914	254,544	255,176	255,809	256,444
607	257,080	257,717	258,356	258,996	259,638	260,280	260,925	261,570	262,217	262,865
608	263,514	264,165	264,817	265,470	266,124	266,779	267,435	268,092	268,751	269,410
609	270,071	270,732	271,395	272,058	272,723	273,388	274,055	274,722	275,391	276,060
610	276,731	277,402	278,074	278,748	279,422	280,097	280,774	281,451	282,129	282,808
611	283,488	284,169	284,852	285,535	286,220	286,905	287,591	288,278	288,967	289,656
612	290,346	291,038	291,730	292,424	293,118	293,814	294,511	295,209	295,908	296,609

Appendix A (Continued)
Lake Travis
RESERVOIR BATHYMETRIC CAPACITY TABLE

TEXAS WATER DEVELOPMENT BOARD

CAPACITY IN ACRE-FEET

ELEVATION INCREMENT IS ONE TENTH FOOT

April-July 2008 Survey

Conservation Pool Elevation 681.6 Feet NAVD88

ELEVATION in Feet	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
613	297,310	298,012	298,716	299,421	300,127	300,834	301,542	302,252	302,962	303,674
614	304,387	305,100	305,816	306,532	307,250	307,968	308,688	309,409	310,131	310,855
615	311,579	312,305	313,032	313,760	314,489	315,219	315,950	316,683	317,417	318,152
616	318,888	319,625	320,363	321,102	321,843	322,585	323,327	324,071	324,816	325,563
617	326,310	327,058	327,807	328,558	329,309	330,062	330,816	331,571	332,327	333,084
618	333,842	334,602	335,363	336,125	336,888	337,652	338,418	339,185	339,953	340,722
619	341,492	342,264	343,037	343,811	344,586	345,363	346,140	346,920	347,700	348,483
620	349,266	350,051	350,838	351,626	352,416	353,208	354,000	354,795	355,590	356,387
621	357,185	357,985	358,786	359,588	360,392	361,197	362,003	362,811	363,620	364,430
622	365,242	366,055	366,869	367,685	368,502	369,321	370,140	370,962	371,784	372,608
623	373,433	374,259	375,087	375,916	376,746	377,578	378,410	379,245	380,080	380,917
624	381,755	382,594	383,434	384,275	385,118	385,962	386,806	387,653	388,500	389,348
625	390,197	391,048	391,899	392,752	393,606	394,461	395,317	396,174	397,032	397,892
626	398,753	399,615	400,479	401,343	402,209	403,076	403,944	404,814	405,685	406,558
627	407,431	408,306	409,182	410,059	410,938	411,818	412,699	413,582	414,466	415,351
628	416,237	417,125	418,014	418,904	419,795	420,688	421,581	422,476	423,372	424,270
629	425,169	426,068	426,970	427,872	428,776	429,681	430,586	431,494	432,402	433,312
630	434,223	435,135	436,049	436,964	437,881	438,798	439,717	440,638	441,559	442,483
631	443,407	444,333	445,260	446,189	447,119	448,050	448,983	449,917	450,853	451,790
632	452,728	453,667	454,608	455,551	456,494	457,439	458,385	459,333	460,282	461,233
633	462,185	463,138	464,093	465,049	466,006	466,965	467,925	468,887	469,850	470,815
634	471,781	472,748	473,717	474,687	475,659	476,632	477,606	478,583	479,560	480,539
635	481,519	482,500	483,483	484,467	485,453	486,439	487,427	488,417	489,407	490,398
636	491,391	492,385	493,380	494,376	495,374	496,372	497,372	498,374	499,376	500,380
637	501,385	502,390	503,398	504,406	505,417	506,427	507,439	508,453	509,468	510,484
638	511,501	512,520	513,540	514,561	515,583	516,607	517,631	518,658	519,685	520,714
639	521,744	522,775	523,808	524,842	525,878	526,914	527,952	528,991	530,032	531,074
640	532,117	533,161	534,208	535,255	536,304	537,353	538,404	539,457	540,511	541,567
641	542,624	543,682	544,742	545,803	546,866	547,930	548,996	550,063	551,132	552,202
642	553,273	554,346	555,421	556,497	557,575	558,654	559,734	560,817	561,901	562,986
643	564,073	565,161	566,252	567,343	568,436	569,531	570,627	571,725	572,825	573,926
644	575,029	576,133	577,239	578,347	579,456	580,567	581,679	582,794	583,909	585,027
645	586,146	587,267	588,391	589,515	590,644	591,776	592,912	594,051	595,193	596,337
646	597,484	598,632	599,784	600,937	602,092	603,249	604,408	605,570	606,733	607,898
647	609,065	610,233	611,405	612,577	613,752	614,928	616,106	617,286	618,467	619,651
648	620,836	622,023	623,212	624,403	625,595	626,789	627,985	629,183	630,382	631,583
649	632,786	633,990	635,197	636,405	637,615	638,826	640,040	641,256	642,472	643,692
650	644,912	646,134	647,359	648,585	649,814	651,043	652,275	653,509	654,744	655,982
651	657,221	658,461	659,704	660,948	662,195	663,443	664,693	665,945	667,198	668,454
652	669,711	670,970	672,232	673,494	674,759	676,026	677,294	678,564	679,836	681,110
653	682,386	683,663	684,943	686,224	687,508	688,792	690,079	691,368	692,659	693,952
654	695,246	696,542	697,841	699,140	700,442	701,746	703,051	704,358	705,667	706,979
655	708,291	709,605	710,922	712,240	713,560	714,882	716,205	717,531	718,858	720,188
656	721,518	722,851	724,187	725,523	726,862	728,203	729,545	730,890	732,236	733,584
657	734,934	736,286	737,641	738,996	740,355	741,714	743,075	744,440	745,805	747,173
658	748,542	749,914	751,288	752,663	754,041	755,421	756,802	758,187	759,572	760,961
659	762,350	763,742	765,137	766,532	767,931	769,331	770,732	772,137	773,543	774,952
660	776,361	777,773	779,188	780,603	782,022	783,442	784,863	786,288	787,713	789,142
661	790,571	792,003	793,437	794,873	796,312	797,751	799,193	800,638	802,083	803,532
662	804,982	806,434	807,890	809,346	810,806	812,267	813,730	815,196	816,663	818,134
663	819,606	821,080	822,557	824,036	825,517	827,000	828,486	829,974	831,464	832,957
664	834,451	835,947	837,447	838,947	840,451	841,956	843,462	844,972	846,484	847,998
665	849,513	851,031	852,552	854,074	855,599	857,125	858,653	860,185	861,718	863,254
666	864,792	866,332	867,875	869,419	870,967	872,516	874,068	875,623	877,180	878,740
667	880,301	881,866	883,433	885,003	886,575	888,150	889,727	891,308	892,890	894,475
668	896,062	897,652	899,245	900,840	902,438	904,038	905,640	907,245	908,853	910,463

Appendix A (Continued)

Lake Travis**RESERVOIR BATHYMETRIC CAPACITY TABLE**

TEXAS WATER DEVELOPMENT BOARD

April-July 2008 Survey

CAPACITY IN ACRE-FEET

Conservation Pool Elevation 681.6 Feet NAVD88

ELEVATION INCREMENT IS ONE TENTH FOOT

ELEVATION in Feet	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
669	912,075	913,690	915,308	916,928	918,551	920,176	921,803	923,433	925,065	926,701
670	928,338	929,977	931,620	933,264	934,912	936,561	938,213	939,868	941,524	943,184
671	944,846	946,510	948,177	949,846	951,518	953,192	954,868	956,548	958,229	959,913
672	961,599	963,288	964,980	966,673	968,370	970,068	971,768	973,472	975,177	976,886
673	978,596	980,308	982,024	983,741	985,461	987,183	988,907	990,634	992,363	994,095
674	995,829	997,565	999,305	1,001,046	1,002,791	1,004,537	1,006,286	1,008,038	1,009,792	1,011,549
675	1,013,308	1,015,069	1,016,834	1,018,601	1,020,371	1,022,143	1,023,918	1,025,696	1,027,476	1,029,260
676	1,031,045	1,032,833	1,034,624	1,036,416	1,038,212	1,040,010	1,041,810	1,043,614	1,045,419	1,047,227
677	1,049,037	1,050,849	1,052,665	1,054,482	1,056,303	1,058,125	1,059,950	1,061,778	1,063,608	1,065,441
678	1,067,275	1,069,112	1,070,952	1,072,793	1,074,638	1,076,484	1,078,332	1,080,184	1,082,036	1,083,893
679	1,085,750	1,087,610	1,089,473	1,091,338	1,093,206	1,095,075	1,096,947	1,098,822	1,100,698	1,102,577
680	1,104,458	1,106,341	1,108,228	1,110,115	1,112,006	1,113,899	1,115,793	1,117,691	1,119,590	1,121,492
681	1,123,395	1,125,300	1,127,209	1,129,119	1,131,032	1,132,947	1,134,863			

Appendix B
Lake Travis
RESERVOIR BATHYMETRIC AREA TABLE

TEXAS WATER DEVELOPMENT BOARD

AREA IN ACRES

ELEVATION INCREMENT IS ONE TENTH FOOT

April-July 2008 Survey

Conservation Pool Elevation 681.6 Feet NAVD88

ELEVATION in Feet	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
501	0	0	0	0	0	0	0	0	1	2
502	3	4	7	11	17	21	24	28	33	36
503	39	43	46	49	52	55	59	63	67	71
504	76	79	81	84	87	91	94	97	101	104
505	107	111	115	120	125	129	133	138	142	148
506	154	159	165	171	176	180	185	189	193	197
507	201	205	209	212	217	222	230	236	242	247
508	252	257	262	267	272	276	280	285	289	293
509	296	299	302	305	308	311	314	317	320	323
510	326	328	330	333	336	338	341	344	347	349
511	352	355	357	360	363	366	370	372	375	378
512	381	384	388	391	394	397	400	403	406	409
513	412	415	418	421	424	426	429	431	434	437
514	440	443	445	447	450	452	454	456	458	461
515	463	467	470	474	478	482	486	490	493	497
516	501	504	508	511	515	518	521	524	527	529
517	532	535	537	540	544	548	552	558	563	567
518	571	574	578	582	587	592	596	600	604	608
519	612	615	619	623	628	633	638	642	646	650
520	653	656	660	664	667	670	673	676	679	682
521	685	687	690	692	695	698	700	703	706	708
522	711	714	717	722	727	732	736	741	747	752
523	756	761	765	769	773	779	785	791	796	800
524	805	809	813	818	822	827	832	836	840	844
525	848	852	855	859	862	865	868	872	875	878
526	881	884	887	890	893	896	898	901	904	906
527	909	912	915	919	923	927	931	936	940	943
528	947	950	954	958	961	965	968	972	975	978
529	982	985	988	991	994	997	1,000	1,003	1,006	1,009
530	1,012	1,015	1,018	1,021	1,024	1,027	1,030	1,034	1,037	1,041
531	1,044	1,047	1,050	1,053	1,056	1,059	1,062	1,065	1,068	1,071
532	1,074	1,076	1,079	1,081	1,084	1,087	1,089	1,092	1,095	1,097
533	1,100	1,103	1,105	1,108	1,111	1,113	1,116	1,119	1,122	1,124
534	1,127	1,130	1,132	1,135	1,138	1,140	1,143	1,146	1,148	1,152
535	1,155	1,159	1,164	1,168	1,173	1,177	1,182	1,187	1,192	1,197
536	1,202	1,207	1,211	1,215	1,219	1,223	1,228	1,232	1,237	1,242
537	1,247	1,251	1,255	1,259	1,264	1,268	1,272	1,276	1,280	1,284
538	1,288	1,293	1,297	1,301	1,306	1,310	1,315	1,319	1,323	1,327
539	1,330	1,334	1,338	1,342	1,345	1,349	1,353	1,356	1,360	1,364
540	1,367	1,370	1,374	1,377	1,381	1,385	1,389	1,392	1,396	1,399
541	1,402	1,406	1,409	1,413	1,416	1,419	1,423	1,426	1,429	1,433
542	1,436	1,439	1,443	1,446	1,450	1,453	1,456	1,460	1,464	1,468
543	1,472	1,476	1,480	1,484	1,488	1,492	1,496	1,500	1,504	1,507
544	1,511	1,514	1,518	1,522	1,526	1,530	1,534	1,538	1,542	1,546
545	1,551	1,555	1,559	1,563	1,568	1,575	1,584	1,591	1,598	1,604
546	1,609	1,615	1,621	1,626	1,631	1,637	1,642	1,647	1,652	1,658
547	1,664	1,670	1,675	1,681	1,686	1,691	1,696	1,701	1,706	1,710
548	1,715	1,719	1,724	1,728	1,733	1,737	1,741	1,746	1,750	1,754
549	1,758	1,762	1,766	1,770	1,774	1,778	1,782	1,787	1,791	1,795
550	1,799	1,803	1,808	1,813	1,819	1,824	1,829	1,835	1,840	1,845
551	1,849	1,854	1,859	1,864	1,869	1,874	1,880	1,885	1,891	1,896
552	1,901	1,906	1,912	1,917	1,922	1,927	1,932	1,937	1,942	1,947
553	1,952	1,957	1,962	1,967	1,972	1,977	1,983	1,988	1,993	1,998
554	2,003	2,008	2,013	2,018	2,022	2,027	2,031	2,036	2,040	2,045
555	2,049	2,053	2,058	2,062	2,066	2,071	2,075	2,079	2,084	2,088
556	2,093	2,097	2,101	2,106	2,110	2,114	2,118	2,123	2,127	2,132

