Volumetric and Sedimentation Survey of LAKE CORPUS CHRISTI

October 2024

TEXAS WATER DEVELOPMENT BOARD

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Prepared for:

City of Corpus Christi, Texas

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Executive summary

In August 2024, the Texas Water Development Board (TWDB) entered into an agreement with the City of Corpus Christi, Texas, to perform a volumetric and sedimentation survey of Lake Corpus Christi (Jim Wells, San Patricio, and Live Oak Counties, Texas). Surveying was performed using a multi-frequency (200 kHz, 50 kHz, and 12 kHz), sub-bottom profiling depth sounder. Sediment core samples were collected and correlated with sub-bottom acoustic profiles to estimate sediment accumulation thicknesses and sedimentation rates.

Wesley E. Seale Dam, impounding Lake Corpus Christi, is located on the Nueces River in San Patricio and Jim Wells counties, approximately 4.0 miles southwest of the City of Mathis, Texas. The conservation pool elevation of Lake Corpus Christi is 94.0 feet above mean sea level (NGVD29). TWDB collected bathymetric data for Lake Corpus Christi on October 3-10, 2024, while daily average water surface elevations measured between 83.56 and 83.34 feet NGVD29. Additional data were collected on July 23-24, 2025, near the Alice, Beeville, and Mathis intake structures, while daily average water surface elevations measured 79.56 and 79.53 feet NGVD29, respectively.

The 2024 TWDB volumetric survey indicates Lake Corpus Christi has a total reservoir capacity of 259,747 acre-feet and encompasses an area of 20,258 acres at conservation pool elevation (94.0 feet NGVD29). Several previous capacity estimates for Lake Corpus Christi have been developed, most notably a 1957 survey estimate of 302,100 acre-feet, a 1972 survey estimate by McCaughan & Etheridge of 272,352 acre-feet, a 1987 U.S. Geological Survey survey estimate of 266,832 acre-feet, a 1991 re-calculation of the 1987 U.S. Geological Survey survey by HDR, Inc. estimating 241,241 acre-feet, a 2002 TWDB survey that was re-evaluated resulting in an updated capacity estimate of 262,564 acre-feet, and a 2016 TWDB survey estimate of 256,339 acre-feet. Differences in reservoir conditions as well as differences in the methodologies used among surveys can affect area and volume calculations. For this reason, the TWDB does not recommend comparing between volumetric surveys to determine loss of area or capacity. Information from past surveys is thus presented for informational purposes only.

The 2024 TWDB sedimentation survey measured 21,150 acre-feet of sediment below elevation 82.0 feet. The sedimentation survey indicates sediment accumulation is greater in the Nueces River and in the area just upstream and downstream of the old Mathis Dam. The TWDB recommends that reservoirs be resurveyed approximately every 10 years or following a major event that results in increased sedimentation or scouring within the reservoir.

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Note: References to brand names throughout this report do not imply endorsement by the Texas Water Development Board

Introduction

The Hydrographic Survey Program of the Texas Water Development Board (TWDB) was authorized by the 72nd Texas State Legislature in 1991. Texas Water Code Section 15.804 authorizes the TWDB to perform surveys to determine reservoir storage capacity, sedimentation levels, rates of sedimentation, and projected water supply availability.

In August 2024, the TWDB entered into an agreement with the City of Corpus Christi, Texas, to perform a volumetric and sedimentation survey of Lake Corpus Christi (Jim Wells, San Patricio, and Live Oak Counties, Texas) (Texas Water Development Board, 2024). This report provides an overview of the survey methods, analysis techniques, and associated results. Also included are the following contract deliverables: (1) an elevation-area-capacity table of the reservoir acceptable to the Texas Commission on Environmental Quality (Appendices A and B), (2) a bottom contour map (Figure 7), (3) a shaded relief plot of the reservoir bottom (Figure 5), and (4) an estimate of sediment accumulation and location (Figure 10).

Lake Corpus Christi general information

Wesley E. Seale Dam, impounding Lake Corpus Christi, is located on the Nueces River (Nueces River Basin) in San Patricio and Jim Wells counties, approximately 4.0 miles southwest of Mathis, Texas (Figure 1). Lake Corpus Christi extends into Live Oak County. Wesley E. Seale Dam and Lake Corpus Christi are owned and operated by the City of Corpus Christi (Texas Water Development Board, 2026a). Construction on Wesley E. Seale Dam began on November 19, 1955. The dam was completed and impoundment of water began on April 26, 1958 (Texas Water Development Board, 1967). The reservoir is a key water supply resource for the city of Corpus Christi and the seven-county Coastal Bend Region, supplying water for municipal and industrial purposes, as well as recreational purposes (City of Corpus Christi, 2026). The region includes San Patricio, Live Oak, Bee, Aransas, Jim Wells, Nueces, and Kleberg counties (City of Corpus Christi, 2022). Additional pertinent data about Wesley E. Seale Dam and Lake Corpus Christi can be found in Table 1.

Water rights for Lake Corpus Christi have been appropriated to the City of Corpus Christi through Certificate of Adjudication No. 21-2464 and Amendment to Certificate of Adjudication No. 21-2464A (Texas Commission on Environmental Quality, 2025). The complete certificates and permits are on file at the Texas Commission on Environmental Quality (TCEQ).

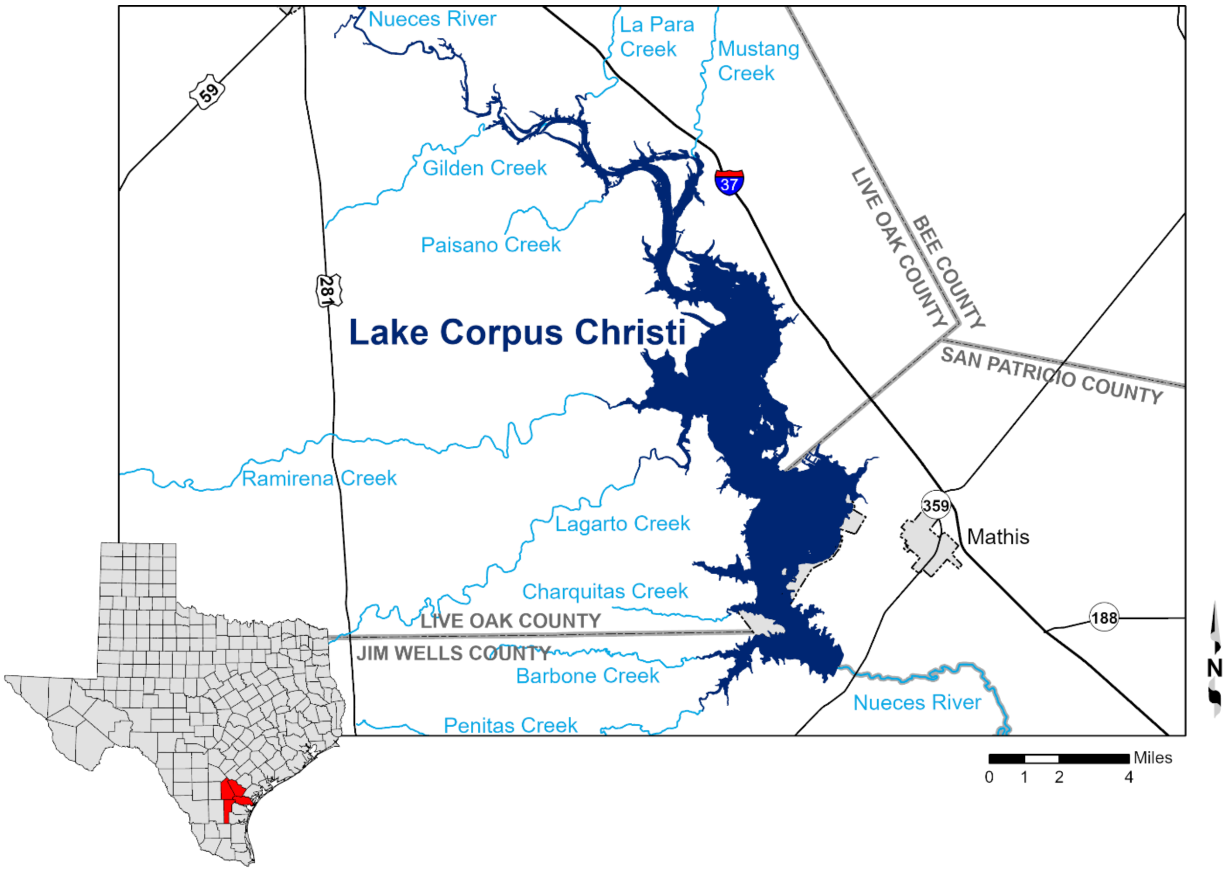


Figure 1. **Location map.**

Table 1. Pertinent Data for Wesley E. Seale Dam and Lake Corpus Christi

Owner(s)	
City of Corpus Christi, Texas	
Engineer (design)	
Ambursen Engineering Company (dam and original gates)	
Forrest and Cotton, Inc. (modification of gates, completed September 4, 1966)	
General contractor for the dam	
H.B. Zachry Co.	
Location of dam	
On the Nueces River in San Patricio and Jim Wells counties, approximately 4.0 miles southwest of Mathis, Texas	
Drainage area	
16,656 square miles	
Dam	
Type	Earthfill and concrete
Length (including gates)	5,980 feet
Height	75 feet
Top width	Varies 15 to 51 feet
Spillway (north or emergency)	
Type	Concrete section
Control (screw type hoists, and portable engines)	33 gates, each 37.5 by 8.75 feet
Spillway crest elevation	88.0 feet above mean sea level
Top of gates elevation	94.3 feet above mean sea level
Spillway (south or service)	
Type	Concrete section
Control (screw type hoists, and electric motors)	27 gates, each 37.5 by 8.75 feet
Spillway crest elevation	88.0 feet above mean sea level
Top of gates elevation	94.0 feet above mean sea level
Outlet Works	
Type	3 openings, each 2.5 by 4 feet
Control	48-inch cylinder valve
Invert elevation	55.5 feet above mean sea level
Water flows in river channel to treating plant.	

Reservoir Data

Feature	**Elevation (feet NGVD29[a])**	**TWDB 2024 Capacity (acre-feet)**	**TWDB 2024 Area (acres)**
Top of dam	109.3	684,839	35,193
Top of north spillway gates	94.3	266,059	20,594
Top of south spillway gates / conservation pool elevation	94.0	259,747	20,258
Spillway crest	88.0	150,996	15,828
Invert low flow outlet	55.5	215	39
Conservation storage capacity[b]	—	259,532	—

Source: Texas Water Development Board, 1967; Texas Water Development Board, 1971; City of Corpus Christi, 2001.

a. National Geodetic Vertical Datum 1929 (NGVD29). The datum conversion from NGVD29 to NAVD88 (North American Vertical Datum 1988) is: NGVD29 - 0.93 feet = NAVD88 (U.S. Geological Survey, 2026).

b. Usable conservation storage equals total capacity at conservation pool elevation minus dead pool capacity. Dead pool refers to water that cannot be drained by gravity through the dam outlet works.

Volumetric and sedimentation survey of Lake Corpus Christi

Datum

Water surface elevations during the TWDB survey were obtained from the United States Geological Survey (USGS) gage *USGS 08210500 Lk Corpus Christi nr Mathis, TX* (U.S. Geological Survey, 2026). These data were used to convert survey depths to elevations. Elevations herein are reported in feet relative to the National Geodetic Vertical Datum 1929 (NGVD29). The horizontal datum used for this report is North American Datum 1983 (NAD83), and the horizontal coordinate system is State Plane Texas South Central Zone (feet).

