

VOLUMETRIC SURVEY OF WACO LAKE

Prepared for:

**U.S. ARMY CORPS OF ENGINEERS
FORT WORTH DISTRICT**



Prepared by:

The Texas Water Development Board

March 10, 2003

Texas Water Development Board

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Published and Distributed
by the
Texas Water Development Board
P.O. Box 13231
Austin, Texas 78711-3231

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WACO LAKE HYDROGRAPHIC SURVEY REPORT

INTRODUCTION

Staff of the Hydrographic Survey Unit of the Texas Water Development Board (TWDB) conducted a hydrographic survey on Waco Lake in January, 1995. The purpose of the survey was to determine the capacity of the lake at the normal pool elevation and to establish baseline information for future surveys. From this information, future surveys will be able to determine sediment deposition locations and rates over time. Survey results are presented in the following pages in both graphical and tabular form. All elevations presented in this report will be reported in feet above mean sea level based on the National Geodetic Vertical Datum of 1929 (NGVD '29) unless noted otherwise. The results will be compared to the information from the latest sedimentation survey performed by the U. S. Army Corps of Engineers in 1970. At the normal pool elevation of 455.0 feet, they reported a surface area of 7,237 acres and a capacity of 149,200 acre-feet.

HISTORY AND GENERAL INFORMATION OF THE RESERVOIR

Waco Lake is located on the Bosque River in McLennan County, 4.6 river miles upstream from the confluence of the Bosque and Brazos Rivers. The lake is located within the city limits of Waco and has an estimated drainage area of 1,652 square miles. The lake and dam facility are owned by the United States Government, and maintained and operated by the U. S. Army Corps of Engineers, Fort Worth District (COE). The water rights are allocated to the City of Waco and the Brazos River Authority.

The water right for the original lake (Old Lake Waco-Permit Number 1115) was

issued by the State Board of Water Engineers on August 15, 1929 to the City of Waco authorizing the impoundment of 39,000 acre-feet and the use of not more than 85,000 acre-feet of water annually for municipal water supply in what is now referred to old Lake Waco. In an agreement with the U. S. Government, a new dam was built immediately downstream and a new lake formed that inundated the old lake and dam structure. Permit 1931 was issued on June 6, 1957, amended June 16, 1959, to allow the impoundment of 39,000 acre-feet of water in the new lake, 3,000 ft. downstream of old Lake Waco. The permit was again amended on October 13, 1960, to reduce the annual diversion from 85,000 acre-feet of water to 39,000 acre-feet. Certificate of Adjudication Number 2315 was issued March 8, 1993 to the City of Waco authorizing the City to store 104,100 acre-feet of water in Waco Lake and to use, not more than 58,200 acre-feet of water for municipal purposes per annum and 900 acre-feet per annum for irrigation purposes. On July 16, 1991, Permit Number 5094 was issued by the Texas Water Commission to the Brazos River Authority (BRA). The permit authorized BRA to impound 87,962 acre-feet of water in Waco Lake, and to use, not more than 20,777 acre-feet of water per annum for municipal purposes in McLennan County. The certificate also authorized the use of the impounded waters of Waco Lake for recreational purposes.

Construction of the existing dam commenced in August 1958. Deliberate impoundment of water began February 26, 1965 and the facility was completed June 24 of the same year. The project was designed by the COE and the general contractors were Clement Brothers of Hickory, North Carolina for the earthwork, Elmer Gardner for the spillway, and R. G. LaTourneau, Inc. for the repairs. The estimated project cost was \$49,407,000.

Waco Dam consists of a earthen dam, 24,618 feet long, with a concrete controlled spillway containing fourteen 40 X 35 foot tainter gates. A separate outlet works consisting of one 20 foot diameter conduit is controlled by three 6.8-by-20-foot broome-type tractor sluice gates. The dam has a maximum height of 140 feet above the streambed.

Waco Lake, at the normal pool elevation of 455.0 feet, was originally estimated when built by the COE to have a capacity of 152,500 acre-feet with a surface area of 7,270 acres. In 1970 a resurvey of Waco Lake was performed by the COE in which 24 of the sedimentation range lines were surveyed. The storage volume was calculated at elevation 455.0 to be 149,189 acre-feet with a surface area of 7,237 acres.