Appendix B (Continued)

Lake Travis**RESERVOIR BATHYMETRIC AREA TABLE**

TEXAS WATER DEVELOPMENT BOARD

AREA IN ACRES

April-July 2008 Survey

Conservation Pool Elevation 681.6 Feet NAVD88

ELEVATION INCREMENT IS ONE TENTH FOOT

ELEVATION in Feet	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
557	2,136	2,140	2,145	2,149	2,154	2,158	2,162	2,167	2,171	2,176
558	2,180	2,185	2,189	2,194	2,198	2,203	2,207	2,212	2,217	2,222
559	2,227	2,232	2,237	2,244	2,251	2,256	2,262	2,268	2,275	2,281
560	2,287	2,293	2,298	2,304	2,310	2,315	2,321	2,326	2,331	2,337
561	2,342	2,348	2,353	2,359	2,365	2,372	2,379	2,387	2,394	2,403
562	2,410	2,417	2,423	2,430	2,437	2,444	2,451	2,458	2,465	2,472
563	2,478	2,484	2,490	2,497	2,503	2,509	2,516	2,522	2,528	2,534
564	2,540	2,546	2,552	2,558	2,565	2,571	2,578	2,584	2,590	2,596
565	2,602	2,608	2,614	2,620	2,626	2,632	2,638	2,644	2,650	2,655
566	2,661	2,667	2,672	2,678	2,684	2,689	2,695	2,701	2,707	2,713
567	2,719	2,725	2,731	2,738	2,746	2,754	2,761	2,769	2,776	2,784
568	2,792	2,799	2,807	2,815	2,823	2,831	2,838	2,844	2,851	2,858
569	2,865	2,871	2,878	2,885	2,892	2,899	2,907	2,915	2,923	2,929
570	2,936	2,943	2,950	2,957	2,965	2,972	2,980	2,987	2,995	3,002
571	3,010	3,017	3,025	3,032	3,041	3,049	3,057	3,064	3,072	3,080
572	3,087	3,095	3,102	3,110	3,117	3,125	3,134	3,143	3,153	3,163
573	3,173	3,183	3,192	3,202	3,211	3,219	3,227	3,236	3,245	3,253
574	3,262	3,271	3,280	3,289	3,297	3,306	3,315	3,323	3,331	3,340
575	3,347	3,356	3,364	3,373	3,382	3,391	3,399	3,408	3,417	3,426
576	3,435	3,443	3,452	3,460	3,469	3,478	3,486	3,495	3,504	3,513
577	3,523	3,532	3,541	3,550	3,559	3,568	3,579	3,591	3,602	3,612
578	3,622	3,632	3,642	3,653	3,664	3,675	3,686	3,697	3,709	3,719
579	3,730	3,740	3,750	3,760	3,770	3,780	3,791	3,801	3,810	3,820
580	3,829	3,838	3,847	3,856	3,865	3,874	3,883	3,892	3,902	3,912
581	3,921	3,930	3,938	3,947	3,955	3,964	3,973	3,981	3,990	3,998
582	4,007	4,016	4,024	4,032	4,041	4,049	4,058	4,066	4,075	4,083
583	4,091	4,099	4,107	4,114	4,122	4,129	4,137	4,144	4,152	4,159
584	4,166	4,174	4,181	4,188	4,195	4,203	4,210	4,217	4,224	4,231
585	4,238	4,246	4,253	4,260	4,267	4,274	4,281	4,289	4,296	4,303
586	4,311	4,318	4,325	4,333	4,340	4,348	4,355	4,362	4,370	4,377
587	4,384	4,392	4,399	4,407	4,415	4,422	4,431	4,439	4,447	4,456
588	4,466	4,476	4,486	4,496	4,506	4,517	4,528	4,539	4,550	4,561
589	4,572	4,584	4,595	4,607	4,619	4,630	4,641	4,651	4,662	4,672
590	4,683	4,695	4,706	4,718	4,730	4,742	4,753	4,764	4,774	4,784
591	4,793	4,802	4,811	4,819	4,828	4,837	4,845	4,854	4,862	4,871
592	4,879	4,887	4,896	4,904	4,912	4,921	4,929	4,937	4,945	4,953
593	4,961	4,969	4,977	4,985	4,993	5,001	5,009	5,017	5,025	5,033
594	5,041	5,048	5,056	5,064	5,072	5,079	5,087	5,095	5,103	5,110
595	5,118	5,126	5,134	5,142	5,150	5,158	5,167	5,175	5,184	5,192
596	5,201	5,209	5,218	5,226	5,234	5,243	5,251	5,259	5,267	5,276
597	5,284	5,293	5,301	5,309	5,318	5,326	5,335	5,344	5,353	5,363
598	5,373	5,382	5,391	5,400	5,410	5,419	5,429	5,439	5,449	5,459
599	5,468	5,477	5,486	5,495	5,504	5,513	5,522	5,531	5,541	5,550
600	5,559	5,569	5,579	5,589	5,599	5,609	5,619	5,630	5,640	5,649
601	5,659	5,668	5,677	5,687	5,696	5,706	5,715	5,725	5,735	5,744
602	5,753	5,763	5,773	5,783	5,793	5,804	5,816	5,830	5,843	5,858
603	5,871	5,884	5,895	5,907	5,919	5,931	5,942	5,954	5,965	5,977
604	5,988	6,000	6,011	6,022	6,034	6,046	6,057	6,068	6,080	6,092
605	6,104	6,116	6,128	6,140	6,152	6,165	6,178	6,191	6,204	6,217
606	6,230	6,243	6,257	6,270	6,284	6,298	6,311	6,325	6,338	6,351
607	6,366	6,381	6,396	6,409	6,423	6,436	6,449	6,461	6,474	6,487
608	6,499	6,512	6,523	6,535	6,546	6,557	6,568	6,578	6,589	6,600
609	6,610	6,620	6,630	6,640	6,650	6,660	6,670	6,680	6,690	6,700
610	6,709	6,719	6,729	6,738	6,748	6,758	6,768	6,777	6,787	6,797
611	6,806	6,817	6,828	6,838	6,848	6,858	6,868	6,878	6,888	6,898
612	6,908	6,919	6,929	6,940	6,952	6,963	6,975	6,986	6,997	7,009

Appendix B (Continued)

Lake Travis**RESERVOIR BATHYMETRIC AREA TABLE**

TEXAS WATER DEVELOPMENT BOARD

AREA IN ACRES

April-July 2008 Survey

Conservation Pool Elevation 681.6 Feet NAVD88

ELEVATION INCREMENT IS ONE TENTH FOOT

ELEVATION in Feet	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
613	7,021	7,032	7,043	7,054	7,065	7,077	7,088	7,099	7,110	7,122
614	7,134	7,145	7,156	7,168	7,180	7,192	7,205	7,217	7,229	7,240
615	7,251	7,262	7,274	7,285	7,297	7,308	7,320	7,332	7,343	7,355
616	7,366	7,377	7,389	7,400	7,411	7,422	7,433	7,444	7,455	7,466
617	7,477	7,488	7,499	7,510	7,521	7,532	7,544	7,555	7,567	7,579
618	7,590	7,602	7,614	7,625	7,638	7,650	7,662	7,674	7,685	7,698
619	7,710	7,722	7,734	7,747	7,760	7,773	7,786	7,800	7,814	7,830
620	7,844	7,859	7,874	7,890	7,905	7,920	7,935	7,949	7,963	7,976
621	7,990	8,003	8,017	8,030	8,043	8,056	8,070	8,083	8,096	8,110
622	8,124	8,137	8,151	8,164	8,177	8,191	8,205	8,218	8,231	8,244
623	8,258	8,271	8,284	8,296	8,309	8,322	8,335	8,348	8,361	8,373
624	8,385	8,397	8,408	8,420	8,431	8,443	8,454	8,466	8,477	8,488
625	8,499	8,510	8,521	8,532	8,544	8,555	8,567	8,578	8,591	8,603
626	8,615	8,628	8,640	8,652	8,665	8,677	8,690	8,703	8,716	8,729
627	8,742	8,755	8,768	8,780	8,793	8,806	8,819	8,832	8,845	8,857
628	8,870	8,882	8,895	8,907	8,919	8,932	8,944	8,956	8,968	8,981
629	8,993	9,005	9,018	9,030	9,042	9,054	9,066	9,079	9,091	9,104
630	9,117	9,130	9,143	9,156	9,170	9,184	9,198	9,211	9,224	9,237
631	9,251	9,265	9,280	9,294	9,308	9,321	9,335	9,348	9,362	9,376
632	9,389	9,402	9,416	9,429	9,443	9,456	9,470	9,484	9,498	9,512
633	9,526	9,540	9,554	9,568	9,582	9,596	9,610	9,624	9,638	9,652
634	9,666	9,681	9,696	9,710	9,724	9,738	9,752	9,766	9,780	9,794
635	9,808	9,822	9,836	9,848	9,861	9,873	9,885	9,897	9,909	9,921
636	9,933	9,945	9,957	9,969	9,981	9,994	10,006	10,018	10,030	10,043
637	10,055	10,067	10,080	10,092	10,104	10,117	10,129	10,141	10,154	10,167
638	10,179	10,192	10,205	10,217	10,230	10,243	10,255	10,268	10,281	10,294
639	10,307	10,320	10,333	10,347	10,360	10,373	10,386	10,400	10,413	10,426
640	10,439	10,452	10,465	10,479	10,492	10,506	10,520	10,534	10,547	10,562
641	10,576	10,591	10,606	10,620	10,635	10,650	10,664	10,679	10,694	10,709
642	10,724	10,739	10,754	10,769	10,784	10,799	10,814	10,830	10,845	10,861
643	10,877	10,892	10,908	10,924	10,940	10,956	10,972	10,988	11,004	11,020
644	11,036	11,052	11,068	11,084	11,100	11,117	11,133	11,150	11,167	11,184
645	11,202	11,220	11,240	11,264	11,306	11,343	11,375	11,403	11,430	11,454
646	11,478	11,500	11,521	11,542	11,563	11,582	11,602	11,621	11,641	11,660
647	11,679	11,698	11,717	11,735	11,754	11,772	11,790	11,808	11,826	11,844
648	11,862	11,880	11,898	11,915	11,932	11,949	11,967	11,984	12,001	12,019
649	12,037	12,055	12,073	12,091	12,109	12,127	12,145	12,162	12,180	12,198
650	12,216	12,235	12,253	12,272	12,290	12,309	12,327	12,345	12,363	12,381
651	12,399	12,417	12,436	12,454	12,472	12,491	12,509	12,528	12,547	12,565
652	12,583	12,601	12,619	12,637	12,655	12,674	12,692	12,711	12,729	12,748
653	12,767	12,786	12,804	12,823	12,842	12,861	12,879	12,898	12,917	12,935
654	12,954	12,972	12,990	13,009	13,027	13,045	13,063	13,081	13,099	13,118
655	13,136	13,154	13,173	13,191	13,209	13,227	13,246	13,264	13,283	13,302
656	13,321	13,340	13,358	13,377	13,397	13,416	13,435	13,454	13,473	13,492
657	13,511	13,531	13,550	13,569	13,588	13,608	13,627	13,647	13,667	13,686
658	13,706	13,726	13,746	13,767	13,787	13,808	13,829	13,849	13,869	13,890
659	13,910	13,930	13,951	13,971	13,991	14,011	14,032	14,052	14,071	14,091
660	14,111	14,131	14,151	14,170	14,190	14,210	14,229	14,249	14,269	14,289
661	14,309	14,330	14,350	14,370	14,390	14,411	14,431	14,452	14,472	14,493
662	14,515	14,536	14,558	14,580	14,602	14,623	14,645	14,667	14,689	14,711
663	14,733	14,755	14,778	14,801	14,823	14,846	14,868	14,890	14,912	14,934
664	14,956	14,977	14,998	15,020	15,041	15,062	15,084	15,105	15,126	15,147
665	15,169	15,191	15,212	15,234	15,256	15,278	15,300	15,323	15,345	15,368
666	15,391	15,414	15,437	15,461	15,485	15,509	15,533	15,557	15,582	15,607
667	15,633	15,658	15,684	15,710	15,736	15,762	15,787	15,813	15,838	15,863
668	15,888	15,913	15,938	15,963	15,988	16,013	16,038	16,063	16,088	16,113