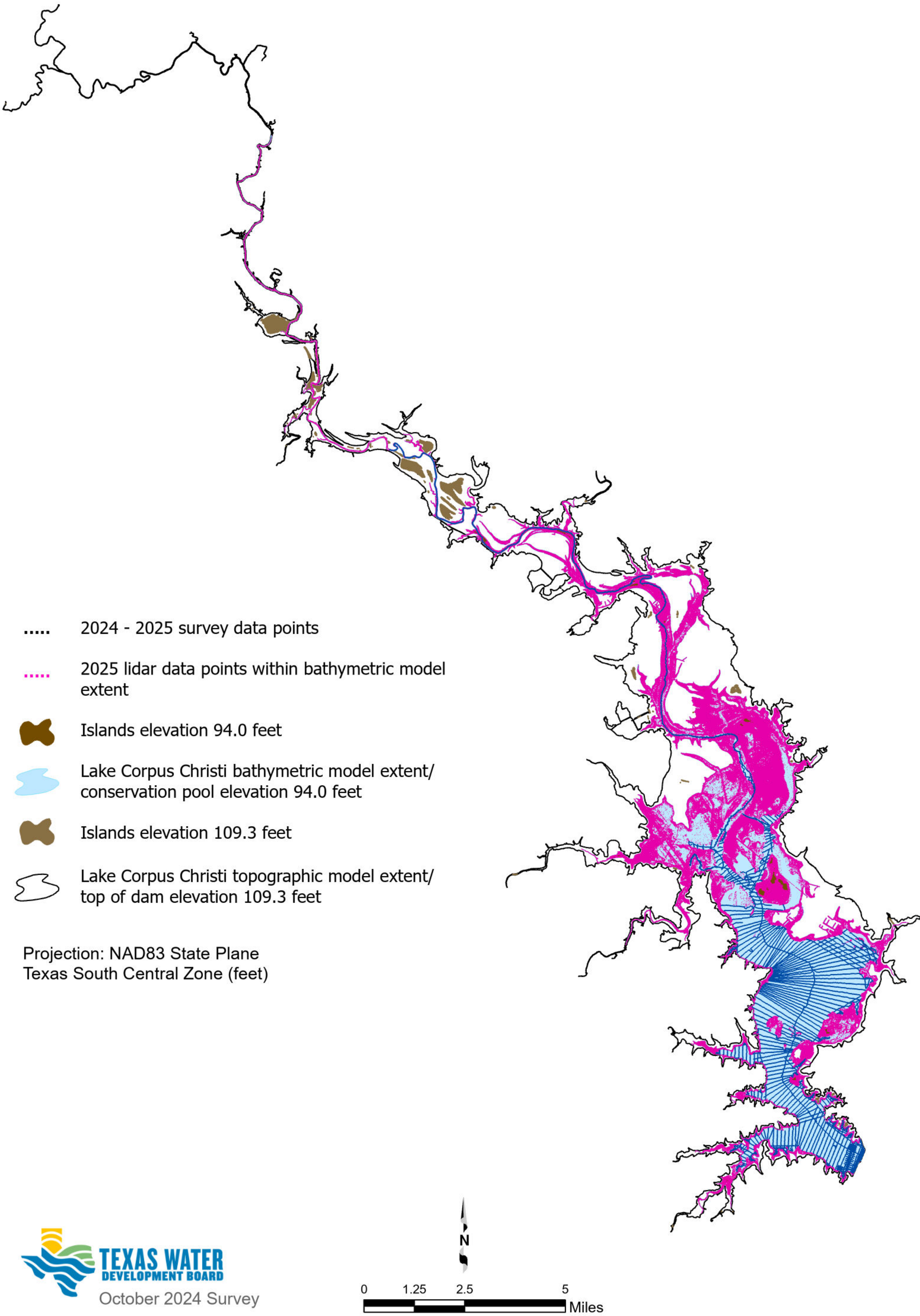
TWDB bathymetric and sedimentation data collection

The TWDB collected bathymetric data for Lake Corpus Christi on October 3-10, 2024, while daily average water surface elevations measured between 83.56 and 83.34 feet NGVD29. Additional data were collected on July 23-24, 2025, near the Alice, Beeville, and Mathis intake structures, while daily average water surface elevations measured 79.56 and 79.53 feet NGVD29, respectively. (U.S. Geological Survey, 2026). For data collection, the TWDB used a Specialty Devices, Inc. (SDI), single-beam, multi-frequency (200 kHz, 50 kHz, and 12 kHz) sub-bottom profiling depth sounder integrated with differential global positioning system (DGPS) equipment. Data were collected along pre-planned survey lines oriented perpendicular to the assumed location of the original river channels and spaced approximately 500 feet apart. Many of the same lines also were used by the TWDB for the *Volumetric Survey of Lake Corpus Christi, February 2016 Survey* (Texas Water Development Board, 2017). 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. Each speed of sound profile, or velocity cast, is saved for further data processing. Figure 2 shows the extent of the sounding data for the 2024 TWDB survey.

Figure 2

Lake Corpus Christi

2024 - 2025 TWDB sounding data



All sounding data were collected and reviewed before sediment core sampling sites were selected. After analyzing the sounding data, the TWDB selected locations to collect sediment core samples that represented the various depositional environments such as main river channel, tributary channels, flood plains, deep basins, shoals, etc. and represented the various acoustic signatures found in the data. Alternate core sites were selected as well in case low water levels at the time of sediment core sampling prevented access to the original sites. Sediment cores were collected on August 5-6, 2025, with a custom-coring boat and an SDI VibeCore system. A total of 21 sediment cores were successfully collected (Figure 3).

Sediment core samples were collected throughout the reservoir to assist with interpretation of the sub-bottom acoustic profiles. Core samples collected contain sediment that extends from the current reservoir-bottom surface, through the accumulated sediment, and into the pre-impoundment surface. Sediment cores were collected in 3-inch diameter aluminum tubes and after a sample was retrieved, the core tube was cut to the level of the sediment core. The tube was then capped, labeled, and transported to TWDB headquarters for further analysis.

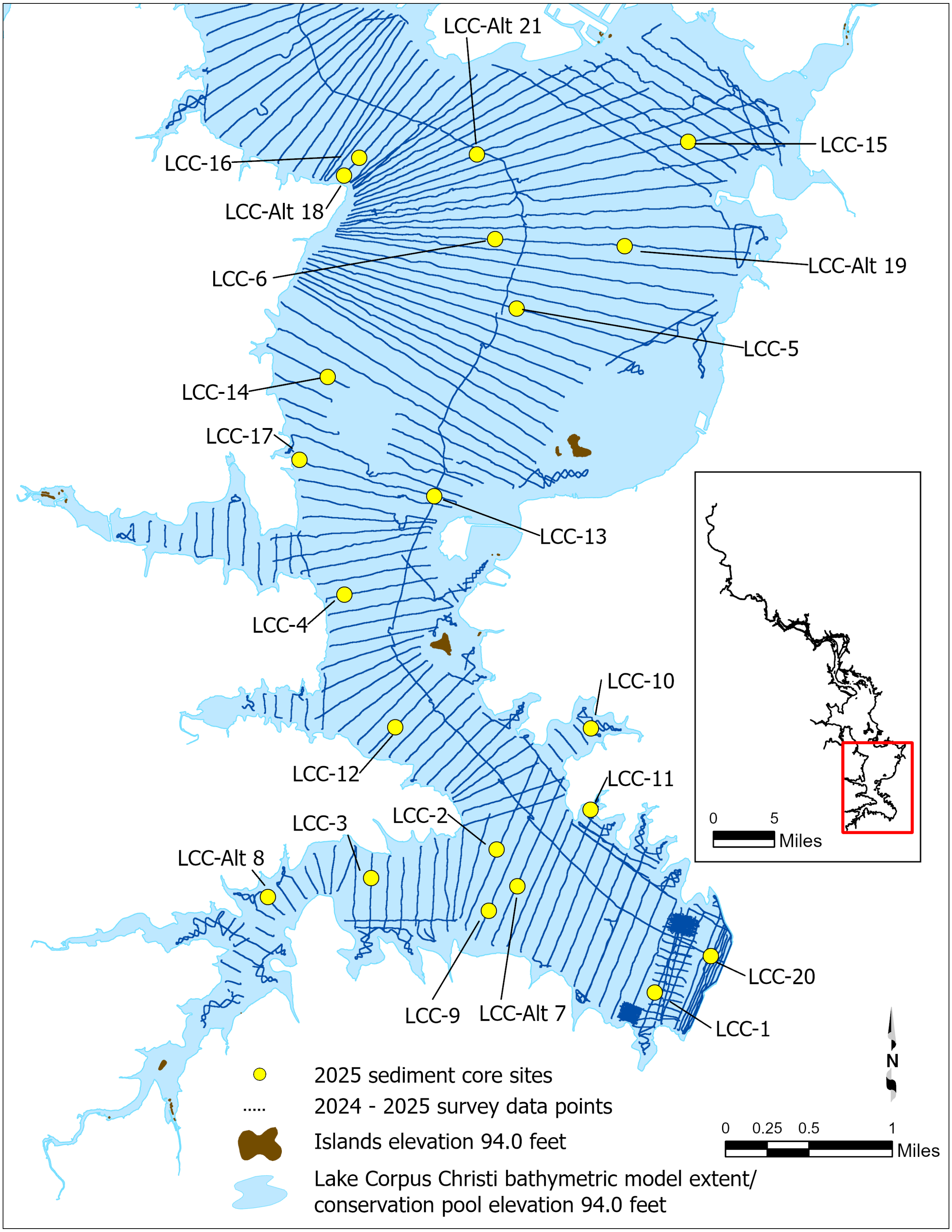


Figure 3. **2024 TWDB sounding data (blue dots), sediment coring locations (yellow circles).**

Data processing

Model boundary

The bathymetric and topographic model boundaries of the reservoir were generated with Light Detection and Ranging (lidar) data available from the Texas Geographic Information Office (TxGIO), formerly known as the Texas Natural Resource Information System (TNRIS). These data were collected on January 19, 2025 (Texas Geographic Information Office, 2026), while the daily average water surface elevation of the reservoir measured 81.16 feet NGVD29. The lidar data files (las) were imported into a LAS Dataset and the dataset was converted to a raster using a cell size of 1.0 meter by 1.0 meter. The horizontal datum of the lidar data is North American Datum 1983 (NAD83; meters) and the projection is Universal Transverse Mercator (UTM) Zone 14. The vertical datum is North American Vertical Datum 1988 (NAVD88; meters). A contour representing the conservation pool elevation of 28.367736 meters NAVD88, equivalent to 94.0 feet NGVD29 and a contour representing the top of the dam elevation of 33.031176 meters NAVD88, equivalent to 109.3 feet NGVD29 were extracted from the raster. A vertical datum transformation of 0.93 feet was used to convert elevations from NAVD88 to NGVD29. The vertical datum transformation offset for the conversion from NAVD88 to NGVD29 is the same transformation value the USGS uses (U.S. Geological Survey, 2026). The topographic model contour was edited to close the contour across the dam and remove other artifacts.

Lidar data points

To utilize the lidar data in the reservoir bathymetric and topographic models, the lidar data files (.las) were converted to a multipoint feature class in an Environmental Systems Research Institute's ArcGIS file geodatabase filtered to include only data classified as ground points. A topographical model, or terrain, was generated from the ground points using a z-tolerance pyramid type. The ArcGIS tool Terrain to Points was used to extract points from the terrain, or topographical model, of the reservoir. Points were extracted at the z-tolerance level of 0.125 meters to model both the bathymetric surface and topographic surface. New attribute fields were added to convert the elevations from meters NAVD88 to feet NAVD88 and feet NGVD29 for compatibility with the bathymetric survey data. Topographic lidar data were edited to use only points contained within the area between the bathymetric model boundary and 109.3-foot contour boundary. All lidar data within the bathymetric modeling boundary with an elevation greater than that of the conservation pool (94.0 feet NGVD29) were removed as well. Both feature classes were projected to NAD83 State Plane Texas South Central Zone (feet).

Triangulated Irregular Network model

Following completion of data collection, the raw data files collected by the TWDB were edited to remove data anomalies. The current bottom surface of the reservoir is automatically determined by the data acquisition software. Hydropick software, developed by TWDB staff, was used to display, interpret, and edit the multi-frequency data by manually removing data anomalies in the current bottom surface and to manually edit the pre-impoundment surfaces. The speed of sound profiles, also known as velocity casts, were used to further refine the measured depths. For each location velocity casts are collected, the harmonic mean sound speed of all the casts is calculated. From this, depths collected using one average speed of sound are corrected with an overall optimum speed of sound for each specific depth (Specialty Devices, Inc., 2018).

Data including the current reservoir bottom surface, pre-impoundment surface, and sediment thickness at each sounding location were exported into a single file. The water surface elevation at the time of each sounding was used to convert each sounding depth to a corresponding reservoir-bottom elevation. This survey point dataset was then preconditioned by inserting a uniform grid of artificial survey points between the actual survey lines. Bathymetric elevations at these artificial points were determined using an anisotropic spatial interpolation algorithm described in the next section. This technique creates a high resolution, uniform grid of interpolated bathymetric elevation points throughout a majority of the reservoir (McEwen, Brock, and others, 2011). The resulting point file was used in conjunction with sounding, lidar, and boundary data to create bathymetric and sediment Triangulated Irregular Network (TIN) models utilizing the 3D Analyst Extension of ArcGIS. The 3D Analyst algorithm uses Delaunay's criteria for triangulation to create a grid composed of triangles from non-uniformly spaced points, including the boundary vertices (Environmental Systems Research Institute, 1995).

The topographic TIN model is created using the topographic model boundary at top of dam elevation, the lidar data points, and the bathymetric model boundary to hydro-flatten the area encompassing the bathymetric model.