HYDROGRAPHIC SURVEYING TECHNOLOGY

The following sections will describe the equipment and methodology used to conduct this hydrographic survey. Some of the theory behind Global Positioning System (GPS) technology and its accuracy are also addressed.

GPS Information

The following is a brief and simple description of Global Positioning System (GPS) technology. GPS is a new technology that uses a network of satellites, maintained in precise orbits around the earth, to determine locations on the surface of the earth. GPS receivers continuously monitor the broadcasts from the satellites to determine the position of the receiver. With only one satellite being monitored, the point in question could be located anywhere on a sphere surrounding the satellite with a radius of the distance measured. The observation of two satellites decreases the possible location to a finite number of points on a circle where the two spheres intersect. With a third satellite observation, the unknown location is reduced to two points where all three spheres intersect. One of these points is obviously in error because its location is in space, and it is ignored. Although three satellite measurements can fairly accurately locate a point on the earth, the minimum number of satellites required to determine a three dimensional position within the required accuracy is four. The fourth measurement compensates for any time discrepancies between the clock on board the satellites and the clock within the GPS receiver.

GPS technology was developed in the 1960s by the United States Air Force and the defense establishment. After program funding in the early 1970s, the initial satellite was launched on February 22, 1978. A four year delay in the launching program occurred after the Challenger space shuttle disaster. In 1989, the launch schedule was resumed. Full operational capability will be reached when the NAVSTAR (NAVigation System with Time And Ranging) satellite constellation is composed of 24 Block II satellites. At the time of the survey, the system had achieved initial operational capability. A full constellation of 24 satellites, in a combination of Block I (prototype) and Block II satellites, was fully functional. The NAVSTAR satellites provide data based on the World Geodetic System (WGS '84) spherical datum. WGS '84 is essentially identical to NAD '83.

The United States Department of Defense (DOD) is currently responsible for implementing and maintaining the satellite constellation. In an attempt to discourage the use of these survey units as a guidance tool by hostile forces, the DOD has implemented means of false signal projection called Selective Availability (S/A). Positions determined by a single receiver when S/A is active result in errors to the actual position of up to 100 meters. These errors can be reduced to centimeters by performing a static survey with two GPS receivers, one of which is set over a point with known coordinates. The errors induced by S/A are time-constant. By monitoring the movements of the satellites over time (one to three hours), the errors can be minimized during post processing of the collected data and the unknown position computed accurately.

Differential GPS (DGPS) can determine positions of moving objects in real-time or "on-the-fly." One GPS receiver was set up over a benchmark with known coordinates established by the hydrographic survey crew. This receiver remained stationary during the survey and monitored the movements of the satellites overhead. Position corrections were determined and transmitted via a radio link once per second to a second GPS receiver located on the moving boat. The boat receiver used these corrections, or differences, in combination with the satellite information it received to determine its

differential location. The large positional errors experienced by a single receiver when S/A is active are greatly reduced by utilizing DGPS. The reference receiver calculates satellite corrections based on its known fixed position, which results in positional accuracies within three meters for the moving receiver. DGPS was used to determine horizontal position only. Vertical information was supplied by the depth sounder.

Equipment

The equipment used in the performance of the hydrographic survey consisted of a 23-foot aluminum tri-hull SeaArk craft with cabin, equipped with twin 90-Horsepower Johnson outboard motors. Installed within the enclosed cabin are an Innerspace Helmsman Display (for navigation), an Innerspace Technology Model 449 Depth Sounder and Model 443 Velocity Profiler, a Trimble Navigation, Inc. 4000SE GPS receiver, a Motorola Radius radio with an Advanced Electronic Applications, Inc. packet modem, and an on-board computer. The computer was supported by a dot matrix printer and a B-size plotter. Power was provided by a water-cooled generator through an in-line uninterruptible power supply. Reference to brand names does not imply endorsement by the TWDB.

The shore station included a second Trimble 4000SE GPS receiver, Motorola Radius radio and Advanced Electronic Applications, Inc. packet modem, and an omni-directional antenna mounted on a modular aluminum tower to a total height of 40 feet. The combination of this equipment provided a data link with a reported range of 25 miles over level to rolling terrain that does not require that line-of-sight be maintained with the survey vessel in most conditions, thereby reducing the time required to conduct the survey.