Appendix B (Continued)

Lake Travis**RESERVOIR BATHYMETRIC AREA TABLE**

TEXAS WATER DEVELOPMENT BOARD

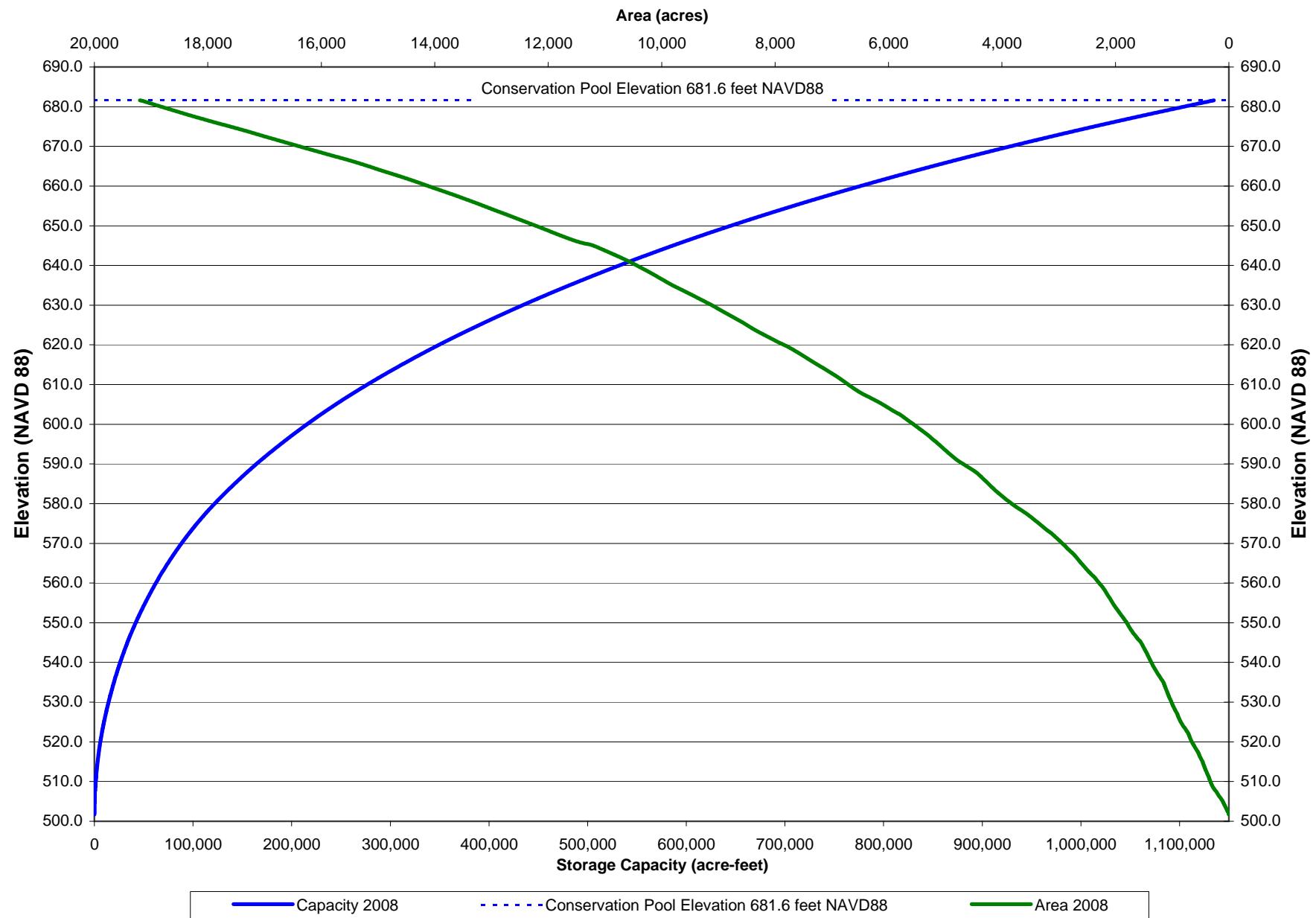
AREA IN ACRES

April-July 2008 Survey

Conservation Pool Elevation 681.6 Feet NAVD88

ELEVATION INCREMENT IS ONE TENTH FOOT

ELEVATION in Feet	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
669	16,138	16,163	16,188	16,213	16,238	16,263	16,287	16,312	16,337	16,361
670	16,386	16,410	16,435	16,459	16,483	16,508	16,532	16,557	16,582	16,606
671	16,631	16,655	16,680	16,705	16,729	16,754	16,778	16,802	16,827	16,851
672	16,876	16,900	16,925	16,949	16,973	16,997	17,021	17,045	17,068	17,092
673	17,116	17,139	17,162	17,185	17,209	17,232	17,256	17,280	17,304	17,329
674	17,354	17,379	17,404	17,428	17,453	17,478	17,504	17,529	17,555	17,580
675	17,606	17,632	17,658	17,684	17,711	17,737	17,764	17,791	17,817	17,842
676	17,867	17,892	17,918	17,943	17,968	17,993	18,017	18,041	18,066	18,090
677	18,115	18,140	18,164	18,189	18,214	18,239	18,264	18,288	18,312	18,336
678	18,359	18,382	18,406	18,429	18,452	18,475	18,498	18,522	18,545	18,568
679	18,591	18,615	18,638	18,661	18,685	18,708	18,731	18,755	18,778	18,801
680	18,824	18,847	18,870	18,892	18,915	18,937	18,959	18,982	19,004	19,026
681	19,048	19,070	19,092	19,114	19,137	19,160	19,199			



Lake Travis
April-July 2008 Survey
Prepared by: TWDB

Appendix C: Area and Capacity Curves

Appendix D
Lake Travis
RESERVOIR TOPOGRAPHIC & BATHYMETRIC CAPACITY TABLE
TEXAS WATER DEVELOPMENT BOARD
CAPACITY IN ACRE-FEET
ELEVATION INCREMENT IS ONE TENTH FOOT

April-July 2008 Survey
Conservation Pool Elevation 681.6 Feet NAVD88

ELEVATION in Feet	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
501	0	0	0	0	0	0	0	1	1	1
502	1	1	2	3	4	6	8	11	14	17
503	21	25	30	35	40	45	51	57	63	70
504	78	85	93	102	110	119	128	138	148	158
505	169	180	191	203	215	228	241	254	268	283
506	298	313	330	346	364	382	400	418	438	457
507	477	497	518	539	560	582	605	628	652	677
508	702	727	753	779	806	834	862	890	918	948
509	977	1,007	1,037	1,067	1,098	1,129	1,160	1,192	1,224	1,256
510	1,288	1,321	1,354	1,387	1,420	1,454	1,488	1,522	1,557	1,592
511	1,627	1,662	1,698	1,733	1,770	1,806	1,843	1,880	1,917	1,955
512	1,993	2,031	2,070	2,109	2,148	2,188	2,227	2,268	2,308	2,349
513	2,390	2,431	2,473	2,515	2,557	2,600	2,642	2,685	2,729	2,772
514	2,816	2,860	2,904	2,949	2,994	3,039	3,084	3,130	3,176	3,222
515	3,268	3,314	3,361	3,408	3,456	3,504	3,552	3,601	3,650	3,700
516	3,750	3,800	3,850	3,901	3,953	4,004	4,056	4,108	4,161	4,214
517	4,267	4,320	4,374	4,428	4,482	4,536	4,591	4,647	4,703	4,759
518	4,816	4,874	4,931	4,989	5,048	5,107	5,166	5,226	5,286	5,347
519	5,408	5,469	5,531	5,593	5,656	5,719	5,782	5,846	5,911	5,975
520	6,040	6,106	6,172	6,238	6,304	6,371	6,438	6,506	6,574	6,642
521	6,710	6,779	6,848	6,917	6,986	7,056	7,126	7,196	7,266	7,337
522	7,408	7,479	7,551	7,623	7,695	7,768	7,841	7,915	7,990	8,065
523	8,140	8,216	8,292	8,369	8,446	8,524	8,602	8,681	8,760	8,840
524	8,920	9,001	9,082	9,163	9,245	9,328	9,411	9,494	9,578	9,662
525	9,747	9,832	9,917	10,003	10,089	10,175	10,262	10,349	10,436	10,524
526	10,612	10,700	10,788	10,877	10,966	11,056	11,146	11,236	11,326	11,416
527	11,507	11,598	11,689	11,781	11,873	11,966	12,059	12,152	12,246	12,340
528	12,434	12,529	12,624	12,720	12,816	12,912	13,009	13,106	13,203	13,301
529	13,399	13,497	13,596	13,695	13,794	13,894	13,994	14,094	14,194	14,295
530	14,396	14,498	14,599	14,701	14,803	14,906	15,009	15,112	15,216	15,319
531	15,424	15,528	15,633	15,738	15,844	15,950	16,056	16,162	16,269	16,376
532	16,483	16,590	16,698	16,806	16,914	17,023	17,132	17,241	17,350	17,460
533	17,570	17,680	17,790	17,901	18,012	18,123	18,234	18,346	18,458	18,571
534	18,683	18,796	18,909	19,022	19,136	19,250	19,364	19,478	19,593	19,708
535	19,823	19,939	20,055	20,172	20,289	20,406	20,524	20,643	20,762	20,881
536	21,001	21,122	21,243	21,364	21,486	21,608	21,730	21,853	21,977	22,101
537	22,225	22,350	22,475	22,601	22,727	22,854	22,981	23,108	23,236	23,364
538	23,493	23,622	23,751	23,881	24,012	24,142	24,274	24,405	24,537	24,670
539	24,803	24,936	25,070	25,203	25,338	25,473	25,608	25,743	25,879	26,015
540	26,152	26,289	26,426	26,563	26,701	26,840	26,978	27,117	27,257	27,396
541	27,537	27,677	27,818	27,959	28,100	28,242	28,384	28,526	28,669	28,812
542	28,956	29,099	29,244	29,388	29,533	29,678	29,823	29,969	30,115	30,262
543	30,409	30,556	30,704	30,852	31,001	31,150	31,299	31,449	31,599	31,750
544	31,901	32,052	32,204	32,356	32,508	32,661	32,814	32,968	33,122	33,276
545	33,431	33,586	33,742	33,898	34,055	34,212	34,370	34,528	34,688	34,848
546	35,008	35,170	35,332	35,494	35,657	35,820	35,984	36,148	36,313	36,479
547	36,645	36,812	36,979	37,147	37,315	37,484	37,653	37,823	37,993	38,164
548	38,335	38,507	38,679	38,852	39,025	39,198	39,372	39,547	39,722	39,897
549	40,072	40,248	40,425	40,602	40,779	40,956	41,134	41,313	41,492	41,671
550	41,851	42,031	42,212	42,393	42,574	42,756	42,939	43,122	43,306	43,490
551	43,675	43,860	44,046	44,232	44,418	44,606	44,793	44,982	45,170	45,360
552	45,550	45,740	45,931	46,122	46,314	46,507	46,699	46,893	47,087	47,281
553	47,476	47,672	47,868	48,064	48,261	48,458	48,656	48,855	49,054	49,253
554	49,453	49,654	49,855	50,056	50,259	50,461	50,664	50,867	51,071	51,275
555	51,480	51,685	51,891	52,097	52,303	52,510	52,717	52,925	53,133	53,342
556	53,551	53,760	53,970	54,180	54,391	54,602	54,814	55,026	55,239	55,452

Appendix D (Continued)