Spatial interpolation of reservoir bathymetry

Isotropic spatial interpolation techniques such as the Delaunay triangulation used by the 3D Analyst extension of ArcGIS are, in many instances, unable to suitably interpolate bathymetry between survey lines common to reservoir surveys. Reservoirs and stream channels are anisotropic morphological features where bathymetry at any particular location is more similar to upstream and downstream locations than to transverse locations. Interpolation schemes that do not consider this anisotropy lead to the creation of several types of artifacts in the final representation of the reservoir bottom surface, thereby introducing errors in volume estimates. These artifacts may include artificially curved contour lines extending into the reservoir where the reservoir walls are steep or the reservoir is relatively narrow, intermittent representation of submerged stream channel connectivity, and oscillations of contour lines in between survey lines. These artifacts reduce the accuracy of the resulting bathymetric and sediment TIN models in areas between actual survey data.

To improve the accuracy of bathymetric representation between survey lines, the TWDB developed various anisotropic spatial interpolation techniques. Generally, the directionality of interpolation at different locations of a reservoir can be determined from external data sources. A basic assumption is that the reservoir profile in the vicinity of a particular location has upstream and downstream similarity. In addition, the sinuosity and directionality of submerged stream channels can be determined by directly examining the survey data, or more robustly by examining scanned USGS 7.5-minute quadrangle maps (DRGs), hypsography files (the vector format of USGS 7.5-minute quadrangle map contours), and historical aerial photographs, when available. Using the survey data, polygons are created to partition the reservoir into segments with centerlines defining the directionality of interpolation within each segment. Using the interpolation definition files and survey data, the current reservoir-bottom elevation, pre-impoundment elevation, and sediment thickness are calculated for each point in the high-resolution uniform grid of artificial survey points. The reservoir boundary, artificial survey points grid, and survey data points are used to create bathymetric and sediment TIN models representing reservoir bathymetry and sediment accumulation throughout the reservoir. Specific details of this interpolation technique can be found in the HydroTools manual (McEwen, Brock, and others, 2011) and in associated literature (McEwen, Pothina, and Negusse, 2011).

In areas inaccessible to survey data collection, such as small coves and shallow upstream areas of the reservoir, linear interpolation is used for volumetric and sediment accumulation estimations (McEwen, Brock, and others, 2011). Although lidar was utilized, linear interpolation was necessary to accurately model features in the areas between survey data and lidar data. Linear interpolation results in improved elevation-capacity and elevation-area calculations.

Figure 4 illustrates typical results from the application of anisotropic interpolation as applied to Lake Corpus Christi. In Figure 4A, deeper channels and steep slopes indicated by surveyed cross-sections are not continuously represented in areas between survey cross-sections. This is an artifact of the TIN generation routine rather than an accurate representation of the physical bathymetric surface. Inclusion of interpolation points in creation of the bathymetric TIN model, represented in Figure 4B, directs Delaunay triangulation to better represent the reservoir bathymetry between survey cross-sections. The bathymetry shown in Figure 4C was used in computing reservoir elevation-capacity (Appendix A) and elevation-area (Appendix B) tables.

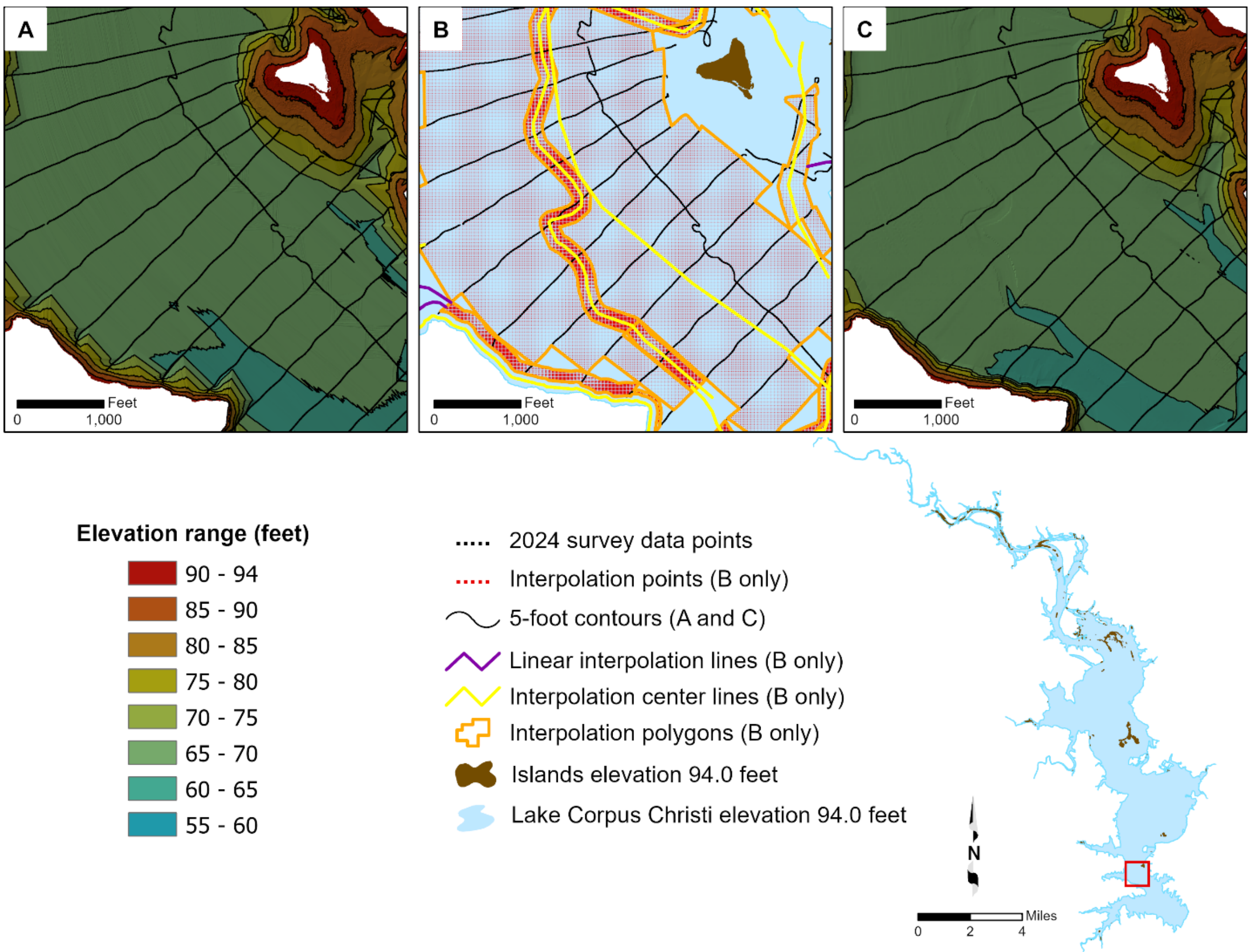


Figure 4. **Anisotropic spatial interpolation as applied to Lake Corpus Christi sounding data: A) bathymetric contours without interpolated points; B) sounding points (black) and interpolated points (red); C) bathymetric contours with interpolated points.**

Area, volume, and contour calculation

Volumes and areas were computed for the entire reservoir at 0.01-foot intervals, from 41.38 to 94.0 feet for the bathymetric TIN model, and from 94.01 to 109.3 feet for the topographic TIN model, and are reported herein at 0.1-foot intervals. The area computations for the hydro-flattened topographic model elevations are accurate; however, capacity (i.e. volume) values must be corrected by adding the bathymetric capacity at conservation pool elevation to each value computed above conservation pool. This method results in an elevation-area-capacity table that preserves the bathymetric survey integrity so as to not add extraneous area and capacity to elevations below the conservation pool elevation that occur outside the bathymetric boundary. For example, areas such as ponds or depressions within the topographic TIN model with elevations below conservation pool that are not included in the bathymetric TIN model computations. These areas are included in the topographic TIN model computations and are reflected in the area curve as a steep increase in area at 94.01 feet (Appendix C).

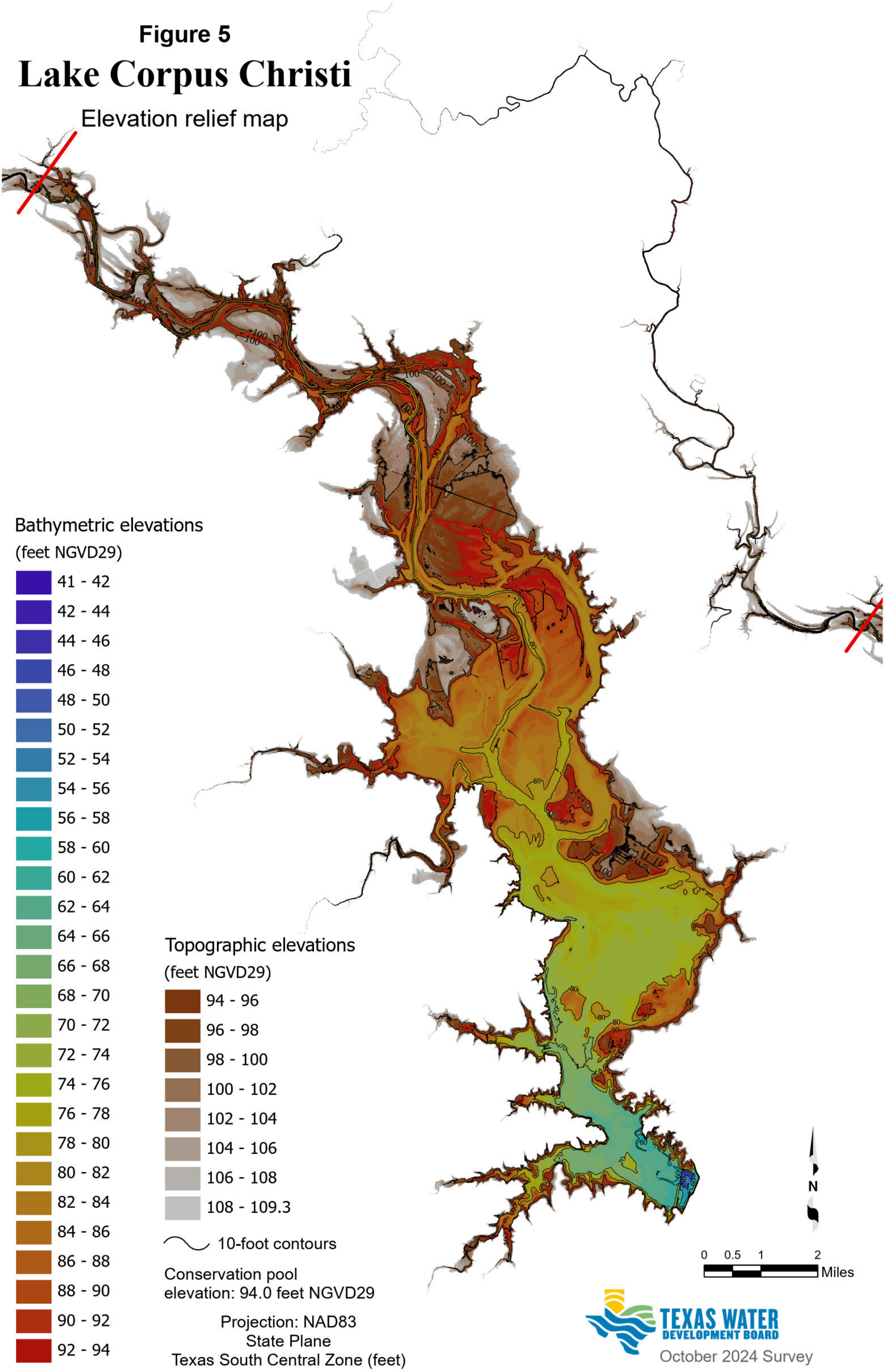
The combined bathymetric and topographic elevation-capacity and elevation-area tables, based on the 2024 survey and analysis, are presented in Appendices A and B, respectively. The combined bathymetric and topographic capacity curve is presented in Appendix C, and the combined bathymetric and topographic area curve is presented in Appendix D.

The topographic and bathymetric TIN models were each converted to a raster representation using a cell size of 2 feet by 2 feet. The raster data then were used to produce three figures: (1) an elevation relief map representing the topography of the reservoir bottom (Figure 5); (2) a depth range map showing depth ranges for Lake Corpus Christi (Figure 6); and (3) a 5-foot contour map (Figure 7).