As the boat traveled across the lake surface, the depth sounder gathered approximately ten readings of the lake bottom each second. The depth readings were averaged over the one-second interval and stored with the positional data to an on-board

computer. After the survey, the average depths were corrected to elevation using the daily lake elevation. The set of data points logged during the survey were used to calculate the lake volume. Accurate estimates of the lake volume can be quickly determined using these methods to produce an affordable survey. The level of accuracy is equivalent to or better than previous methods used to determine lake volumes, some of which are discussed below.

Previous Survey Procedures

Originally, reservoir surveys were conducted with a rope stretched across the reservoir along pre-determined range lines. A small boat would manually pole the depth at selected intervals along the rope. Over time, aircraft cable replaced the rope and electronic depth sounders replaced the pole. The boat was hooked to the cable, and depths were again recorded at selected intervals. This method, used mainly by the Soil Conservation Service, worked well for small reservoirs.

Larger bodies of water required more involved means to accomplish the survey, mainly due to increased size. Cables could not be stretched across the body of water, so surveying instruments were utilized to determine the path of the boat. Monumentation was set for the end points of each line so the same lines could be used on subsequent surveys. Prior to a survey, each end point had to be located (and sometimes reestablished) in the field and vegetation cleared so that line of sight could be maintained. One surveyor monitored the path of the boat and issued commands via radio to insure that it remained on line while a second surveyor determined depth measurement locations by turning angles. Since it took a major effort to determine each of the points along the line, the depth readings were spaced quite a distance apart. Another major cost was the land surveying required prior to the reservoir survey to locate the range line monuments and clear vegetation.

Electronic positioning systems were the next improvement. If triangulation could determine the boat location by electronic means, then the boat could take continuous

depth soundings. A set of microwave transmitters positioned around the lake at known coordinates would allow the boat to receive data and calculate its position. Line of site was required, and the configuration of the transmitters had to be such that the boat remained within the angles of 30 and 150 degrees in respect to the shore stations. The maximum range of most of these systems was about 20 miles. Each shore station had to be accurately located by survey, and the location monumented for future use. Any errors in the land surveying resulted in significant errors that were difficult to detect. Large reservoirs required multiple shore stations and a crew to move the shore stations to the next location as the survey progressed. Land surveying was still a major cost.

Another method used mainly prior to construction utilized aerial photography to generate elevation contours which could then be used to calculate the volume of the reservoir. Fairly accurate results could be obtained, although the vertical accuracy of the aerial topography was generally one-half of the contour interval or \pm five feet for a ten-foot contour interval. This method could be quite costly and was only applicable in areas that were not inundated.

PRE-SURVEY PROCEDURES

The reservoir's surface area was determined prior to the survey by digitizing with AutoCad software the lake's normal pool boundary from three USGS quad sheets. The names of the quad sheets are as follows: Speegleville, TX, 1957 (Photo-revised 1970 and 1975); Waco West, TX, 1957 (Photo-revised 1970 and 1975); and South Bosque, TX, 1965 (Revised 1993).

The survey layout was designed by placing survey track lines at 500 foot intervals across the lake. The survey design for this lake required approximately 145 survey lines to be placed along the length of the lake. Survey setup files were created using Innerspace Technology Inc. software for each group of track lines that represented a specific section of the lake. The setup files were copied onto diskettes for use during the

field survey.

SURVEY CONTROL SETUP

The first task of the Hydrographic Survey field staff after arriving at Waco Lake was to establish a horizontal reference control point. Figure 3 shows the location of the control point established. This location was chosen due to the close proximity to the reservoir and the security of the area.

Prior to the field survey, TWDB staff had researched locations of known first-order benchmarks and requested Brazos River Authority employees to physically locate the associated monuments. Of the monuments found, the one chosen to provide horizontal control for the survey was a United States Geological Survey first-order monument named PAYNE 1919 located approximately 1.5 miles west of China Springs, Texas. The coordinates for the monument are published as Latitude $31^{\circ} 39' 53.33051''\text{N}$ and Longitude $97^{\circ} 19' 37.21359''\text{W}$.