Lake Travis**RESERVOIR TOPOGRAPHIC & BATHYMETRIC CAPACITY TABLE**

TEXAS WATER DEVELOPMENT BOARD

April-July 2008 Survey

CAPACITY IN ACRE-FEET

Conservation Pool Elevation 681.6 Feet NAVD88

ELEVATION INCREMENT IS ONE TENTH FOOT

ELEVATION in Feet	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
557	55,665	55,879	56,093	56,308	56,523	56,738	56,954	57,171	57,388	57,605
558	57,823	58,041	58,260	58,479	58,699	58,919	59,139	59,360	59,582	59,804
559	60,026	60,249	60,472	60,696	60,921	61,147	61,372	61,599	61,826	62,054
560	62,282	62,511	62,741	62,971	63,202	63,433	63,665	63,897	64,130	64,363
561	64,597	64,832	65,067	65,303	65,539	65,776	66,013	66,251	66,490	66,730
562	66,971	67,212	67,454	67,697	67,940	68,184	68,429	68,675	68,921	69,168
563	69,415	69,663	69,912	70,161	70,411	70,662	70,913	71,165	71,418	71,671
564	71,925	72,179	72,434	72,689	72,946	73,202	73,460	73,718	73,977	74,236
565	74,496	74,756	75,017	75,279	75,541	75,804	76,068	76,332	76,596	76,862
566	77,128	77,394	77,661	77,928	78,197	78,465	78,734	79,004	79,275	79,546
567	79,817	80,089	80,362	80,636	80,910	81,185	81,461	81,737	82,014	82,292
568	82,571	82,851	83,131	83,412	83,694	83,977	84,260	84,544	84,829	85,115
569	85,401	85,687	85,975	86,263	86,552	86,842	87,132	87,423	87,715	88,007
570	88,301	88,595	88,889	89,185	89,481	89,778	90,075	90,374	90,673	90,973
571	91,273	91,574	91,877	92,179	92,483	92,788	93,093	93,399	93,706	94,013
572	94,322	94,631	94,941	95,251	95,563	95,875	96,187	96,501	96,816	97,132
573	97,449	97,766	98,085	98,405	98,726	99,047	99,369	99,693	100,017	100,342
574	100,667	100,994	101,322	101,650	101,979	102,309	102,640	102,972	103,305	103,639
575	103,973	104,308	104,644	104,981	105,319	105,657	105,997	106,337	106,679	107,021
576	107,364	107,708	108,052	108,398	108,745	109,092	109,440	109,789	110,139	110,490
577	110,842	111,194	111,548	111,903	112,258	112,614	112,972	113,330	113,690	114,051
578	114,412	114,775	115,139	115,503	115,869	116,236	116,604	116,973	117,344	117,715
579	118,087	118,461	118,836	119,211	119,588	119,965	120,344	120,723	121,104	121,485
580	121,868	122,251	122,636	123,021	123,407	123,794	124,181	124,570	124,960	125,351
581	125,742	126,135	126,528	126,922	127,318	127,714	128,110	128,508	128,907	129,306
582	129,706	130,107	130,509	130,912	131,316	131,720	132,126	132,532	132,939	133,347
583	133,756	134,165	134,575	134,986	135,398	135,811	136,224	136,638	137,053	137,469
584	137,885	138,302	138,720	139,138	139,557	139,977	140,398	140,819	141,241	141,664
585	142,087	142,511	142,937	143,362	143,789	144,215	144,643	145,072	145,501	145,931
586	146,362	146,793	147,225	147,658	148,092	148,526	148,961	149,397	149,834	150,271
587	150,709	151,148	151,588	152,028	152,469	152,911	153,353	153,797	154,241	154,686
588	155,132	155,579	156,028	156,477	156,927	157,378	157,830	158,284	158,738	159,194
589	159,650	160,108	160,567	161,027	161,488	161,951	162,414	162,879	163,344	163,811
590	164,279	164,748	165,218	165,689	166,162	166,635	167,110	167,586	168,063	168,541
591	169,019	169,499	169,980	170,461	170,944	171,427	171,911	172,396	172,882	173,368
592	173,856	174,344	174,833	175,323	175,814	176,306	176,798	177,291	177,785	178,280
593	178,776	179,272	179,770	180,268	180,767	181,267	181,767	182,268	182,770	183,273
594	183,777	184,281	184,787	185,293	185,800	186,307	186,815	187,324	187,834	188,345
595	188,856	189,368	189,882	190,395	190,910	191,425	191,941	192,459	192,977	193,496
596	194,015	194,535	195,057	195,579	196,102	196,626	197,151	197,676	198,203	198,730
597	199,258	199,786	200,316	200,847	201,378	201,910	202,443	202,977	203,512	204,048
598	204,585	205,122	205,661	206,201	206,741	207,283	207,825	208,369	208,913	209,458
599	210,005	210,552	211,100	211,649	212,199	212,750	213,301	213,854	214,408	214,963
600	215,518	216,074	216,632	217,190	217,750	218,310	218,871	219,434	219,997	220,562
601	221,127	221,693	222,261	222,829	223,398	223,968	224,539	225,111	225,684	226,258
602	226,833	227,409	227,986	228,563	229,142	229,722	230,303	230,885	231,469	232,054
603	232,640	233,228	233,817	234,407	234,999	235,591	236,185	236,780	237,375	237,973
604	238,571	239,170	239,771	240,372	240,975	241,579	242,184	242,791	243,398	244,007
605	244,616	245,227	245,840	246,453	247,068	247,683	248,300	248,919	249,539	250,160
606	250,782	251,406	252,031	252,657	253,285	253,914	254,544	255,176	255,809	256,444
607	257,080	257,717	258,356	258,996	259,638	260,280	260,925	261,570	262,217	262,865
608	263,514	264,165	264,817	265,470	266,124	266,779	267,435	268,092	268,751	269,410
609	270,071	270,732	271,395	272,058	272,723	273,388	274,055	274,722	275,391	276,060
610	276,731	277,402	278,074	278,748	279,422	280,097	280,774	281,451	282,129	282,808
611	283,488	284,169	284,852	285,535	286,220	286,905	287,591	288,278	288,967	289,656
612	290,346	291,038	291,730	292,424	293,118	293,814	294,511	295,209	295,908	296,609

Appendix D (Continued)

Lake Travis**RESERVOIR TOPOGRAPHIC & BATHYMETRIC CAPACITY TABLE**

TEXAS WATER DEVELOPMENT BOARD

April-July 2008 Survey

CAPACITY IN ACRE-FEET

Conservation Pool Elevation 681.6 Feet NAVD88

ELEVATION INCREMENT IS ONE TENTH FOOT

ELEVATION in Feet	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
613	297,310	298,012	298,716	299,421	300,127	300,834	301,542	302,252	302,962	303,674
614	304,387	305,100	305,816	306,532	307,250	307,968	308,688	309,409	310,131	310,855
615	311,579	312,305	313,032	313,760	314,489	315,219	315,950	316,683	317,417	318,152
616	318,888	319,625	320,363	321,102	321,843	322,585	323,327	324,071	324,816	325,563
617	326,310	327,058	327,807	328,558	329,309	330,062	330,816	331,571	332,327	333,084
618	333,842	334,602	335,363	336,125	336,888	337,652	338,418	339,185	339,953	340,722
619	341,492	342,264	343,037	343,811	344,586	345,363	346,140	346,920	347,700	348,483
620	349,266	350,051	350,838	351,626	352,416	353,208	354,000	354,795	355,590	356,387
621	357,185	357,985	358,786	359,588	360,392	361,197	362,003	362,811	363,620	364,430
622	365,242	366,055	366,869	367,685	368,502	369,321	370,140	370,962	371,784	372,608
623	373,433	374,259	375,087	375,916	376,746	377,578	378,410	379,245	380,080	380,917
624	381,755	382,594	383,434	384,275	385,118	385,962	386,806	387,653	388,500	389,348
625	390,197	391,048	391,899	392,752	393,606	394,461	395,317	396,174	397,032	397,892
626	398,753	399,615	400,479	401,343	402,209	403,076	403,944	404,814	405,685	406,558
627	407,431	408,306	409,182	410,059	410,938	411,818	412,699	413,582	414,466	415,351
628	416,237	417,125	418,014	418,904	419,795	420,688	421,581	422,476	423,372	424,270
629	425,169	426,068	426,970	427,872	428,776	429,681	430,586	431,494	432,402	433,312
630	434,223	435,135	436,049	436,964	437,881	438,798	439,717	440,638	441,559	442,483
631	443,407	444,333	445,260	446,189	447,119	448,050	448,983	449,917	450,853	451,790
632	452,728	453,667	454,608	455,551	456,494	457,439	458,385	459,333	460,282	461,233
633	462,185	463,138	464,093	465,049	466,006	466,965	467,925	468,887	469,850	470,815
634	471,781	472,748	473,717	474,687	475,659	476,632	477,606	478,583	479,560	480,539
635	481,519	482,500	483,483	484,467	485,453	486,439	487,427	488,417	489,407	490,398
636	491,391	492,385	493,380	494,376	495,374	496,372	497,372	498,374	499,376	500,380
637	501,385	502,390	503,398	504,406	505,417	506,427	507,439	508,453	509,468	510,484
638	511,501	512,520	513,540	514,561	515,583	516,607	517,631	518,658	519,685	520,714
639	521,744	522,775	523,808	524,842	525,878	526,914	527,952	528,991	530,032	531,074
640	532,117	533,161	534,208	535,255	536,304	537,353	538,404	539,457	540,511	541,567
641	542,624	543,682	544,742	545,803	546,866	547,930	548,996	550,063	551,132	552,202
642	553,273	554,346	555,421	556,497	557,575	558,654	559,734	560,817	561,901	562,986
643	564,073	565,161	566,252	567,343	568,436	569,531	570,627	571,725	572,825	573,926
644	575,029	576,133	577,239	578,347	579,456	580,567	581,679	582,794	583,909	585,027
645	586,146	587,267	588,391	589,515	590,644	591,776	592,912	594,051	595,193	596,337
646	597,484	598,632	599,784	600,937	602,092	603,249	604,408	605,570	606,733	607,898
647	609,065	610,233	611,405	612,577	613,752	614,928	616,106	617,286	618,467	619,651
648	620,836	622,023	623,212	624,403	625,595	626,789	627,985	629,183	630,382	631,583
649	632,786	633,990	635,197	636,405	637,615	638,826	640,040	641,256	642,472	643,692
650	644,912	646,134	647,359	648,585	649,814	651,043	652,275	653,509	654,744	655,982
651	657,221	658,461	659,704	660,948	662,195	663,443	664,693	665,945	667,198	668,454
652	669,711	670,970	672,232	673,494	674,759	676,026	677,294	678,564	679,836	681,110
653	682,386	683,663	684,943	686,224	687,508	688,792	690,079	691,368	692,659	693,952
654	695,246	696,542	697,841	699,140	700,442	701,746	703,051	704,358	705,667	706,979
655	708,291	709,605	710,922	712,240	713,560	714,882	716,205	717,531	718,858	720,188
656	721,518	722,851	724,187	725,523	726,862	728,203	729,545	730,890	732,236	733,584
657	734,934	736,286	737,641	738,996	740,355	741,714	743,075	744,440	745,805	747,173
658	748,542	749,914	751,288	752,663	754,041	755,421	756,802	758,187	759,572	760,961
659	762,350	763,742	765,137	766,532	767,931	769,331	770,732	772,137	773,543	774,952
660	776,361	777,773	779,188	780,603	782,022	783,442	784,863	786,288	787,713	789,142
661	790,571	792,003	793,437	794,873	796,312	797,751	799,193	800,638	802,084	803,533
662	804,983	806,435	807,890	809,347	810,806	812,267	813,730	815,197	816,664	818,135
663	819,607	821,081	822,558	824,037	825,518	827,001	828,487	829,975	831,465	832,958
664	834,452	835,949	837,448	838,949	840,452	841,957	843,464	844,974	846,486	848,000
665	849,515	851,033	852,554	854,076	855,601	857,127	858,656	860,188	861,721	863,257
666	864,795	866,335	867,878	869,423	870,971	872,520	874,072	875,627	877,184	878,744
667	880,306	881,870	883,438	885,007	886,580	888,155	889,732	891,313	892,895	894,481
668	896,069	897,658	899,252	900,846	902,445	904,044	905,647	907,253	908,860	910,471

Appendix D (Continued)