Figure 5

Lake Corpus Christi

Elevation relief map



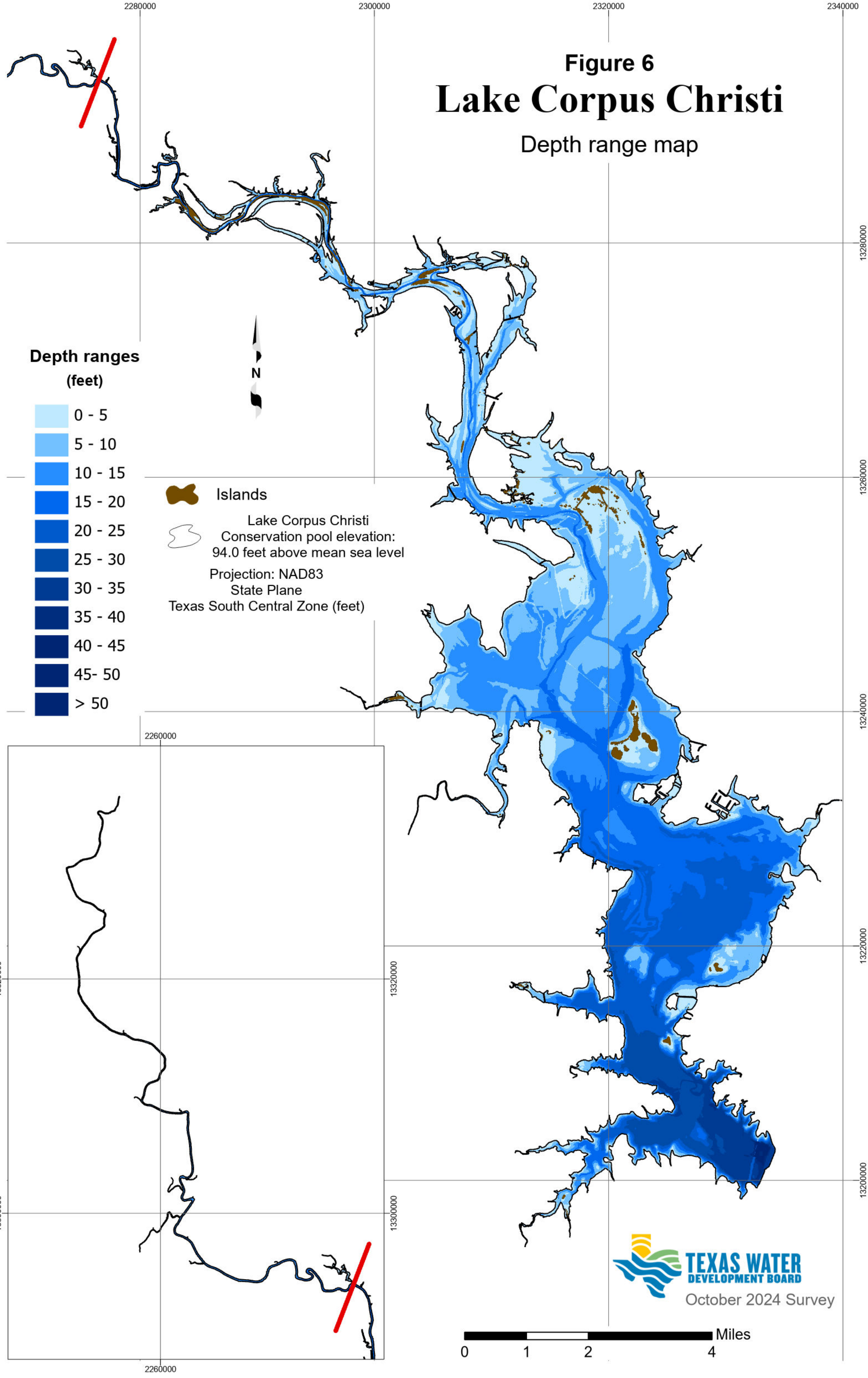


Figure 6
Lake Corpus Christi
Depth range map
Depth ranges
(feet)
0 - 5
5 - 10
10 - 15
15 - 20
20 - 25
25 - 30
30 - 35
35 - 40
40 - 45
45- 50
> 50
Islands
Lake Corpus Christi
Conservation pool elevation:
94.0 feet above mean sea level
Projection: NAD83
State Plane
Texas South Central Zone (feet)
N
2280000
2300000
2320000
2340000
13280000
13260000
13240000
13220000
13200000
2260000
13320000
13300000
TEXAS WATER
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October 2024 Survey
Miles
0
1
2
4

Analysis of sediment data from Lake Corpus Christi

Sedimentation in Lake Corpus Christi was determined by analyzing the acoustic signal returns of all three depth sounder frequencies using customized software called Hydropick. While the 200 kHz signal is used to determine the current bathymetric surface, the 200 kHz, 50 kHz, and 12 kHz are analyzed to determine the reservoir bathymetric surface at the time of initial impoundment, *i.e.*, pre-impoundment surface. Sediment core samples collected in the reservoir are correlated with the acoustic signals in each frequency to assist in identifying the pre-impoundment surface. The difference between the current surface bathymetry and the pre-impoundment surface bathymetry yields a sediment thickness value at each sounding location.

Sediment cores were split longitudinally and analyzed to identify the location of the pre-impoundment surface. The pre-impoundment surface was identified within the sediment core using the following methods: (1) a visual examination of the sediment core for 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) recording changes in texture from well sorted, relatively fine-grained sediment to poorly sorted mixtures of coarse and fine-grained materials; and, (3) identifying variations in the physical properties of the sediment, particularly sediment water content and penetration resistance with depth (Van Metre and others, 2004). Total sediment core length, post-impoundment sediment thickness, and pre-impoundment thickness were recorded. Physical characteristics of the sediment core, such as Munsell (2018) soil color, descriptive texture, relative water content, and presence of organic materials are presented in Table 2.

Table 2. Sediment core sample analysis data.

Sediment core sample	Easting[a] (feet)	Northing[a] (feet)	Total core sample / post-impoundment sediment length (inches)	Sediment core description[b]		Munsell soil color
LCC-1	2331748.98	13200890.65	120.0 / NA	post-impoundment	0.0–4.0″ very high water content, fine silt, soupy, smooth,	2.5Y 3/1 very dark gray
					4.0–120.0″ high to moderate water content, water content decreases with depth, silty clay, pudding to fudge like consistency, density increases with depth, uniform texture throughout	2.5Y 3/1 very dark gray
LCC–2	2326735.97	13205412.33	32.0 / 24.0	post-impoundment	0.0–2.0″ high water content, fine silt soupy	2.5Y 4/1 dark gray
					2.0–24.0″ high to moderate water content, water content decreases with depth silty clay, smooth, pudding like, uniform consistency and texture throughout	2.5Y 4/1 dark gray
				pre-impoundment	24.0–32.0″ low water content, clay, dense, easily crumbles, malleable, organic material present throughout (fibrous roots)	2.5Y 2.5/1 black
LCC-3	2322767.33	13204503.18	72.0 / NA	post-impoundment	0.0–2.0″ very high water content, fine silt, soupy, uniform consistency and texture throughout	2.5Y 4/2 dark grayish brown
					2–10″ high water content, silty clay, pudding like, uniform consistency and texture throughout	2.5Y 4/1 dark gray
					10–33″ moderate water content, sandy clay, organic material present throughout (roots)	2.5Y 3/2 vary dark grayish brown
					33–58″ low water content, sandy clay, more dense than previous layer, organic material present throughout (roots)	2.5Y 5/1 gray
					58.0–72.0″ low water content, sand, fine, sugar like, more dense than previous layer	2.5Y 5/1 gray
LCC-4	2321913.48	13213477.40	46.0 / 42.0	post-impoundment	0.0–2.0″ very high water content, fine silt, smooth, soupy, uniform consistency and texture throughout	2.5Y 4/1 dark gray
					2.0–42.0″ moderate water content, silty clay, peanut butter like, density increases with depth	2.5Y 3/1 very dark gray

a. Coordinates are based on NAD83 State Plane Texas South Central System (feet).
b. Sediment core samples are measured in inches with zero representing the current bottom surface.

Table 2 (continued). Sediment core sample analysis data.

Sediment core sample	Easting[a] (feet)	Northing[a] (feet)	Total core sample / post-impoundment sediment length (inches)	Sediment core description[b]		Munsell soil color
LCC-4 (continued)	2321913.48	13213477.40	46.0 / 42.0	post-impoundment	42.0–46.0″ low water content, clay, dense, organic material present throughout (terrestrial vegetation, woody debris)	2.5Y 2.5/1 black
LCC-5	2327375.78	13222526.65	30.0 / 23.0	post-impoundment	0.0–2.0″ very high water content, fine silt, soupy	2.5Y 4/1 dark gray
					2.0–23.0″ high to moderate water content, water content decreases with depth, silty clay, smooth, pudding like texture, mollusk shell present	5Y 3/1 very dark gray
				pre-impoundment	23.0–30.0″ low water content, clay, uniform consistency and texture throughout, organic material present throughout (fibrous roots, woody debris)	2.5Y 2.5/1 black
LCC-6	2326692.68	13224720.39	12.0 / 4.0	post-impoundment	0.0–4.0″ high water content, silty clay, soupy, smooth, very fine to coarse sized clay bits present	5Y 3/1 very dark gray
				pre-impoundment	4.0–12.0″ moderate to low water content, water content decreases with depth, clay, crumbles easily, malleable, uniform consistency and texture throughout, organic material present throughout (roots)	Gley 1 3/1 very dark greenish gray
LCC-Alt7	2327397.34	13204242.07	33.0 / NA	pre-impoundment	0.0–3.0″ low water content, fine sand, uniform consistency and texture throughout	2.5Y 5/2 grayish brown
					3.0–23.0″ low to moderate water content, water content increases with depth, sandy silt, dense, uniform consistency and texture throughout, smooth flat rock present	5Y 3/1 very dark gray
					23.0–33.0″ low water content, sandy clay, uniform consistency and texture, bits of macroinvertebrate shell present	2.5Y 5/1 gray
LCC-Alt8	2319501.06	13203910.07	63.0 / 47.0	post-impoundment	0.0–3.0″ very high water content, fine silt, soupy	2.5Y 4/1 dark gray
					3.0–33.0″ moderate water content, silty clay, smooth, pudding like, sticky, uniform consistency and texture throughout	2.5Y 3/1 very dark gray
					33.0–34.0″ moderate water content, clay loam	2.5Y 4/1 dark gray

a. Coordinates are based on NAD83 State Plane Texas South Central System (feet).
b. Sediment core samples are measured in inches with zero representing the current bottom surface.

Table 2 (continued). Sediment core sample analysis data.

Sediment core sample	Easting[a] (feet)	Northing[a] (feet)	Total core sample / post-impoundment sediment length (inches)	Sediment core description[b]		Munsell soil color
LCC-Alt8 (continued)	2319501.06	13203910.07	63.0 / 47.0	post-impoundment	34.0–47.0″ moderate water content, water content less than previous layers, silty clay, smooth, density increases compared to previous layers, uniform consistency and texture throughout	2.5Y 4/1 dark gray
				pre-impoundment	47.0–63.0″ low water content, water content decreases with depth, sandy clay, density increases with depth, organic material present throughout (fibrous roots, woody debris terrestrial vegetation)	2.5Y 3/1 very dark gray
LCC-9	2326491.51	13203474.99	18.0 / 3.0	post-impoundment	0.0–1.0″ very high water content, fine silt, soupy	5Y 3/1 very dark gray
					1.0–3.0″ high water content, fine sand, silty, organic material present (woody debris)	2.5Y 4/1 dark gray
				pre-impoundment	3.0–18.0″ low water content, sandy clay, crumbles, dense, uniform consistency and texture throughout, organic material present throughout (fibrous roots)	10YR 2/1 black
LCC-10	2329722.15	13209247.80	19.0 / 9.0	post-impoundment	0.0–1.0″ very high water content, fine silt, soupy, uniform consistency and texture throughout	2.5Y 4/1 dark gray
					1.0–9.0″ moderate water content, silty clay, smooth, peanut butter texture, uniform consistency	2.5Y 3/1 very dark gray
				pre-impoundment	9.0–19.0″ moderate water content, clay, sticky, malleable, organic material present (detritus, woody debris)	5Y 2.5/1 black
LCC-11	2329707.30	13206673.28	100.0 / 81.0	post-impoundment	0.0–1.0″ very high water content, fine silt, soupy, uniform consistency and texture throughout	2.5Y 4/1 dark gray
					1.0–17.0″ moderate water content, sandy silt, uniform consistency and texture throughout	2.5Y 4/1 dark gray
					17.0–24.0″ moderate water content, silty clay, peanut butter consistency, uniform texture throughout	2.5Y 4/1 dark gray
					24.0–27.0″ moderate water content, silty clay, rocks present medium to coarse grain rocks present at top of layer	2.5Y 2.5/1 black

a. Coordinates are based on NAD83 State Plane Texas South Central System (feet).

b. Sediment core samples are measured in inches with zero representing the current bottom surface.

Table 2 (continued). Sediment core sample analysis data.