On January 5, 1995, TWDB staff performed a static survey to determine the WGS'84 coordinates of the lake survey control point, an existing surveyor's cap labeled G900-1Q set flush to the ground in concrete and located on the crest of the dam between the outlet works and the spillway. The static survey was performed from the PAYNE 1919 monument to the control point using two Trimble 4000SE GPS receivers. The GPS receivers were setup on tripods over each point and satellite data were gathered for approximately one hour, with up to six satellites visible at the same time to the receivers.

Once data collection ended, the data were retrieved and processed from both receivers, using Trimble Trimvec software, to determine the coordinates for the control point. The WGS' 84 coordinates for G900-1Q were determined to be North latitude $31^{\circ} 35' 03.57873''$ and West longitude $97^{\circ} 12' 08.23326''$.

Using the newly determined coordinates, a shore station was setup at G900-1Q to provided DGPS control during the survey. The coordinates from the static survey were entered into the GPS receiver located over the control point to fix its location. Data received during the survey could then be corrected and broadcast to the GPS receiver on the moving boat during the survey.

SURVEY PROCEDURES

The following procedures were followed during the hydrographic survey of Waco Lake performed by the TWDB. Information regarding equipment calibration and operation, the field survey, and data processing is presented.

Equipment Calibration and Operation

During the survey, the GPS receivers were operated in the following DGPS modes. The reference station receiver was set to a horizontal mask of 0° , to acquire information on the rising satellites. A horizontal mask of 10° was used on the roving receiver for the purpose of calculating better horizontal positions. A PDOP (Position Dilution of Precision) limit of 7 was set for both receivers. The DGPS positions are known to be within acceptable limits of horizontal accuracy when the PDOP is seven (7) or less. An internal alarm sounds if the PDOP rises above seven to advise the field crew that the horizontal position has degraded to an unacceptable level.

Prior to the survey, TWDB staff verified the horizontal accuracy of the DGPS used during the Waco Lake survey to be within the specified accuracy of three meters by the following procedure. The shore station was set up over a known United States Geological Service (USGS) first order monument and placed in differential mode. The

second receiver, directly connected to the boat with its interface computer, was placed over another known USGS first order monument and data was collected for 60 minutes in the same manner as during a survey. Based on the differentially-corrected coordinates obtained and the published coordinates for both monuments, the resulting positions fell within a three-meter radius of the actual known monument position.

At the beginning of each surveying day, the depth sounder was calibrated with the Innerspace Velocity Profiler. The Velocity Profiler calculates an average speed of sound through the water column of interest for a designated draft value of the boat (draft is the vertical distance that the boat penetrates the water surface). The draft of the boat was previously determined to average 1.2 ft. The velocity profiler probe is placed in the water to moisten and acclimate the probe. The probe is then raised to the water surface where the depth is zeroed. The probe is lowered on a cable to just below the maximum depth set for the water column, and then raised to the surface. The unit displays an average speed of sound for a given water depth and draft, which is entered into the depth sounder. The depth value on the depth sounder was then checked manually with a measuring tape to ensure that the depth sounder was properly calibrated and operating correctly. During the survey of Waco Lake, the speed of sound in the water column varied daily between 4,762 and 4,777 feet per second. Based on the measured speed of sound for various depths, and the average speed of sound calculated for the entire water column, the depth sounder is accurate to within ± 0.2 feet, plus an estimated error of ± 0.3 feet due to the plane of the boat for a total accuracy of ± 0.5 feet for any instantaneous reading. These errors tend to be minimized over the entire survey, since some are plus readings and some are minus readings. Further information on these calculations is presented in Appendix A.

Field Survey

Data was collected on Waco Lake during the period of January 9-13, 1995. Approximately 71,622 data points were collected over the 128 miles traveled along the

pre-planned survey lines and the random data-collection lines. These points were stored digitally on the boat's computer in 160 data files. Data were not collected in areas of shallow water (depths less than 3.0 ft.) or with significant obstructions unless these areas represented a large amount of water. Random data points were collected, when determined necessary by the field crew, by manually poling the depth and entering the depth value into the data file. As each point was entered, the DGPS horizontal position was stored automatically with each return keystroke on the computer. The boat was moving slowly during this period so positions stored were within the stated accuracy of \pm 3 meters to the point poled. Figure 2 shows the actual location of the data collection points.