Lake Travis**RESERVOIR TOPOGRAPHIC & BATHYMETRIC CAPACITY TABLE**

TEXAS WATER DEVELOPMENT BOARD

April-July 2008 Survey

CAPACITY IN ACRE-FEET

Conservation Pool Elevation 681.6 Feet NAVD88

ELEVATION INCREMENT IS ONE TENTH FOOT

ELEVATION in Feet	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
669	912,083	913,698	915,317	916,936	918,560	920,185	921,812	923,443	925,075	926,711
670	928,348	929,987	931,631	933,275	934,923	936,572	938,224	939,880	941,536	943,197
671	944,858	946,523	948,190	949,859	951,532	953,206	954,883	956,563	958,244	959,929
672	961,615	963,304	964,996	966,689	968,387	970,085	971,786	973,490	975,196	976,905
673	978,615	980,328	982,044	983,761	985,482	987,204	988,929	990,656	992,386	994,118
674	995,853	997,589	999,329	1,001,071	1,002,816	1,004,563	1,006,312	1,008,065	1,009,819	1,011,577
675	1,013,337	1,015,099	1,016,864	1,018,632	1,020,403	1,022,175	1,023,950	1,025,730	1,027,510	1,029,294
676	1,031,080	1,032,868	1,034,660	1,036,453	1,038,250	1,040,048	1,041,849	1,043,653	1,045,459	1,047,268
677	1,049,079	1,050,892	1,052,709	1,054,527	1,056,348	1,058,171	1,059,997	1,061,826	1,063,656	1,065,490
678	1,067,325	1,069,163	1,071,004	1,072,846	1,074,691	1,076,538	1,078,388	1,080,240	1,082,094	1,083,951
679	1,085,810	1,087,671	1,089,535	1,091,401	1,093,270	1,095,140	1,097,013	1,098,889	1,100,766	1,102,647
680	1,104,529	1,106,413	1,108,301	1,110,189	1,112,082	1,113,975	1,115,871	1,117,770	1,119,670	1,121,574
681	1,123,478	1,125,385	1,127,295	1,129,207	1,131,121	1,133,037	1,134,956	1,136,888	1,138,824	1,140,764
682	1,142,706	1,144,652	1,146,602	1,148,554	1,150,509	1,152,467	1,154,427	1,156,392	1,158,358	1,160,328
683	1,162,301	1,164,276	1,166,256	1,168,237	1,170,222	1,172,209	1,174,198	1,176,191	1,178,185	1,180,183
684	1,182,183	1,184,184	1,186,190	1,188,197	1,190,207	1,192,219	1,194,233	1,196,251	1,198,271	1,200,294
685	1,202,318	1,204,344	1,206,375	1,208,406	1,210,441	1,212,477	1,214,515	1,216,557	1,218,600	1,220,647
686	1,222,695	1,224,745	1,226,799	1,228,854	1,230,913	1,232,973	1,235,035	1,237,101	1,239,168	1,241,239
687	1,243,311	1,245,386	1,247,464	1,249,543	1,251,626	1,253,709	1,255,796	1,257,885	1,259,976	1,262,071
688	1,264,167	1,266,265	1,268,366	1,270,469	1,272,576	1,274,683	1,276,793	1,278,907	1,281,021	1,283,140
689	1,285,259	1,287,381	1,289,507	1,291,633	1,293,764	1,295,895	1,298,029	1,300,166	1,302,305	1,304,447
690	1,306,590	1,308,736	1,310,886	1,313,036	1,315,191	1,317,346	1,319,504	1,321,666	1,323,829	1,325,996
691	1,328,163	1,330,334	1,332,508	1,334,683	1,336,862	1,339,042	1,341,225	1,343,412	1,345,599	1,347,791
692	1,349,983	1,352,179	1,354,378	1,356,578	1,358,782	1,360,988	1,363,196	1,365,408	1,367,621	1,369,838
693	1,372,056	1,374,276	1,376,501	1,378,727	1,380,957	1,383,188	1,385,422	1,387,659	1,389,898	1,392,141
694	1,394,386	1,396,633	1,398,884	1,401,136	1,403,392	1,405,650	1,407,910	1,410,174	1,412,440	1,414,710
695	1,416,981	1,419,254	1,421,532	1,423,811	1,426,094	1,428,379	1,430,666	1,432,958	1,435,250	1,437,547
696	1,439,846	1,442,147	1,444,452	1,446,758	1,449,069	1,451,381	1,453,696	1,456,015	1,458,335	1,460,660
697	1,462,986	1,465,315	1,467,648	1,469,982	1,472,321	1,474,661	1,477,004	1,479,351	1,481,699	1,484,051
698	1,486,405	1,488,762	1,491,123	1,493,485	1,495,852	1,498,219	1,500,590	1,502,966	1,505,342	1,507,723
699	1,510,106	1,512,492	1,514,882	1,517,274	1,519,670	1,522,067	1,524,468	1,526,873	1,529,280	1,531,691
700	1,534,104	1,536,519	1,538,939	1,541,361	1,543,787	1,546,214	1,548,645	1,551,080	1,553,517	1,555,958
701	1,558,400	1,560,846	1,563,297	1,565,749	1,568,205	1,570,663	1,573,124	1,575,590	1,578,057	1,580,529
702	1,583,002	1,585,478	1,587,959	1,590,442	1,592,929	1,595,417	1,597,909	1,600,405	1,602,903	1,605,406
703	1,607,910	1,610,417	1,612,930	1,615,443	1,617,962	1,620,482	1,623,005	1,625,533	1,628,062	1,630,596
704	1,633,132	1,635,670	1,638,214	1,640,759	1,643,309	1,645,861	1,648,415	1,650,975	1,653,536	1,656,102
705	1,658,670	1,661,241	1,663,817	1,666,395	1,668,978	1,671,562	1,674,150	1,676,743	1,679,338	1,681,938
706	1,684,540	1,687,145	1,689,755	1,692,367	1,694,984	1,697,603	1,700,225	1,702,852	1,705,482	1,708,116
707	1,710,752	1,713,392	1,716,037	1,718,684	1,721,336	1,723,990	1,726,647	1,729,310	1,731,975	1,734,645
708	1,737,316	1,739,992	1,742,672	1,745,355	1,748,042	1,750,732	1,753,425	1,756,123	1,758,823	1,761,529
709	1,764,236	1,766,947	1,769,663	1,772,381	1,775,104	1,777,830	1,780,558	1,783,292	1,786,028	1,788,770
710	1,791,513	1,794,260	1,797,012	1,799,766	1,802,526	1,805,288	1,808,053	1,810,824	1,813,597	1,816,375
711	1,819,155	1,821,939	1,824,728	1,827,519	1,830,315	1,833,114	1,835,916	1,838,724	1,841,533	1,844,348
712	1,847,165	1,849,986	1,852,813	1,855,641	1,858,475	1,861,310	1,864,150	1,866,995	1,869,842	1,872,694
713	1,875,548	1,878,406	1,881,270	1,884,135	1,887,006	1,889,879	1,892,755	1,895,637	1,898,521	1,901,410
714	1,904,302	1,907,197	1,910,097	1,912,999	1,915,907	1,918,817	1,921,731	1,924,650	1,927,570	1,930,497
715	1,933,425	1,936,357	1,939,294	1,942,233	1,945,178	1,948,125	1,951,075	1,954,030	1,956,988	1,959,951
716	1,962,916	1,965,885	1,968,859	1,971,836	1,974,818	1,977,802	1,980,790	1,983,783	1,986,778	1,989,779
717	1,992,782	1,995,789	1,998,801	2,001,815	2,004,835	2,007,856	2,010,881	2,013,912	2,016,945	2,019,984
718	2,023,024	2,026,068	2,029,117	2,032,169	2,035,226	2,038,285	2,041,347	2,044,416	2,047,486	2,050,562
719	2,053,639	2,056,721	2,059,807	2,062,896	2,065,991	2,069,087	2,072,187	2,075,293	2,078,401	2,081,514
720	2,084,629	2,087,748	2,090,872	2,093,998	2,097,130	2,100,264	2,103,402	2,106,546	2,109,692	2,112,843
721	2,115,997	2,119,154	2,122,318	2,125,483	2,128,654	2,131,827	2,135,004	2,138,186	2,141,371	2,144,561
722	2,147,754	2,150,950	2,154,152	2,157,357	2,160,567	2,163,779	2,166,995	2,170,217	2,173,440	2,176,670
723	2,179,902	2,183,137	2,186,378	2,189,622	2,192,871	2,196,122	2,199,377	2,202,638	2,205,901	2,209,170
724	2,212,441	2,215,716	2,218,997	2,222,280	2,225,569	2,228,860	2,232,155	2,235,456	2,238,759	2,242,068

Appendix D (Continued)

Lake Travis

RESERVOIR TOPOGRAPHIC & BATHYMETRIC CAPACITY TABLE

TEXAS WATER DEVELOPMENT BOARD

April-July 2008 Survey

CAPACITY IN ACRE-FEET

Conservation Pool Elevation 681.6 Feet NAVD88

LEVEL ELEVATION FLOOR
ELEVATION INCREMENT IS ONE TENTH FOOT

Appendix E
Lake Travis
RESERVOIR TOPOGRAPHIC & BATHYMETRIC AREA TABLE

TEXAS WATER DEVELOPMENT BOARD
 AREA IN ACRES

April-July 2008 Survey
 Conservation Pool Elevation 681.6 Feet NAVD88

ELEVATION INCREMENT IS ONE TENTH FOOT

ELEVATION in Feet	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
501	0	0	0	0	0	0	0	0	1	2
502	3	4	7	11	17	21	24	28	33	36
503	40	43	46	49	52	56	59	63	67	71
504	76	79	81	84	87	91	94	97	101	104
505	108	111	115	120	125	129	133	138	143	148
506	154	159	165	171	176	180	185	189	193	197
507	201	205	209	212	217	222	230	236	242	247
508	252	257	262	267	272	276	280	285	289	293
509	296	299	302	305	308	311	314	317	320	323
510	326	328	330	333	336	338	341	344	347	349
511	352	355	357	360	363	366	370	373	375	378
512	381	384	388	391	394	397	400	403	406	410
513	412	415	418	421	424	427	429	431	434	437
514	440	443	445	447	450	452	454	456	459	461
515	463	467	471	474	478	482	486	490	493	497
516	501	504	508	511	515	518	521	524	527	529
517	532	535	537	540	544	548	552	558	563	567
518	571	574	578	583	587	592	596	600	604	608
519	612	615	619	624	628	633	638	642	646	650
520	653	656	660	664	667	670	673	676	679	682
521	685	687	690	692	695	698	701	703	706	708
522	711	714	718	722	727	732	736	741	747	752
523	756	761	765	769	773	779	785	791	796	800
524	805	809	813	818	822	827	832	836	840	844
525	848	852	855	859	862	865	868	872	875	878
526	881	884	887	890	893	896	898	901	904	906
527	909	912	915	919	923	927	931	936	940	943
528	947	950	954	958	961	965	968	972	975	979
529	982	985	988	991	994	997	1,000	1,003	1,006	1,009
530	1,012	1,015	1,018	1,021	1,024	1,027	1,030	1,034	1,037	1,041
531	1,044	1,047	1,050	1,053	1,056	1,059	1,062	1,065	1,068	1,071
532	1,074	1,076	1,079	1,081	1,084	1,087	1,090	1,092	1,095	1,097
533	1,100	1,103	1,105	1,108	1,111	1,113	1,116	1,119	1,122	1,124
534	1,127	1,130	1,132	1,135	1,138	1,140	1,143	1,146	1,148	1,152
535	1,155	1,159	1,164	1,168	1,173	1,177	1,182	1,187	1,192	1,197
536	1,202	1,207	1,211	1,215	1,219	1,223	1,228	1,232	1,237	1,242
537	1,247	1,251	1,255	1,259	1,264	1,268	1,272	1,276	1,280	1,284
538	1,288	1,293	1,297	1,302	1,306	1,310	1,315	1,319	1,323	1,327
539	1,330	1,334	1,338	1,342	1,346	1,349	1,353	1,357	1,360	1,364
540	1,367	1,370	1,374	1,378	1,381	1,385	1,389	1,392	1,396	1,399
541	1,403	1,406	1,409	1,413	1,416	1,419	1,423	1,426	1,429	1,433
542	1,436	1,439	1,443	1,446	1,450	1,453	1,457	1,460	1,464	1,468
543	1,472	1,476	1,480	1,484	1,488	1,492	1,496	1,500	1,504	1,507
544	1,511	1,514	1,518	1,522	1,526	1,530	1,534	1,538	1,542	1,547
545	1,551	1,555	1,559	1,563	1,568	1,575	1,584	1,591	1,598	1,604
546	1,610	1,615	1,621	1,626	1,631	1,637	1,642	1,647	1,652	1,658
547	1,664	1,670	1,675	1,681	1,686	1,691	1,696	1,701	1,706	1,710
548	1,715	1,720	1,724	1,728	1,733	1,737	1,742	1,746	1,750	1,754
549	1,758	1,762	1,766	1,770	1,774	1,778	1,782	1,787	1,791	1,795
550	1,799	1,803	1,808	1,813	1,819	1,824	1,830	1,835	1,840	1,845
551	1,850	1,854	1,859	1,864	1,869	1,874	1,880	1,886	1,891	1,896
552	1,901	1,906	1,912	1,917	1,922	1,927	1,932	1,937	1,942	1,947
553	1,952	1,957	1,962	1,967	1,972	1,977	1,983	1,988	1,993	1,998
554	2,003	2,008	2,013	2,018	2,022	2,027	2,031	2,036	2,040	2,045
555	2,049	2,053	2,058	2,062	2,066	2,071	2,075	2,080	2,084	2,088
556	2,093	2,097	2,101	2,106	2,110	2,114	2,118	2,123	2,127	2,132