Sediment core sample	Easting[a] (feet)	Northing[a] (feet)	Total core sample / post-impoundment sediment length (inches)	Sediment core description[b]		Munsell soil color
LCC-11 (continued)	2329707.30	13206673.28	100.0 / 81.0	post-impoundment	27.0–57.0″ moderate water content, silty clay, smooth, sticky, peanut butter like consistency, more dense than previous layers	5Y 4/1 dark gray
					57.0–62.0″ moderate water content, silty clay, very coarse clay bits present, organic material present throughout (terrestrial vegetation, stems)	2.5Y 3/1 very dark gray
					62.0–81.0″ moderate water content, water content less than previous layer, sandy mix, shell bits present	2.5Y 4/1 dark gray
				pre-impoundment	81.0–87.0″ low water content, sandy clay, gritty, uniform consistency and texture throughout, organic material present (roots at top of layer)	2.5Y 3/1 very dark gray
					87.0–93.0″ low water content, silty sand, uniform consistency and texture throughout	2.5Y 4/1 dark gray
					93.0–95.0″ low water content, sand with medium to coarse grain sized rock, shells present	2.5Y 4/1 dark gray
					95.0–100.0″ low water content, sand, dense, shells present	2.5Y 4/1 dark gray
LCC-12	2323526.77	13209281.82	120.0 / NA	post-impoundment	0.0–120.0″ high to moderate water content, water content decreases with depth, silty clay, density increases with depth at both 40 and 97 inches, uniform consistency and texture throughout	2.5Y 3/1 very dark gray
LCC-13	2324757.56	13216591.54	53.0 / 46.0	post-impoundment	0.0–1.0″ very high water content, fine silt, soupy, smooth	2.5Y 4/1 dark gray
					1.0–46.0″ high to moderate water content, water content decreases with depth, silty clay, sticky, pudding like, uniform consistency and texture throughout, shell fragments present	2.5Y 3/1 very dark gray
				pre-impoundment	46.0–53.0″ low water content, clay, dense, malleable	2.5Y 2.5/1 black

a. Coordinates are based on NAD83 State Plane Texas South Central System (feet).

b. Sediment core samples are measured in inches with zero representing the current bottom surface.

Table 2 (continued). Sediment core sample analysis data.

Sediment core sample	Easting[a] (feet)	Northing[a] (feet)	Total core sample / post-impoundment sediment length (inches)	Sediment core description[b]		Munsell soil color
LCC-14	2321391.13	13220356.80	14.0 / 5.0	post-impoundment	0.0–1.0″ very high water content, fine silt, very fine to fine bits of clay, organic material present (woody debris)	5Y 3/1 very dark gray
					1.0–5.0″ high water content, fine silt, pudding like, very fine to very coarse clay bits, uniform consistency and texture throughout, organic material present (woody debris)	5Y 3/1 very dark gray
				pre-impoundment	5.0–14.0″ moderate to low water content, water content decreases with depth, clay, malleable, fractures easily, uniform consistency and texture throughout, organic material present (woody debris near bottom of layer)	2.5Y 2.5/1 black
LCC-15	2332804.64	13227802.87	59.0 / 52.0	post-impoundment	0.0–2.0″ very high water content, fine silt, soupy, uniform consistency and texture throughout	2.5y 3/1 very dark gray
					2.0–52.0″ moderate water content, silty clay, smooth, density increases with depth uniform consistency and texture throughout	2.5y 3/1 very dark gray
				pre-impoundment	52.0–59.0″ low water content, clay, dense, organic material present (terrestrial vegetation)	2.5Y 2.5/1 black
LCC-16	2322383.77	13227298.06	67.0 / 64.0	post-impoundment	0.0–3.0″ very high water content, fine silt, soupy, smooth, uniform consistency and texture throughout	5Y 3/1 very dark gray
					3.0–34.0″ high to moderate water content, water content decreases with depth, silty clay, smooth, peanut butter like	2.5Y 4/1 dark gray
					34.0–64.0″ moderate water content, silty clay with very fine to coarse grain clay bit, fudge like, more dense than previous layer	2.5Y 3/1 very dark gray
				pre-impoundment	64.0–67.0″ low water content, clay, crumbles, organic material present (roots, terrestrial vegetation)	2.5Y 2.5/1 black
LCC-17	2320493.21	13217742.74	120.0 / NA	post-impoundment	0.0–5.0″ very high water content, fine silt, soupy, smooth	2.5Y 3/1 very dark gray

a. Coordinates are based on NAD83 State Plane Texas South Central System (feet).

b. Sediment core samples are measured in inches with zero representing the current bottom surface.

Table 2 (continued). Sediment core sample analysis data.

Sediment core sample	Easting[a] (feet)	Northing[a] (feet)	Total core sample / post-impoundment sediment length (inches)	Sediment core description[b]		Munsell soil color
LCC-17 (continued)	2320493.21	13217742.74	120.0 / NA	post-impoundment	5.0–120.0″ high to moderate water content, water content decreases with depth, silty clay, pudding to fudge like consistency, density change at 82 inches	2.5Y 2.5/1 black
LCC-Alt18	2321907.98	13226731.75	109.0 / NA	post-impoundment	0.0–2.0″ very high water content, fine silt, soupy, smooth	5Y 2.5/1 black
					2.0–109.0″ high to low water content, water content decreases with depth, silty clay, smooth, density increases with depth, uniform texture throughout	2.5Y 3/1 very dark gray
LCC-Alt19	2330796.21	13224500.81	74.0 / 70.0	post-impoundment	0.0–4.0″ very high water content, fine silt, soupy, smooth, uniform consistency and texture throughout	5Y 3/2 dark olive gray
					4.0–70.0″ high to moderate, water content decreases with depth, silty clay, density increases with depth, pudding like to peanut butter like consistency	5Y 4/1 dark gray
				pre-impoundment	70.0–74.0″ low water content, clay, crumbles, malleable, organic material present (terrestrial vegetation)	2.5Y 2.5/1 black
LCC-20	2333524.52	13202033.78	46.0 / 33.0	post-impoundment	0.0–1.0″ very high water content, fine silt, soupy, smooth	2.5Y 3/1 very dark gray
					1.0–23.0″ high to moderate water content, water content decreases with depth, silty clay, smooth, pudding to peanut butter like consistency, density increases with depth, uniform texture throughout	2.5Y 4/1 dark gray
					23.0–33.0″ low water content, silty clay, smooth, more dense than previous layer, fudge like consistency	2.5Y 4/1 dark gray
				pre-impoundment	33.0–46.0″ moderate to low water content, water content decreases with depth, sandy clay loam, easily fractures, crumbles, organic material present (fibrous roots)	2.5Y 4/1 dark gray
LCC-Alt21	2326109.91	13227404.00	16.0 / 1.0	post-impoundment	0.0–1.0″ high water content, sandy silt, uniform consistency and texture throughout	2.5Y 3/1 very dark gray
				pre-impoundment	1.0–16.0″ low water content, sandy clay, smooth, some grit present, malleable, easily fractures, organic material present throughout (fibrous roots, woody debris)	5Y 2.5/1 black

a. Coordinates are based on NAD83 State Plane Texas Central System (feet).

b. Sediment core samples are measured in inches with zero representing the current bottom surface.

Several criteria determine sediment core locations. Locations are distributed throughout the reservoir, are selected to represent the various acoustic signatures observed in the data, as well as a variety of depths and topographical features such as the submerged river channels, floodplains, shallow slopes, and deep basins. The pre-impoundment surface is identified by matching each sediment core with the acoustic signal returns. This information then serves as a guide for identifying the pre-impoundment surface along cross-sections where sediment core samples were not collected.

A photograph of sediment core LCC-4 (refer to Figure 3 for location) is shown in Figure 8. The base, or deepest part of the sample, is denoted by the blue line. The pre-impoundment boundary (yellow line closest to the base) was evident within this sediment core sample at 42 inches and identified by the change in color, texture, moisture, porosity, and structure. Identification of the pre-impoundment surface for each sediment core followed a similar procedure.

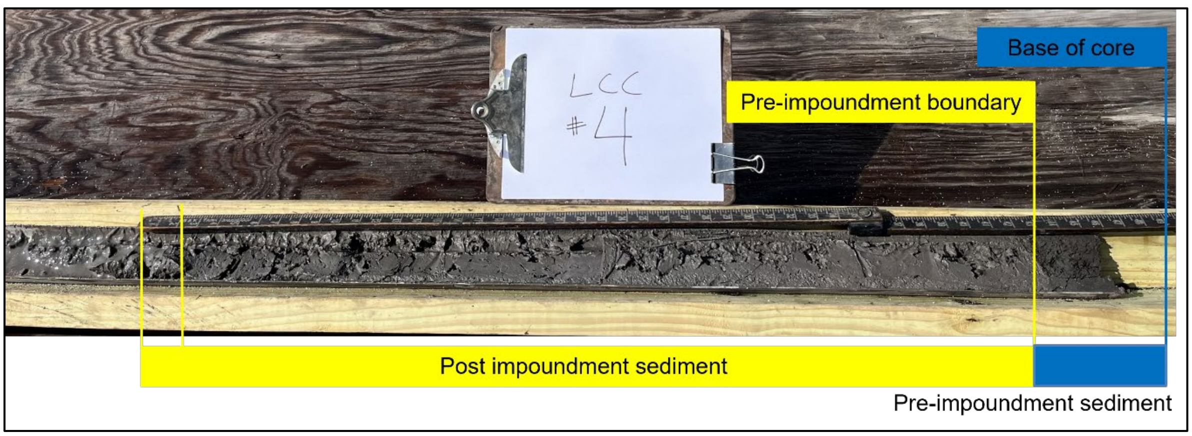

Figure 8. **Sediment core LCC-4. Post-impoundment sediment layers occur in the top 42 inches of this sediment core (identified by the yellow box). Pre-impoundment sediment layers were identified and are defined by the blue box.**

Figure 9 illustrates the relationships between acoustic signal returns and the depositional layering seen in sediment cores. In this example, sediment core LCC-4 is shown correlated with each frequency: 200 kHz, 50 kHz, and 12 kHz. The current bathymetric surface is determined based on signal returns from the 200 kHz transducer as represented by the top red line in Figure 8. The pre-impoundment surface is identified by comparing boundaries observed in the 200 kHz, 50 kHz, and 12 kHz signals to the location of the pre-impoundment surface of the sediment core sample. Many layers of sediment may be identified during analysis based on changes in observed characteristics such as water content, organic matter content, and sediment particle size, and each layer is classified as either post-impoundment or pre-impoundment. Yellow boxes represent post-impoundment sediments identified in the sediment core. Blue boxes indicate pre-impoundment sediments. In this example, the pre-impoundment boundary in sediment core LCC-4 most closely aligned with the different layers picked up by the 200kHz acoustic returns (Figure 9 A).

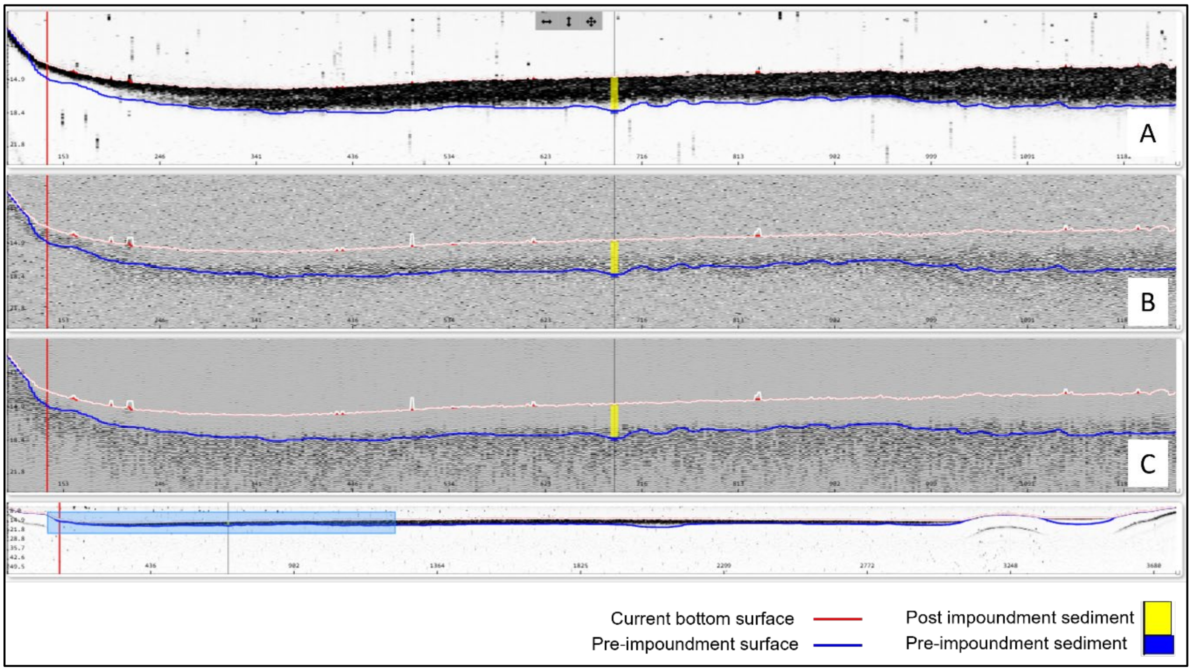

Figure 9. Sediment core sample LCC-4 compared with acoustic signal returns: A) 200 kHz frequency, B) 50 kHz frequency, and C) 12 kHz frequency.