Appendix E (Continued)

Lake Travis**RESERVOIR TOPOGRAPHIC & BATHYMETRIC AREA TABLE**

TEXAS WATER DEVELOPMENT BOARD

AREA IN ACRES

April-July 2008 Survey

Conservation Pool Elevation 681.6 Feet NAVD88

ELEVATION INCREMENT IS ONE TENTH FOOT

ELEVATION in Feet	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
557	2,136	2,140	2,145	2,149	2,154	2,158	2,162	2,167	2,171	2,176
558	2,180	2,185	2,189	2,194	2,198	2,203	2,207	2,212	2,217	2,222
559	2,227	2,232	2,238	2,244	2,251	2,256	2,262	2,268	2,275	2,281
560	2,287	2,293	2,298	2,304	2,310	2,315	2,321	2,326	2,331	2,337
561	2,342	2,348	2,354	2,359	2,365	2,372	2,379	2,387	2,395	2,403
562	2,410	2,417	2,423	2,430	2,437	2,444	2,451	2,458	2,465	2,472
563	2,478	2,484	2,490	2,497	2,503	2,510	2,516	2,522	2,528	2,534
564	2,540	2,546	2,552	2,558	2,565	2,571	2,578	2,584	2,590	2,596
565	2,602	2,608	2,614	2,620	2,626	2,632	2,638	2,644	2,650	2,655
566	2,661	2,667	2,672	2,678	2,684	2,689	2,695	2,701	2,707	2,713
567	2,719	2,725	2,731	2,738	2,746	2,754	2,761	2,769	2,776	2,784
568	2,792	2,800	2,807	2,815	2,823	2,831	2,838	2,844	2,851	2,858
569	2,865	2,871	2,878	2,885	2,892	2,899	2,907	2,915	2,923	2,929
570	2,936	2,943	2,950	2,957	2,965	2,972	2,980	2,988	2,995	3,002
571	3,010	3,017	3,025	3,032	3,041	3,049	3,057	3,064	3,072	3,080
572	3,087	3,095	3,102	3,110	3,117	3,125	3,134	3,143	3,153	3,163
573	3,173	3,183	3,193	3,202	3,211	3,219	3,227	3,236	3,245	3,253
574	3,262	3,271	3,280	3,289	3,298	3,306	3,315	3,323	3,331	3,340
575	3,348	3,356	3,364	3,373	3,382	3,391	3,400	3,408	3,417	3,426
576	3,435	3,443	3,452	3,460	3,469	3,478	3,486	3,495	3,504	3,513
577	3,523	3,532	3,541	3,550	3,559	3,568	3,579	3,591	3,602	3,612
578	3,622	3,632	3,642	3,653	3,664	3,675	3,686	3,697	3,709	3,719
579	3,730	3,740	3,750	3,761	3,771	3,780	3,791	3,801	3,810	3,820
580	3,829	3,838	3,847	3,856	3,865	3,874	3,883	3,892	3,902	3,912
581	3,921	3,930	3,938	3,947	3,956	3,964	3,973	3,981	3,990	3,998
582	4,007	4,016	4,024	4,033	4,041	4,049	4,058	4,066	4,075	4,083
583	4,091	4,099	4,107	4,114	4,122	4,129	4,137	4,144	4,152	4,159
584	4,166	4,174	4,181	4,188	4,195	4,203	4,210	4,217	4,224	4,231
585	4,238	4,246	4,253	4,260	4,267	4,274	4,281	4,289	4,296	4,303
586	4,311	4,318	4,325	4,333	4,340	4,348	4,355	4,362	4,370	4,377
587	4,384	4,392	4,399	4,407	4,415	4,423	4,431	4,439	4,447	4,456
588	4,466	4,476	4,486	4,496	4,506	4,517	4,528	4,539	4,550	4,561
589	4,572	4,584	4,595	4,607	4,619	4,630	4,641	4,651	4,662	4,672
590	4,683	4,695	4,706	4,718	4,730	4,742	4,753	4,764	4,774	4,784
591	4,793	4,802	4,811	4,820	4,828	4,837	4,845	4,854	4,862	4,871
592	4,879	4,887	4,896	4,904	4,912	4,921	4,929	4,937	4,945	4,953
593	4,961	4,969	4,977	4,985	4,993	5,001	5,009	5,017	5,025	5,033
594	5,041	5,049	5,056	5,064	5,072	5,079	5,087	5,095	5,103	5,110
595	5,118	5,126	5,134	5,142	5,150	5,159	5,167	5,175	5,184	5,192
596	5,201	5,209	5,218	5,226	5,234	5,243	5,251	5,259	5,267	5,276
597	5,284	5,293	5,301	5,310	5,318	5,326	5,335	5,344	5,353	5,363
598	5,373	5,382	5,391	5,400	5,410	5,419	5,429	5,439	5,449	5,459
599	5,468	5,477	5,486	5,495	5,504	5,513	5,522	5,531	5,541	5,550
600	5,559	5,569	5,579	5,589	5,599	5,609	5,619	5,630	5,640	5,649
601	5,659	5,668	5,677	5,687	5,696	5,706	5,715	5,725	5,735	5,744
602	5,754	5,763	5,773	5,783	5,793	5,804	5,816	5,830	5,843	5,858
603	5,871	5,884	5,896	5,907	5,919	5,931	5,942	5,954	5,965	5,977
604	5,988	6,000	6,011	6,022	6,034	6,046	6,057	6,068	6,080	6,092
605	6,104	6,116	6,128	6,140	6,153	6,165	6,178	6,191	6,204	6,217
606	6,230	6,243	6,257	6,270	6,284	6,298	6,311	6,325	6,338	6,351
607	6,366	6,381	6,396	6,409	6,423	6,436	6,449	6,461	6,474	6,487
608	6,499	6,512	6,523	6,535	6,546	6,557	6,568	6,578	6,589	6,600
609	6,610	6,620	6,631	6,640	6,650	6,660	6,670	6,680	6,690	6,700
610	6,709	6,719	6,729	6,738	6,748	6,758	6,768	6,777	6,787	6,797
611	6,806	6,817	6,828	6,838	6,848	6,858	6,868	6,878	6,888	6,898
612	6,908	6,919	6,929	6,940	6,952	6,963	6,975	6,986	6,997	7,009

Appendix E (Continued)
Lake Travis
RESERVOIR TOPOGRAPHIC & BATHYMETRIC AREA TABLE

TEXAS WATER DEVELOPMENT BOARD

AREA IN ACRES

April-July 2008 Survey
 Conservation Pool Elevation 681.6 Feet NAVD88

ELEVATION INCREMENT IS ONE TENTH FOOT

ELEVATION in Feet	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
613	7,021	7,032	7,043	7,054	7,065	7,077	7,088	7,099	7,110	7,122
614	7,134	7,145	7,156	7,168	7,180	7,192	7,205	7,217	7,229	7,240
615	7,251	7,263	7,274	7,285	7,297	7,309	7,320	7,332	7,343	7,355
616	7,366	7,377	7,389	7,400	7,411	7,422	7,433	7,444	7,455	7,466
617	7,477	7,488	7,499	7,510	7,521	7,532	7,544	7,555	7,567	7,579
618	7,590	7,602	7,614	7,626	7,638	7,650	7,662	7,674	7,686	7,698
619	7,710	7,722	7,735	7,747	7,760	7,773	7,786	7,800	7,814	7,830
620	7,845	7,859	7,875	7,890	7,905	7,920	7,935	7,949	7,963	7,977
621	7,990	8,003	8,017	8,030	8,043	8,056	8,070	8,083	8,096	8,110
622	8,124	8,137	8,151	8,164	8,178	8,191	8,205	8,218	8,231	8,244
623	8,258	8,271	8,284	8,296	8,309	8,322	8,335	8,348	8,361	8,373
624	8,385	8,397	8,408	8,420	8,431	8,443	8,454	8,466	8,477	8,488
625	8,499	8,510	8,521	8,532	8,544	8,555	8,567	8,579	8,591	8,603
626	8,615	8,628	8,640	8,652	8,665	8,678	8,690	8,703	8,716	8,729
627	8,742	8,755	8,768	8,780	8,793	8,806	8,819	8,832	8,845	8,857
628	8,870	8,882	8,895	8,907	8,919	8,932	8,944	8,956	8,968	8,981
629	8,993	9,005	9,018	9,030	9,042	9,054	9,067	9,079	9,092	9,104
630	9,117	9,130	9,143	9,156	9,170	9,184	9,198	9,211	9,225	9,237
631	9,251	9,265	9,280	9,294	9,308	9,321	9,335	9,348	9,362	9,376
632	9,389	9,402	9,416	9,429	9,443	9,456	9,470	9,484	9,498	9,512
633	9,526	9,540	9,554	9,568	9,582	9,596	9,610	9,624	9,638	9,652
634	9,667	9,681	9,696	9,710	9,724	9,738	9,752	9,766	9,780	9,794
635	9,808	9,822	9,836	9,848	9,861	9,873	9,885	9,897	9,909	9,921
636	9,933	9,945	9,957	9,969	9,981	9,994	10,006	10,018	10,030	10,043
637	10,055	10,067	10,080	10,092	10,104	10,117	10,129	10,141	10,154	10,167
638	10,179	10,192	10,205	10,217	10,230	10,243	10,255	10,268	10,281	10,294
639	10,307	10,320	10,333	10,347	10,360	10,373	10,386	10,400	10,413	10,426
640	10,439	10,452	10,465	10,479	10,492	10,506	10,520	10,534	10,547	10,562
641	10,576	10,591	10,606	10,621	10,635	10,650	10,664	10,679	10,694	10,709
642	10,724	10,739	10,754	10,769	10,784	10,799	10,814	10,830	10,845	10,861
643	10,877	10,892	10,908	10,924	10,940	10,956	10,972	10,988	11,004	11,020
644	11,036	11,052	11,068	11,084	11,100	11,117	11,133	11,150	11,167	11,184
645	11,202	11,220	11,240	11,264	11,306	11,343	11,375	11,403	11,430	11,454
646	11,478	11,500	11,521	11,542	11,563	11,583	11,602	11,621	11,641	11,660
647	11,679	11,698	11,717	11,735	11,754	11,772	11,790	11,808	11,826	11,844
648	11,862	11,880	11,898	11,915	11,932	11,950	11,967	11,984	12,001	12,019
649	12,037	12,055	12,073	12,091	12,109	12,127	12,145	12,162	12,180	12,198
650	12,216	12,235	12,253	12,272	12,291	12,309	12,327	12,345	12,363	12,382
651	12,399	12,417	12,436	12,454	12,472	12,491	12,509	12,528	12,547	12,565
652	12,583	12,601	12,619	12,637	12,655	12,674	12,692	12,711	12,729	12,748
653	12,767	12,786	12,804	12,823	12,842	12,861	12,879	12,898	12,917	12,935
654	12,954	12,972	12,990	13,009	13,027	13,045	13,063	13,081	13,099	13,118
655	13,136	13,154	13,173	13,191	13,209	13,227	13,246	13,264	13,283	13,302
656	13,321	13,340	13,359	13,378	13,397	13,416	13,435	13,454	13,473	13,492
657	13,511	13,531	13,550	13,569	13,588	13,608	13,627	13,647	13,667	13,686
658	13,706	13,726	13,746	13,767	13,787	13,808	13,829	13,849	13,869	13,890
659	13,910	13,930	13,951	13,971	13,991	14,011	14,032	14,052	14,071	14,091
660	14,111	14,131	14,151	14,171	14,190	14,210	14,229	14,249	14,269	14,289
661	14,310	14,330	14,350	14,370	14,391	14,411	14,431	14,452	14,473	14,494
662	14,515	14,537	14,558	14,580	14,602	14,624	14,646	14,668	14,690	14,712
663	14,734	14,756	14,779	14,801	14,824	14,846	14,869	14,891	14,913	14,935
664	14,957	14,978	14,999	15,021	15,042	15,063	15,085	15,106	15,127	15,148
665	15,170	15,192	15,213	15,235	15,257	15,279	15,301	15,324	15,346	15,369
666	15,392	15,415	15,438	15,462	15,486	15,510	15,534	15,559	15,584	15,609
667	15,634	15,660	15,685	15,711	15,737	15,763	15,789	15,814	15,840	15,865
668	15,890	15,914	15,939	15,964	15,990	16,015	16,040	16,065	16,090	16,115

Appendix E (Continued)

Lake Travis**RESERVOIR TOPOGRAPHIC & BATHYMETRIC AREA TABLE**

TEXAS WATER DEVELOPMENT BOARD

AREA IN ACRES

April-July 2008 Survey

Conservation Pool Elevation 681.6 Feet NAVD88

ELEVATION INCREMENT IS ONE TENTH FOOT

ELEVATION in Feet	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
669	16,140	16,165	16,190	16,215	16,240	16,265	16,290	16,314	16,339	16,364
670	16,388	16,413	16,437	16,461	16,486	16,510	16,535	16,560	16,584	16,609
671	16,634	16,658	16,683	16,708	16,732	16,757	16,781	16,805	16,830	16,854
672	16,879	16,904	16,928	16,952	16,976	17,001	17,025	17,048	17,072	17,096
673	17,120	17,143	17,166	17,190	17,213	17,237	17,260	17,284	17,309	17,333
674	17,359	17,384	17,409	17,434	17,459	17,484	17,509	17,535	17,560	17,586
675	17,612	17,638	17,664	17,690	17,717	17,744	17,770	17,797	17,823	17,849
676	17,874	17,899	17,924	17,950	17,975	18,000	18,024	18,049	18,073	18,098
677	18,123	18,147	18,172	18,197	18,222	18,247	18,272	18,296	18,320	18,344
678	18,368	18,391	18,415	18,438	18,461	18,485	18,508	18,531	18,555	18,578
679	18,602	18,625	18,649	18,672	18,696	18,719	18,742	18,766	18,789	18,812
680	18,836	18,859	18,882	18,904	18,927	18,950	18,972	18,995	19,017	19,040
681	19,062	19,084	19,107	19,130	19,153	19,176	19,297	19,339	19,377	19,413
682	19,446	19,477	19,507	19,536	19,565	19,594	19,623	19,652	19,682	19,713
683	19,745	19,775	19,803	19,831	19,857	19,883	19,909	19,935	19,960	19,985
684	20,011	20,036	20,061	20,086	20,111	20,136	20,161	20,185	20,210	20,235
685	20,259	20,283	20,307	20,330	20,354	20,377	20,400	20,424	20,447	20,471
686	20,495	20,519	20,544	20,568	20,593	20,617	20,641	20,665	20,689	20,713
687	20,737	20,761	20,785	20,808	20,832	20,856	20,879	20,903	20,926	20,950
688	20,974	20,997	21,021	21,045	21,069	21,093	21,116	21,140	21,164	21,188
689	21,212	21,236	21,260	21,283	21,307	21,331	21,355	21,379	21,402	21,426
690	21,450	21,475	21,499	21,524	21,548	21,573	21,598	21,623	21,647	21,672
691	21,696	21,721	21,745	21,770	21,795	21,820	21,845	21,870	21,895	21,920
692	21,945	21,971	21,996	22,021	22,047	22,072	22,098	22,123	22,149	22,174
693	22,200	22,226	22,252	22,278	22,304	22,330	22,356	22,382	22,409	22,435
694	22,462	22,488	22,515	22,542	22,568	22,595	22,622	22,648	22,675	22,702
695	22,729	22,756	22,783	22,810	22,837	22,865	22,892	22,920	22,947	22,974
696	23,002	23,029	23,057	23,085	23,112	23,140	23,168	23,196	23,224	23,252
697	23,280	23,308	23,336	23,364	23,392	23,419	23,447	23,475	23,502	23,530
698	23,558	23,586	23,614	23,642	23,671	23,699	23,729	23,758	23,788	23,818
699	23,848	23,878	23,908	23,938	23,968	23,998	24,027	24,057	24,087	24,117
700	24,147	24,177	24,207	24,236	24,266	24,296	24,327	24,357	24,388	24,418
701	24,449	24,479	24,510	24,540	24,571	24,601	24,632	24,663	24,693	24,724
702	24,754	24,785	24,816	24,846	24,877	24,908	24,938	24,970	25,001	25,032
703	25,064	25,096	25,127	25,159	25,191	25,222	25,253	25,284	25,316	25,347
704	25,379	25,410	25,442	25,474	25,506	25,537	25,570	25,602	25,635	25,667
705	25,700	25,734	25,768	25,802	25,835	25,869	25,904	25,938	25,972	26,006
706	26,041	26,075	26,109	26,144	26,178	26,212	26,247	26,281	26,316	26,351
707	26,387	26,422	26,457	26,493	26,528	26,564	26,600	26,635	26,671	26,707
708	26,743	26,778	26,813	26,848	26,884	26,920	26,955	26,991	27,026	27,062
709	27,098	27,133	27,169	27,205	27,241	27,277	27,312	27,348	27,384	27,421
710	27,458	27,494	27,531	27,568	27,605	27,642	27,679	27,716	27,753	27,790
711	27,827	27,863	27,900	27,936	27,973	28,010	28,047	28,084	28,122	28,159
712	28,197	28,234	28,271	28,309	28,346	28,383	28,420	28,457	28,495	28,532
713	28,569	28,606	28,643	28,679	28,716	28,753	28,790	28,827	28,864	28,901
714	28,938	28,976	29,013	29,050	29,087	29,124	29,160	29,197	29,234	29,271
715	29,308	29,344	29,381	29,418	29,454	29,491	29,527	29,564	29,602	29,639
716	29,677	29,714	29,753	29,791	29,828	29,866	29,904	29,941	29,979	30,017
717	30,054	30,092	30,130	30,167	30,205	30,242	30,279	30,317	30,354	30,391
718	30,429	30,466	30,503	30,541	30,578	30,615	30,652	30,690	30,727	30,765
719	30,802	30,840	30,878	30,915	30,953	30,990	31,028	31,065	31,102	31,139
720	31,177	31,214	31,252	31,290	31,328	31,367	31,406	31,446	31,485	31,524
721	31,563	31,602	31,640	31,679	31,717	31,756	31,795	31,834	31,873	31,913
722	31,952	31,991	32,031	32,070	32,109	32,148	32,187	32,226	32,265	32,304
723	32,343	32,382	32,421	32,460	32,500	32,539	32,579	32,618	32,658	32,697
724	32,737	32,777	32,818	32,858	32,898	32,938	32,978	33,019	33,059	33,099

Appendix E (Continued)

Lake Travis

RESERVOIR TOPOGRAPHIC & BATHYMETRIC AREA TABLE

TEXAS WATER DEVELOPMENT BOARD

AREA IN ACRES

April-July 2008 Survey
Conservation Pool Elevation 681.6 Feet NAVD88

ELEVATION INCREMENT IS ONE TENTH FOOT

Appendix F

Analysis of Sediment Accumulation Data from Lake Travis

Executive Summary

The results of the TWDB 2008 Sedimentation Survey indicate Lake Travis has accumulated approximately 16,974 acre-feet of sediment since impoundment.

Based on this measured sediment volume and assuming a constant sediment accumulation rate, Lake Travis loses approximately 250 acre-feet of capacity per year. The thickest sediment deposits are in the submerged river channel throughout the main lake body. The maximum sediment thickness observed in Lake Travis was 7.1 feet.

Introduction

This appendix includes the results of the sediment investigation using multi-frequency depth sounder and sediment core data collected by the Texas Water Development Board (TWDB). Through careful analysis and interpretation of the multi-frequency signal returns, it is possible to discern the pre-impoundment bathymetric surface, as well as the current surface and sediment thickness. Such interpretations are aided and validated through comparisons with sediment core samples which provide independent measurements of sediment thickness. The remainder of this appendix presents a discussion of the results from and methodology used in the core sampling and multi-frequency data collection efforts, followed by a composite analysis of sediment measured in Lake Travis.

Data Collection & Processing Methodology

TWDB conducted the bathymetric data collection for Lake Travis from April 22, 2008, through July 18, 2008. For all data collection efforts, TWDB used a Specialty Devices, Inc. (SDI) multi-frequency (200 kHz, 50 kHz, and 24 kHz) sub-bottom profiling depth sounder integrated with Differential Global Positioning System (DGPS) equipment. Data collection occurred while navigating along pre-planned range lines oriented perpendicular to the assumed location of the original river channels and spaced approximately 500 feet apart. For all data collection efforts, the depth sounder was calibrated daily using a velocity profiler to measure the speed of sound in the water column and a weighted tape or stadia rod for depth reading verification. During the 2008 survey, team members collected nearly 340,000 data points over cross-sections totaling nearly 511 miles in length. Figure F1 shows where data points were collected during the TWDB 2008 Lake Travis survey.

Core samples collected by TWDB were collected at locations where sounding data had been previously collected (Figure F1). All cores were collected with a custom-coring boat and SDI VibraCore system. Cores were analyzed by TWDB, and both the sediment thickness and the distance the core penetrated the pre-impoundment boundary were recorded. The coordinates and a description of each core sample are provided in Table F1. Figure F2 shows the cross-section of sediment core T4. At this location, TWDB collected 32 inches of sediment, with the upper sediment layer (Figure F2) having high water content, consisting of clay material and having some organic matter. The pre-impoundment boundary was evident from this core at a distance of 6 inches above the core base; above this location, the moisture content in the sediment greatly increases (Figure F2).

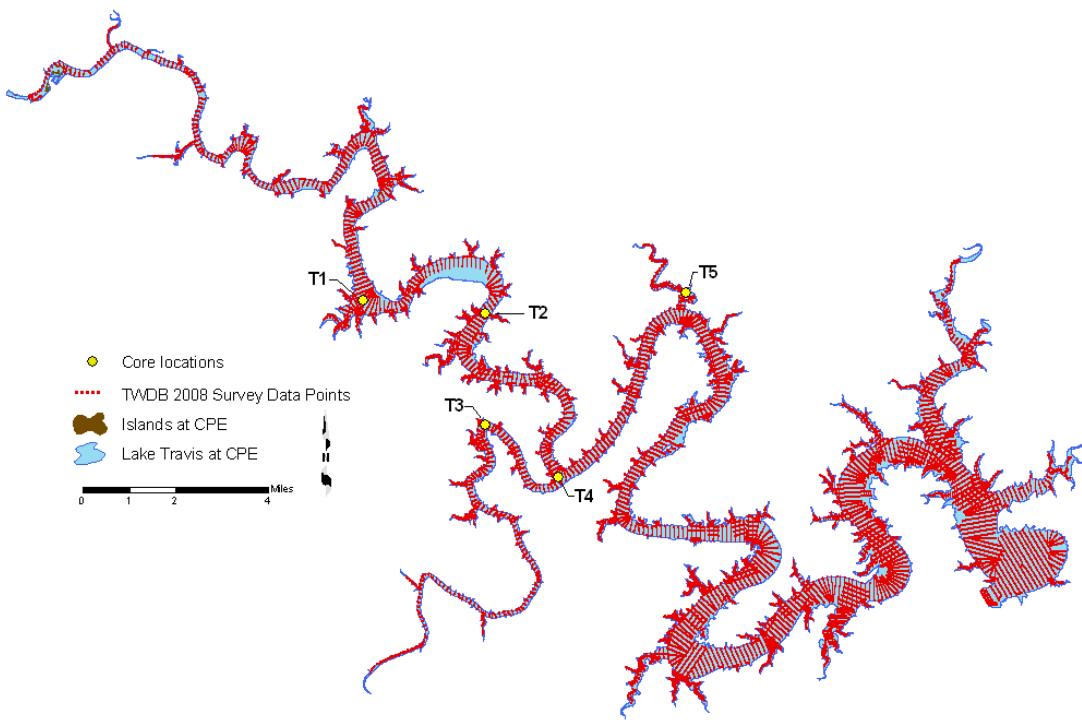


Figure F1 – TWDB 2008 survey data points and core sites for Lake Travis.

Table F1 – Core Sampling Analysis Data – Lake Travis

Core	Easting** (ft)	Northing** (ft)	Description
T1	2990831.82	10148405.54	41" of loamy sediment with some plant material visible.
T2	3004775.39	10146902.88	60" of loamy sediment with some plant material visible.
T3	3004777.04	10134284.17	42" of loamy sediment with some plant material visible
T4	3013039.21	10128337.88	32" of loamy sediment with some plant material visible
T5	3027590.44	10149339.06	55" of loamy sediment with some plant material visible.