After the pre-impoundment surface for all cross-sections is identified, a pre-impoundment TIN model and a sediment thickness TIN model are created. Pre-impoundment elevations and sediment thicknesses are interpolated between surveyed cross-sections using HydroTools with the same interpolation definition file used for bathymetric interpolation. For the purposes of TIN model creation, the TWDB labeled the sediment thickness for each LIDAR point and the reservoir boundary at zero feet (defined as the 94.0-foot elevation contour) indicating no sediment was measured in these areas. The sediment thickness TIN model was converted to a raster representation using a cell size of 2 feet by 2 feet and was used to produce a sediment thickness map (Figure 10). Elevation-capacity and elevation-area tables were computed from the pre-impoundment TIN model for the purpose of calculating the total volume of accumulated sediment.

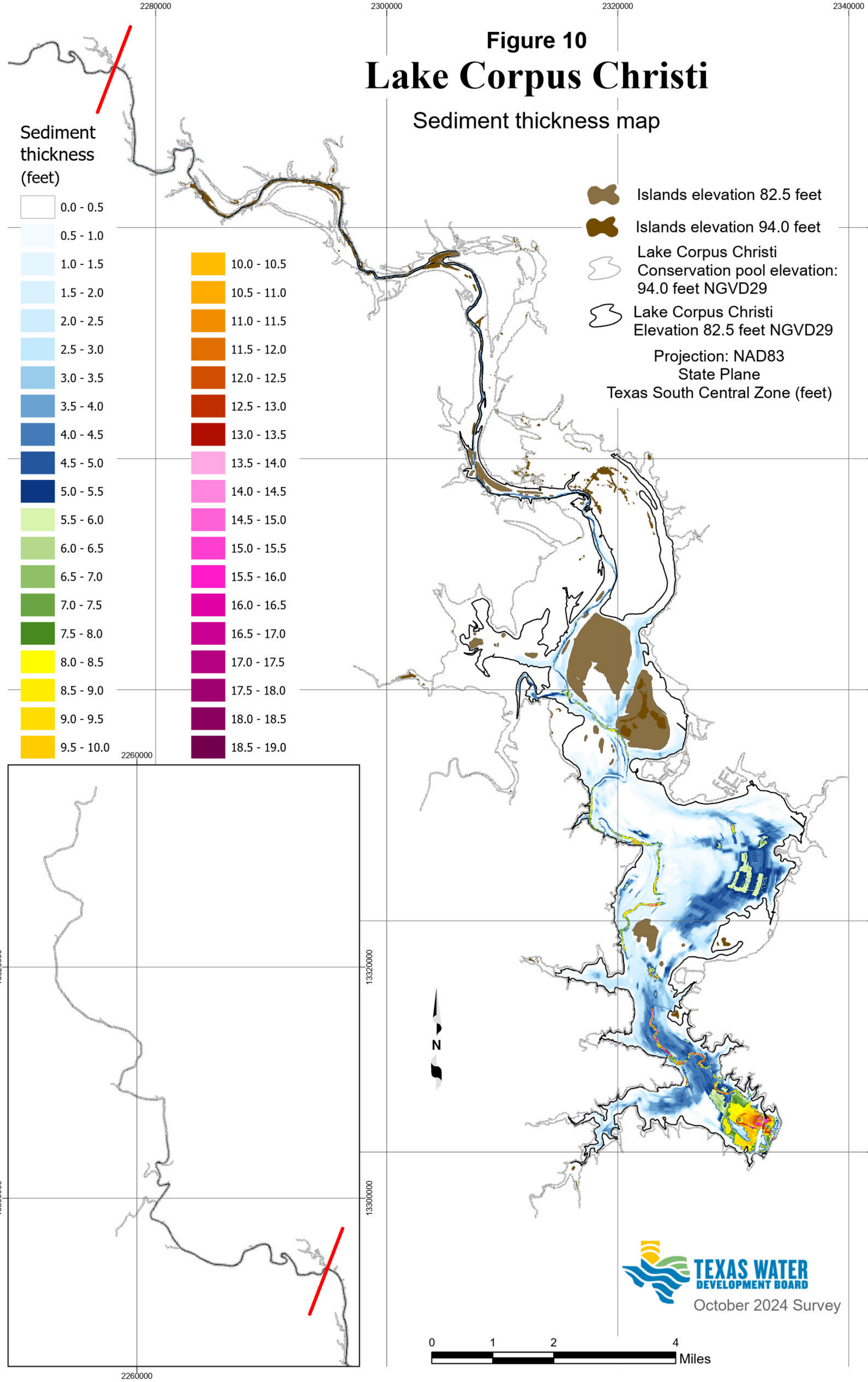
Figure 10
Lake Corpus Christi
Sediment thickness map
Sediment thickness (feet)
0.0 - 0.5
0.5 - 1.0
1.0 - 1.5
1.5 - 2.0
2.0 - 2.5
2.5 - 3.0
3.0 - 3.5
3.5 - 4.0
4.0 - 4.5
4.5 - 5.0
5.0 - 5.5
5.5 - 6.0
6.0 - 6.5
6.5 - 7.0
7.0 - 7.5
7.5 - 8.0
8.0 - 8.5
8.5 - 9.0
9.0 - 9.5
9.5 - 10.0
10.0 - 10.5
10.5 - 11.0
11.0 - 11.5
11.5 - 12.0
12.0 - 12.5
12.5 - 13.0
13.0 - 13.5
13.5 - 14.0
14.0 - 14.5
14.5 - 15.0
15.0 - 15.5
15.5 - 16.0
16.0 - 16.5
16.5 - 17.0
17.0 - 17.5
17.5 - 18.0
18.0 - 18.5
18.5 - 19.0
Islands elevation 82.5 feet
Islands elevation 94.0 feet
Lake Corpus Christi Conservation pool elevation: 94.0 feet NGVD29
Lake Corpus Christi Elevation 82.5 feet NGVD29
Projection: NAD83
State Plane
Texas South Central Zone (feet)
N
0
1
2
4
Miles
TEXAS WATER DEVELOPMENT BOARD
October 2024 Survey
2280000
2300000
2320000
2340000
13280000
13260000
13240000
13220000
13200000
2260000
13320000
13300000

Survey results

Volumetric survey

The 2024 TWDB volumetric survey indicates Lake Corpus Christi has a total reservoir capacity of 259,747 acre-feet and encompasses an area of 20,258 acres at conservation pool elevation (94.0 feet NGVD29). Current area and capacity estimates are presented along with previous estimates of area and capacity at conservation pool elevation in Table 3. Because differences in reservoir conditions as well as differences in the methodologies used among surveys can affect area and volume calculations, the TWDB does not recommend comparing between volumetric surveys to determine loss of area or capacity. Information from past surveys is thus presented for informational purposes only.

Table 3. Current and previous survey capacity and surface area estimates at conservation pool elevation (94.0 feet NGVD29).

Survey	Surface area (acres)	Total capacity (acre-feet)	Source
U.S. Soil Conservation Service 1948	19,860	292,758	McCaughan & Etheridge, 1973
Reagan & McCaughan 1957	22,050	302,100	TWDB, 1967, McCaughan & Etheridge, 1973
1957 re-calculated	22,050	297,776	McCaughan & Etheridge, 1973
McCaughan & Etheridge 1972	19,336	272,352	McCaughan & Etheridge, 1973
USGS 1987	18,883	266,832	West *and others,* 1987
USGS 1987 re-calculated by HDR Inc. 1991	19,251	241,241	James L. Riley, written commun., 1991, Ken Choffel, written commun., 2002
TWDB 2002 re-calculated	18,766	262,564	Texas Water Development Board, 2016
TWDB 2016	19,748	256,339	Texas Water Development Board, 2017
TWDB 2024	20,258	259,747	

Sedimentation survey

The 2024 TWDB sedimentation survey measured 21,150 acre-feet of sediment below elevation 82.0 feet. Elevation 82.0 feet is the maximum elevation with sufficient coverage by the 2024 TWDB survey data for accurate comparison against previous sedimentation surveys. The sedimentation survey indicates sediment accumulation is greater in the Nueces River and in the area just upstream and downstream of the old Mathis

Dam. Determining sedimentation rates based on the sedimentation survey leads to some uncertainty due to the history of the reservoir. Mathis Dam, also known as La Fruta Dam, was originally constructed in early 1930, before being partially washed out on November 23, 1930. The dam was repaired and reconstruction was completed on July 24, 1934. The reservoir had an operating level of 74.0 feet and accumulated sediments at a high rate until Wesley E. Seale Dam was completed in 1958. Although the current operating level of the reservoir is 94.0 feet, Lake Corpus Christi was operated at a level of 88.0 feet from the time of completion of the Wesley E. Seale Dam in 1958 until July 1964. Therefore, there are three distinct eras of sediment deposition within the reservoir and three distinct elevations at which the heavier sediment load would have settled out (McCaughan & Etheridge, 1973). Additionally, the reservoir again operated at 88.0 feet for a short period when the gates were damaged by a storm on February 23, 1965, until their repair was completed on September 7, 1966. The reservoir also operated for a short time at 91.0 feet for safety until modifications to increase the stability of the dam could be made after a soils test was completed in April 1997 (American Society of Civil Engineers, 1998).

Lake Corpus Christi is prone to periods of high inflow as well as periods of drought as seen in the water surface elevation records (Texas Water Development Board, 2026b). The fluctuation in water levels makes it difficult to identify the pre-impoundment layer in the acoustic returns and can lead to an under or over-estimate of sediment in these areas. Low water levels lead to the desiccation of any exposed sediment. Upon inundation and re-saturation, exposed sediment will not return to its original high level of water content (Dunbar and Allen, 2003). Drying of sediment in exposed areas creates hard surfaces that cannot be penetrated with gravity coring techniques, and compressive stresses on the sediments may also increase sediment density, inhibiting the measurement of the original, pre-impoundment surface. Density stratification in the sediment layers can also scatter and attenuate acoustic return signals of the multi-frequency depth sounder (U.S. Army Corps of Engineers, 2013).

Comparison of annual capacity loss estimates of Lake Corpus Christi derived using differing methodologies are provided in Table 4 for sedimentation rate calculation.

Table 4. Capacity loss comparisons at conservation pool elevation (94.0 feet NGVD29).

Previous surveys	U.S. Soil Conservation Service 1948	McCaughan & Etheridge 1957 re-calculated	McCaughan & Etheridge 1972	TWDB 2002 re-calculated
Volume difference versus TWDB 2024 survey (acre-feet)	33,011	38,029	12,605	2,817
Percent change	11.3	12.8	4.6	1.1
Years between surveys	66[a]	66[a]	52	22
Average annual capacity loss rate (acre-feet/year)	500	576	242	128
Average annual capacity loss (acre-feet) per square mile of drainage area (16,656 sq miles) per year	0.03	0.03	0.01	0.01

Note: Wesley E. Seale Dam was completed, and impoundment of water began on April 26, 1958.

Any changes to the hydrologic system that contributes runoff to the reservoir, including changes in vegetative cover, land use, or frequency and intensity of rainfall events, can impact the local rate of sedimentation. Because methodological and technological changes from one survey to the next yield inconsistencies in estimates of capacity loss rates, long-term capacity calculations, computed by plotting all capacity estimates and calculating a linear regression line, reduce the effect of individual survey error. As illustrated in Figure 11, long-term trends indicate Lake Corpus Christi loses approximately 558 acre-feet per year in capacity since impoundment due to sedimentation below conservation pool elevation (94.0 feet NGVD29).

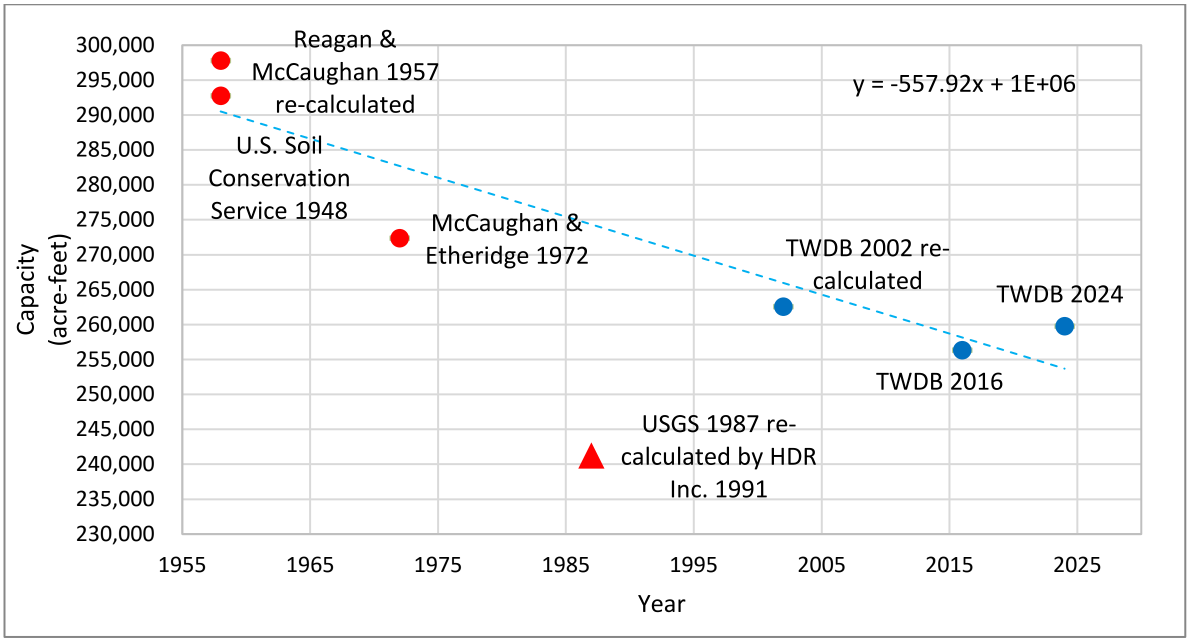

Figure 11. **Plot of current and previous capacity estimates (acre-feet). Capacity estimates for each TWDB survey plotted as blue dots and other surveys plotted in red. The blue trend line illustrates general decline in capacity from time of lake impoundment (1958) through 2024 (excluding the red triangle value).**

Recommendations

Sedimentation processes tend to be slow, with changes accumulating over the time frame of years—unless there is a high flow event. For these reasons, we recommend reservoir sedimentation surveys be conducted every 10 years or after a major event. Closely monitoring changes in the reservoir provides information needed to plan for a secure water supply for the future.