** Coordinates are based on NAD83 State Plane Texas Central system

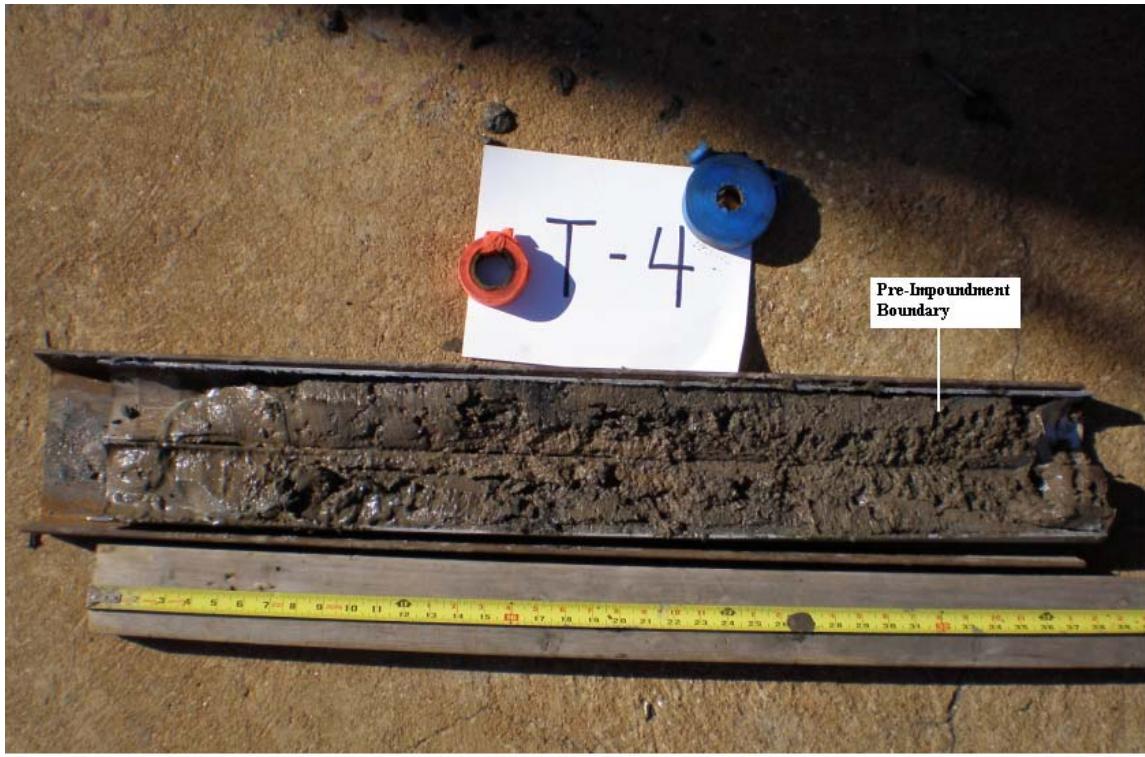


Figure F2 – Sediment Core T4 from Lake Travis, showing the pre-impoundment boundary 6 inches above the base of the core (right). The pre-impoundment boundary is marked by the change in sediment moisture content below and above the area 6 inches up from the core base.

All sounding data is processed using the DepthPic software, within which both the pre-impoundment and current bathymetric surfaces are identified and digitized manually. These surfaces are first identified along cross-sections for which core samples have been collected – thereby allowing the user to identify color bands in the DepthPic display that correspond to the sediment layer(s) observed in the core samples. This process is illustrated in Figure F3 where core sample T4 is shown with its corresponding sounding data. Core sample T4 contained 32 inches of sediment above the pre-impoundment boundary, as indicated by the yellow box in Figure F3. The top of the green box represents the pre-impoundment boundary identified in the core sample in Figure F2. The pre-impoundment surface is usually identified within the core sample by one of the following methods: (1) a visual examination of the core for in-place terrestrial materials, such as leaf litter, tree bark, twigs, intact roots, etc., concentrations of which tend to occur on or just below the pre-impoundment surface, (2) changes in texture from

well sorted, relatively fine-grained sediment to poorly sorted mixtures of coarse and fine-grained materials, and (3) variations in the physical properties of the sediment, particularly sediment water content and penetration resistance with depth.

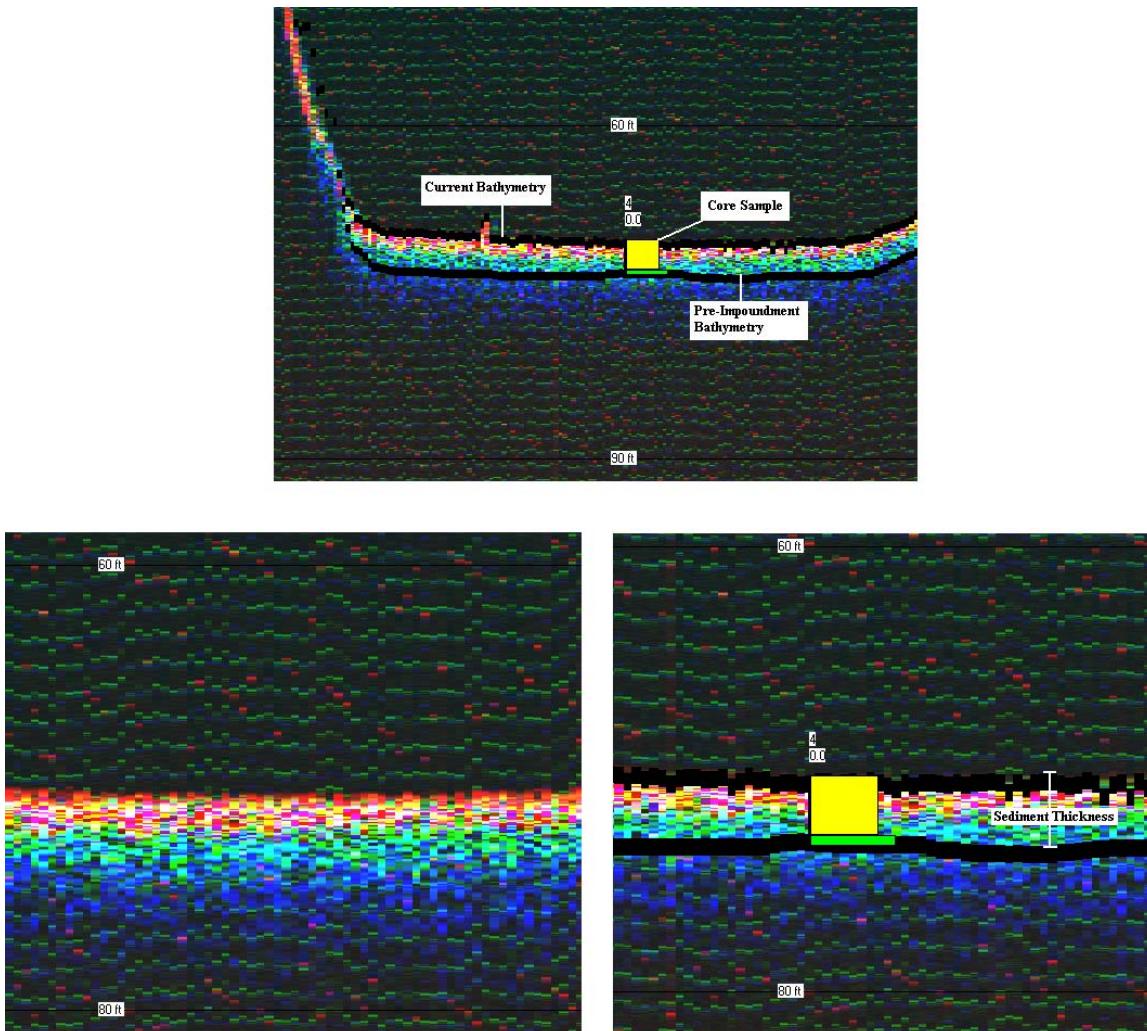


Figure F3 – DepthPic and core sample use in identifying the pre-impoundment bathymetry.

Within DepthPic, the current surface is automatically determined based on the signal returns from the 200 kHz transducer. The pre-impoundment surface must be determined visually based on the pixel color display and any available core sample data. Based on core sample T4, it is clear that the pre-impoundment bathymetric surface for this cross-section is identified by the transition from turquoise pixels to blue pixels in the

DepthPic display. The current bathymetric surface is identified as the upper-most layer of red-orange pixels. (Figure F3).

In analyzing data from cross-sections where core samples were not collected, the assumption is made that sediment layers may be identified in a similar manner as when core sample data is available. To improve the validity of this assumption, core samples are collected at regularly spaced intervals within the lake, or at locations where interpretation of the DepthPic display would be difficult without site-specific core data. For this reason, all sounding data is collected and reviewed before core sites are selected and cores are collected.

After manually digitizing the pre-impoundment surface from all cross-sections, both the pre-impoundment and current bathymetric surfaces are exported as X-,Y-,Z-coordinates from DepthPic into text files suitable for use in ArcGIS. Within ArcGIS, the sounding points are then processed into TIN models following standard GIS techniques¹. For Lake Travis, the sediment thickness TIN model boundary was set to the extent of the conservation pool (elevation 681.6 Feet NAVD88), and was identical to the boundary of the Bathymetric TIN model described in the main body of this report. For the purposes of the TIN model creation, TWDB assumed 0-feet sediment thicknesses at the model boundaries. Sediment thicknesses were computed as the difference in elevations between the current and pre-impoundment bathymetric surfaces, and thickness values were interpolated for locations between surveyed cross-sections using the TWDB Self-Similar Interpolation technique².

Results

The results of the TWDB 2008 Sedimentation Survey indicate Lake Travis has accumulated approximately 16,974 acre-feet of sediment since impoundment began in 1940. Based on this measured sediment volume and assuming a constant rate of sediment accumulation over the 68 years since impoundment, Lake Travis loses approximately 250 acre-feet of capacity per year. The thickest sediment deposits are in the submerged river channel throughout the main lake body. The maximum sediment thickness observed in Lake Travis was 7.1 feet. Figure F4 depicts the sediment thickness in Lake Travis.

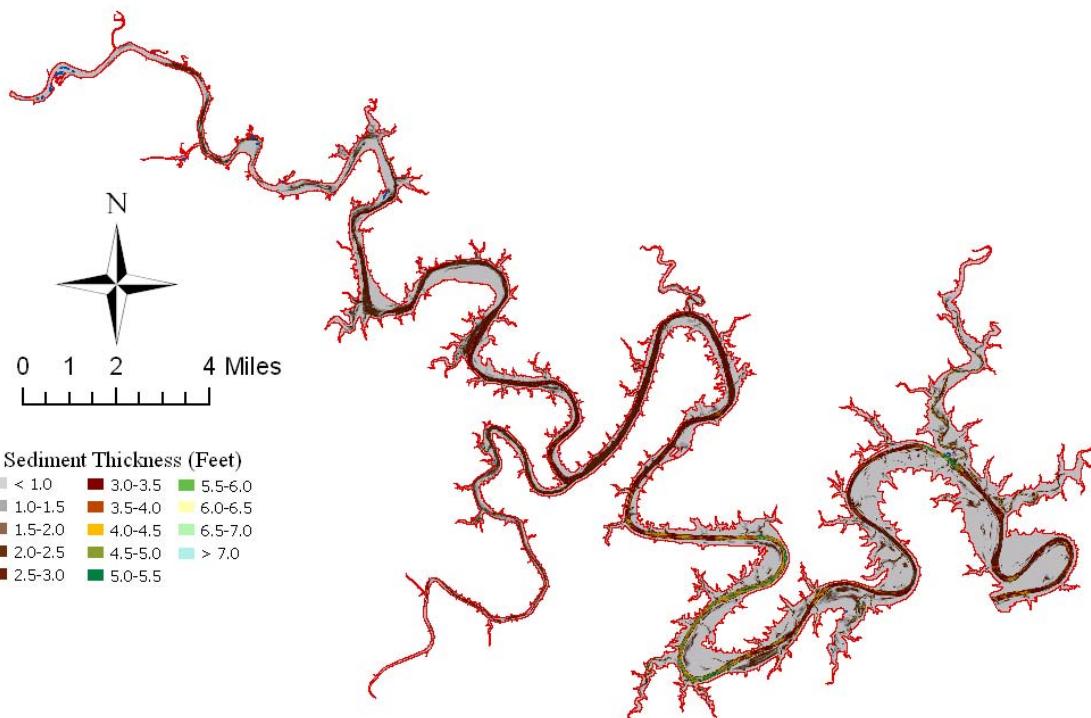


Figure F4 - Sediment thicknesses in Lake Travis derived from multi-frequency sounding data.

Re-Survey Recommendations

The TWDB considers the 2008 survey to be significantly more accurate than previous surveys and recommends that a similar methodology be used to resurvey Lake Travis in approximately 10 years, or after a major flood event. Results from such a survey would allow the sediment accumulation rate for Lake Travis to be quantified with greater accuracy. Additional point estimates of sediment accumulation rates may also be obtained through assessment of the cesium-137 and lead-210 content within sediment cores.³

References

1. Furnans, J., Austin, B., Hydrographic survey methods for determining reservoir volume, Environmental Modelling & Software (2007), doi: 10.1016/j.envsoft.2007.05.011
2. Furnans, Jordan. Texas Water Development Board. 2006. “HydroEdit User’s Manual.”
3. Furnans, Jordan. Texas Water Development Board. 2009. “TWDB Hydrographic Assessment Project Report” (Under Development)

Figure 7

Lake Travis

10' - Contour Map