TWDB contact information

For more information about the TWDB Hydrographic Survey Program, visit www.twdb.texas.gov/surfacewater/surveys. Any questions regarding the TWDB Hydrographic Survey Program or this report may be addressed to: Hydrosurvey@twdb.texas.gov.

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Appendix A

Lake Corpus Christi

RESERVOIR BATHYMETRIC AND TOPOGRAPHIC CAPACITY TABLE

TEXAS WATER DEVELOPMENT BOARD
CAPACITY IN ACRE-FEET
ELEVATION INCREMENT IS ONE TENTH FOOT

October 2024 Survey
Conservation Pool Elevation 94.0 feet NGVD29
Top of dam elevation 109.3 feet NGVD29

ELEVATION (Feet NGVD29)	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
41	0	0	0	0	0	0	0	0	0	0
42	0	0	0	0	0	0	0	0	0	0
43	0	0	0	0	0	0	0	0	0	1
44	1	1	1	1	1	1	1	1	1	2
45	2	2	2	3	3	3	4	4	5	5
46	6	6	7	8	8	9	9	10	11	11
47	12	13	13	14	15	16	17	18	19	20
48	21	23	24	25	27	28	29	31	32	34
49	35	37	38	40	41	43	45	46	48	50
50	52	54	56	58	60	62	64	67	69	71
51	73	76	78	81	83	86	88	91	94	96
52	99	102	105	107	110	113	116	119	122	125
53	128	131	134	138	141	144	147	151	154	157
54	161	164	168	171	175	178	182	185	189	193
55	196	200	204	208	212	215	219	223	227	232
56	236	240	245	249	253	258	263	267	272	277
57	281	286	291	296	302	307	312	317	323	328
58	334	340	345	351	357	363	370	376	383	389
59	396	404	411	419	427	435	443	452	462	471
60	482	492	504	516	528	541	554	568	582	596
61	612	628	645	663	681	701	722	743	766	789
62	814	839	866	893	922	951	983	1,017	1,052	1,089
63	1,127	1,168	1,210	1,255	1,301	1,349	1,401	1,455	1,512	1,570
64	1,631	1,694	1,758	1,824	1,892	1,960	2,030	2,101	2,174	2,248
65	2,324	2,401	2,479	2,560	2,642	2,727	2,815	2,905	2,997	3,092
66	3,189	3,288	3,388	3,490	3,594	3,699	3,807	3,917	4,029	4,143
67	4,260	4,380	4,502	4,627	4,755	4,885	5,018	5,152	5,289	5,428
68	5,569	5,712	5,855	6,001	6,149	6,298	6,449	6,602	6,756	6,911
69	7,067	7,225	7,384	7,545	7,708	7,872	8,038	8,205	8,374	8,545
70	8,718	8,894	9,072	9,253	9,436	9,622	9,810	10,001	10,194	10,391
71	10,590	10,792	10,998	11,208	11,421	11,638	11,857	12,079	12,304	12,532
72	12,762	12,995	13,231	13,469	13,711	13,957	14,208	14,465	14,728	15,000
73	15,284	15,583	15,898	16,226	16,566	16,917	17,278	17,650	18,032	18,425
74	18,828	19,243	19,668	20,104	20,551	21,008	21,475	21,950	22,433	22,923
75	23,420	23,922	24,431	24,945	25,466	25,991	26,522	27,059	27,601	28,149
76	28,702	29,262	29,827	30,398	30,975	31,558	32,146	32,740	33,338	33,942
77	34,551	35,165	35,784	36,408	37,038	37,675	38,318	38,968	39,625	40,288
78	40,958	41,633	42,315	43,002	43,694	44,393	45,097	45,806	46,522	47,243
79	47,969	48,701	49,439	50,182	50,930	51,684	52,443	53,208	53,978	54,753
80	55,534	56,322	57,115	57,915	58,722	59,534	60,353	61,178	62,010	62,851
81	63,706	64,580	65,475	66,387	67,316	68,259	69,216	70,184	71,165	72,156
82	73,157	74,168	75,188	76,217	77,255	78,303	79,360	80,427	81,504	82,591
83	83,689	84,797	85,915	87,041	88,177	89,324	90,482	91,650	92,828	94,015
84	95,211	96,415	97,627	98,848	100,078	101,318	102,568	103,828	105,098	106,379
85	107,670	108,972	110,284	111,607	112,940	114,283	115,635	116,997	118,369	119,752
86	121,144	122,547	123,959	125,381	126,813	128,254	129,705	131,166	132,636	134,115
87	135,605	137,104	138,612	140,129	141,655	143,190	144,734	146,287	147,848	149,418
88	150,996	152,583	154,179	155,784	157,397	159,018	160,647	162,285	163,930	165,585
89	167,247	168,919	170,598	172,286	173,982	175,687	177,399	179,119	180,846	182,581

Appendix A (continued)

Lake Corpus Christi

RESERVOIR BATHYMETRIC AND TOPOGRAPHIC CAPACITY TABLE

TEXAS WATER DEVELOPMENT BOARD
CAPACITY IN ACRE-FEET
ELEVATION INCREMENT IS ONE TENTH FOOT

October 2024 Survey
Conservation Pool Elevation 94.0 feet NGVD29
Top of dam elevation 109.3 feet NGVD29

ELEVATION (Feet NGVD29)	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
90	184,324	186,072	187,828	189,589	191,357	193,131	194,912	196,699	198,493	200,293
91	202,101	203,916	205,738	207,567	209,403	211,246	213,097	214,955	216,820	218,693
92	220,573	222,462	224,357	226,261	228,172	230,091	232,018	233,952	235,893	237,842
93	239,798	241,762	243,732	245,710	247,694	249,686	251,685	253,692	255,705	257,724
94	259,747	261,953	264,003	266,059	268,122	270,192	272,270	274,355	276,449	278,550
95	280,660	282,777	284,903	287,036	289,178	291,328	293,486	295,653	297,828	300,012
96	302,204	304,405	306,615	308,834	311,061	313,298	315,544	317,800	320,065	322,340
97	324,624	326,918	329,222	331,535	333,860	336,194	338,540	340,897	343,266	345,647
98	348,040	350,445	352,862	355,290	357,729	360,179	362,640	365,111	367,594	370,087
99	372,591	375,106	377,631	380,167	382,714	385,271	387,840	390,420	393,010	395,611
100	398,223	400,846	403,479	406,123	408,778	411,443	414,118	416,805	419,502	422,210
101	424,928	427,657	430,396	433,146	435,906	438,676	441,457	444,248	447,049	449,861
102	452,683	455,515	458,358	461,210	464,072	466,944	469,826	472,717	475,618	478,528
103	481,448	484,377	487,315	490,262	493,219	496,186	499,162	502,147	505,142	508,147
104	511,162	514,187	517,222	520,267	523,323	526,388	529,464	532,550	535,646	538,753
105	541,870	544,998	548,136	551,286	554,445	557,616	560,796	563,986	567,187	570,396
106	573,615	576,844	580,082	583,329	586,584	589,849	593,123	596,405	599,696	602,995
107	606,304	609,620	612,946	616,280	619,623	622,974	626,334	629,702	633,079	636,465
108	639,859	643,262	646,674	650,095	653,527	656,968	660,418	663,879	667,350	670,830
109	674,319	677,817	681,324	684,839						

Appendix B

Lake Corpus Christi

RESERVOIR BATHYMETRIC AND TOPOGRAPHIC AREA TABLE

TEXAS WATER DEVELOPMENT BOARD
AREA IN ACRES
ELEVATION INCREMENT IS ONE TENTH FOOT

October 2024 Survey
Conservation Pool Elevation 94.0 feet NGVD29
Top of dam elevation 109.3 feet NGVD29

ELEVATION (Feet NGVD29)	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
41	0	0	0	0	0	0	0	0	0	0
42	0	0	0	0	0	0	0	0	0	0
43	0	0	0	0	0	0	1	1	1	1
44	1	1	1	1	1	1	1	1	2	2
45	3	3	3	3	4	4	4	5	5	5
46	5	6	6	6	6	6	6	6	6	6
47	7	7	7	8	9	9	10	11	12	12
48	13	13	13	13	14	14	14	14	15	15
49	15	15	15	16	16	16	16	17	18	19
50	19	20	21	21	22	22	22	23	23	23
51	24	24	24	25	25	26	26	26	27	27
52	27	28	28	28	29	29	30	30	30	31
53	31	31	32	32	32	33	33	33	33	34
54	34	34	35	35	35	36	36	36	37	37
55	37	38	38	38	39	39	40	40	41	42
56	43	43	44	44	45	45	46	47	47	48
57	49	50	50	51	52	52	53	54	55	55
58	56	58	59	60	61	62	63	65	67	69
59	71	73	75	78	81	84	87	91	95	100
60	105	111	116	121	126	130	134	138	143	151
61	158	166	174	182	191	201	211	221	230	240
62	249	259	269	280	292	308	326	342	362	378
63	395	414	433	452	473	502	529	552	575	597
64	618	637	653	668	681	692	705	720	735	749
65	762	777	792	814	838	862	887	913	938	961
66	978	994	1,009	1,028	1,049	1,069	1,089	1,110	1,131	1,154
67	1,180	1,210	1,239	1,264	1,290	1,313	1,336	1,359	1,381	1,399
68	1,416	1,432	1,448	1,467	1,486	1,503	1,518	1,531	1,543	1,556
69	1,572	1,587	1,602	1,617	1,632	1,649	1,665	1,681	1,702	1,722
70	1,745	1,769	1,793	1,818	1,845	1,871	1,894	1,921	1,948	1,978
71	2,008	2,040	2,078	2,115	2,151	2,180	2,208	2,237	2,264	2,290
72	2,316	2,342	2,370	2,400	2,435	2,481	2,539	2,598	2,669	2,776
73	2,913	3,072	3,215	3,343	3,459	3,562	3,664	3,768	3,875	3,980
74	4,094	4,195	4,306	4,421	4,522	4,619	4,708	4,793	4,866	4,934
75	4,994	5,055	5,117	5,176	5,230	5,283	5,337	5,391	5,451	5,508
76	5,564	5,621	5,681	5,742	5,802	5,856	5,908	5,961	6,012	6,063
77	6,113	6,163	6,216	6,272	6,332	6,400	6,467	6,535	6,599	6,664
78	6,726	6,785	6,842	6,898	6,954	7,014	7,070	7,124	7,179	7,240
79	7,293	7,348	7,401	7,456	7,511	7,566	7,619	7,672	7,728	7,783
80	7,843	7,905	7,968	8,031	8,094	8,156	8,218	8,285	8,362	8,469
81	8,638	8,844	9,042	9,207	9,362	9,499	9,627	9,746	9,859	9,962
82	10,060	10,155	10,248	10,339	10,428	10,521	10,619	10,720	10,824	10,928
83	11,030	11,127	11,221	11,313	11,413	11,522	11,630	11,734	11,829	11,917
84	12,000	12,079	12,163	12,253	12,350	12,450	12,548	12,650	12,752	12,858
85	12,966	13,074	13,178	13,279	13,376	13,474	13,572	13,672	13,774	13,875
86	13,976	14,075	14,172	14,269	14,365	14,460	14,556	14,652	14,749	14,846
87	14,943	15,037	15,129	15,217	15,304	15,393	15,481	15,569	15,655	15,742
88	15,828	15,915	16,002	16,088	16,171	16,253	16,334	16,416	16,499	16,585
89	16,670	16,755	16,839	16,921	17,001	17,081	17,161	17,239	17,314	17,386

Appendix B (continued)

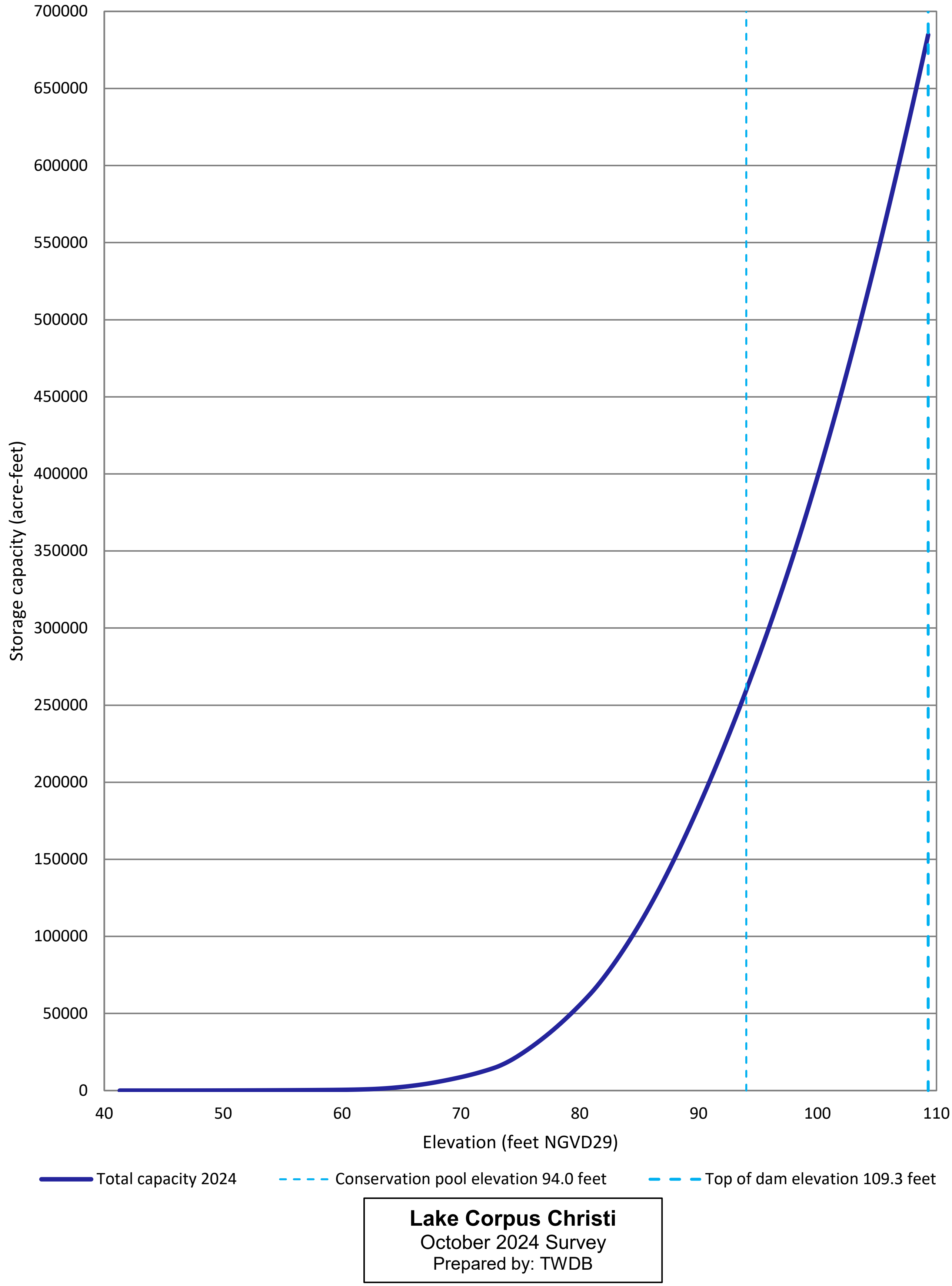
Lake Corpus Christi

RESERVOIR BATHYMETRIC AND TOPOGRAPHIC AREA TABLE

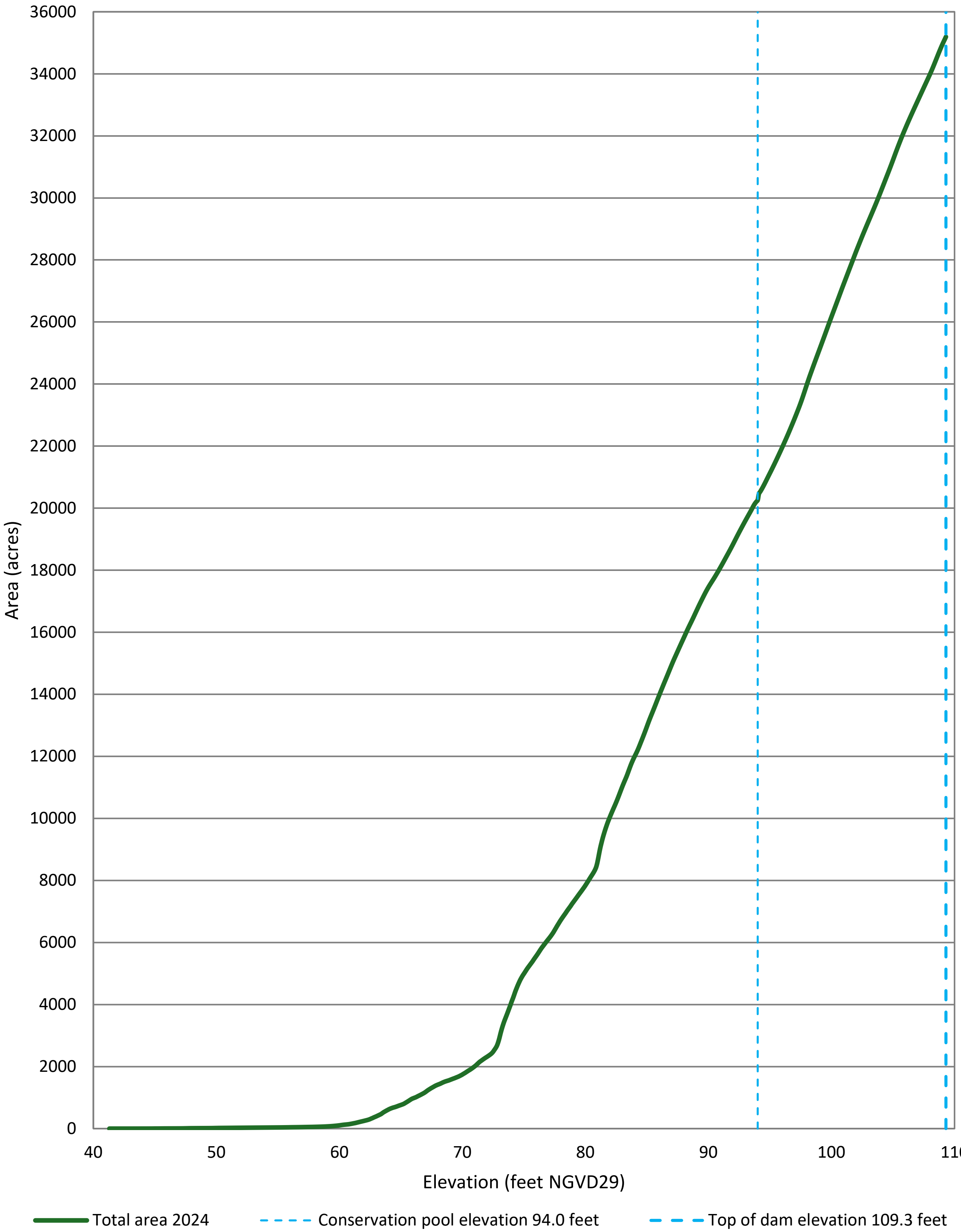
TEXAS WATER DEVELOPMENT BOARD
AREA IN ACRES
ELEVATION INCREMENT IS ONE TENTH FOOT

October 2024 Survey
Conservation Pool Elevation 94.0 feet NGVD29
Top of dam elevation 109.3 feet NGVD29

ELEVATION (Feet NGVD29)	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
90	17,456	17,521	17,584	17,647	17,709	17,773	17,839	17,905	17,973	18,042
91	18,112	18,182	18,254	18,326	18,398	18,471	18,543	18,616	18,690	18,766
92	18,842	18,920	18,998	19,075	19,152	19,228	19,303	19,377	19,451	19,524
93	19,597	19,669	19,740	19,810	19,881	19,954	20,030	20,101	20,162	20,212
94	20,258	20,466	20,528	20,594	20,665	20,740	20,817	20,896	20,976	21,056
95	21,135	21,214	21,294	21,375	21,458	21,540	21,624	21,709	21,794	21,880
96	21,967	22,055	22,144	22,233	22,323	22,415	22,508	22,603	22,698	22,794
97	22,890	22,989	23,089	23,190	23,293	23,401	23,514	23,630	23,749	23,870
98	23,990	24,108	24,223	24,335	24,445	24,555	24,664	24,771	24,879	24,986
99	25,093	25,200	25,307	25,415	25,522	25,631	25,740	25,850	25,959	26,067
100	26,174	26,280	26,385	26,491	26,598	26,705	26,812	26,919	27,025	27,131
101	27,235	27,339	27,443	27,547	27,651	27,755	27,858	27,962	28,067	28,170
102	28,273	28,374	28,473	28,573	28,671	28,769	28,865	28,960	29,055	29,149
103	29,242	29,336	29,429	29,523	29,617	29,711	29,806	29,902	30,000	30,100
104	30,200	30,301	30,402	30,503	30,605	30,706	30,807	30,910	31,013	31,118
105	31,224	31,333	31,440	31,546	31,650	31,753	31,854	31,953	32,050	32,145
106	32,238	32,331	32,423	32,513	32,603	32,692	32,779	32,866	32,952	33,039
107	33,125	33,211	33,298	33,384	33,470	33,556	33,641	33,727	33,812	33,899
108	33,986	34,075	34,167	34,263	34,360	34,459	34,558	34,657	34,754	34,848
109	34,938	35,025	35,107	35,193						



Appendix C: Bathymetric and topographic capacity curve



Lake Corpus Christi
October 2024 Survey
Prepared by: TWDB

Appendix D: Bathymetric and topographic area curve

Figure 7

Lake Corpus Christi

5' - contour map

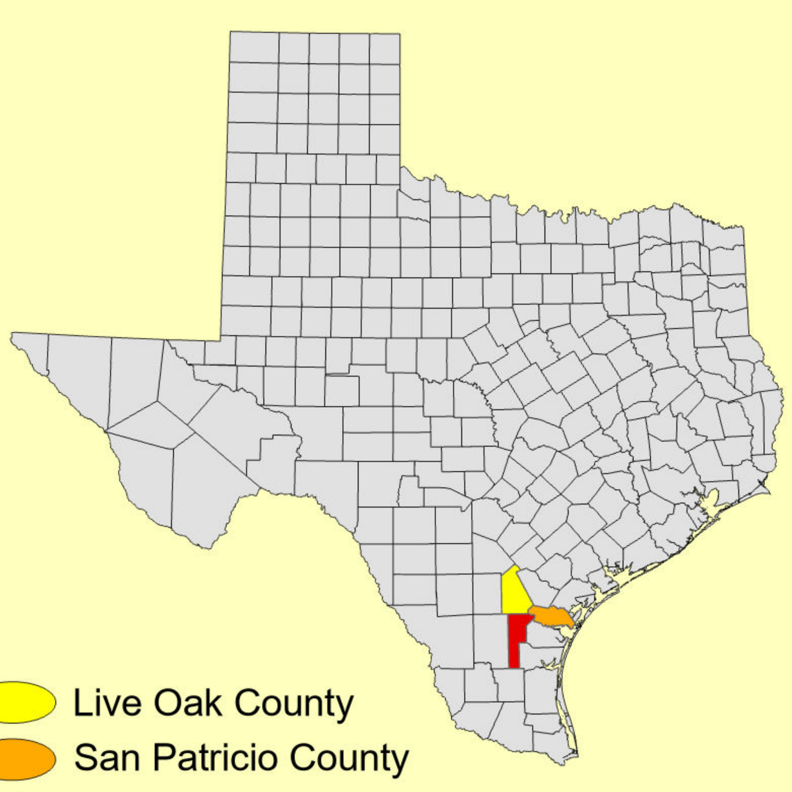
CONTOURS
(feet NGVD29)

- 90
- 85
- 80
- 75
- 70
- 65
- 60
- 55
- 50
- 45

Lake Corpus Christi Conservation pool elevation 94.0 feet NGVD29

Islands

Projection: NAD83
State Plane
Texas South Central Zone



Live Oak County
San Patricio County
Jim Wells County

This map is the product of a survey conducted by the Texas Water Development Board's Hydrographic Survey Program to determine the capacity of Lake Corpus Christi. The Texas Water Development Board makes no representations nor assumes any liability.