Analog charts were printed for each survey line as the data were collected. The gate mark, which is a known distance above the actual depth, was also printed on the chart. Each chart was labeled with the date and data file ID for future reference. The depth sounder was set to record bad depth readings as 0.

The collected data were stored in individual data files for each pre-plotted range line or random data collection events. These files were downloaded to diskettes at the end of each day for further processing.

Data Processing

All collected data were down-loaded from diskettes onto the TWDB's computer network. The diskettes were then stored in a secured, safe location for future reference as needed. A Fortran program stripped the data collection files of non-essential data and created a Temporary data file. This data file consists of latitude, longitude and depth readings for each data point. The depth readings consist of instantaneous, average and auxiliary readings. The data files were edited manually by comparing the analog charts to the gate mark. Where the gate mark indicated that the recorded depth was other than the bottom, the depths were modified to reflect the recorded bottom.

The Temporary files were then saved as Output files after editing was completed. The Output files were run through another Fortran program to delete all zero depth readings and to replace the average reading with the spot reading when the average reading was zero and the spot reading was greater than zero. The resulting file was saved as the final data file. Each of the individual data files were then combined into a single data-collection file that represented the date of data collection. The depths were then transformed to elevations with a simple Unix command based on the water surface elevation of each day. The elevations were rounded to the nearest tenth of a foot since the depth sounder records in tenths. The water surface ranged from 455.29 to 455.56 feet during the survey. Each of the daily files were then combined into a single edited data file to be used to develop a model of the lake's bottom surface.

The resulting DOS data file was imported into the UNIX operating system used to run Environmental Systems Research Institutes's (ESRI) Arc/Info GIS software. The latitude and longitude coordinates of each point were then converted to decimal degrees by a UNIX awk command. The awk command manipulates the data file format into a MASS points format for use by the GIS software. The graphic boundary file used for guidance along the pre-plotted survey lines was then transformed from NAD '27 datum to NAD '83, using Environmental Systems Research Institutes's (ESRI) Arc/Info project command with the NADCOM parameters. The area of the lake boundary was checked to verify that the area was the same in both datums. Once this was accomplished successfully, the boundary and the edited data file were in the same datum.

The two files are edited using the Arc/Edit module. The MASS points are converted into a point coverage and plotted on top of the boundary file. If data points were collected outside the boundary file, the boundary was modified to include the data points. The boundary near the edges of the lake in areas of significant sedimentation was down-sized to reflect the observations of the field crew. The resulting boundary shape was considered to be the acreage at the normal pool elevation of the lake. This was calculated as 7,194 acres for Waco Lake. The Board does not represent the boundary, as depicted in this report, to be a detailed actual boundary. Instead, it is a

graphical approximation of the actual boundary used solely to compute the volume and area of the lake. The boundary does not represent the true land versus water boundary of the lake. An aerial topographic map of the upper four feet of the lake or an aerial photo taken when the lake is at the normal pool elevation would more closely define the present boundary. However, the minimal increase in accuracy does not appear to offset the cost of those services at this time.

The edited MASS points and modified boundary file were used to create a Digital Terrain Model (DTM) of the reservoir's bottom surface using Arc/Info's TIN module. The module builds an irregular triangulated network from the data points and the boundary file. This software uses a method known as Delauney's criteria for triangulation. A triangle is formed between three non-uniformly spaced points, including all points along the boundary. If there is another point within the triangle, additional triangles are created until all points lie on the vertex of a triangle. All of the data points are preserved for use in determining the solution of the model by using this method. The generated network of three-dimensional triangular planes represents the actual bottom surface. Once the triangulated irregular network (TIN) is formed, the software then calculates elevations along the triangle surface plane by solving the equations for elevation along each leg of the triangle. Areas that were too shallow for data collection or obstructed by vegetation were estimated by the Arc/Info's TIN product using this method of interpolation.

There were some areas where values could not be calculated by interpolation because of a lack of information along the boundary of the reservoir. "Flat triangles" were drawn at these locations. Arc/Info does not use flat triangle areas in the volume or contouring features of the model. These areas were determined to be insignificant on Waco Lake. Therefore no additional points were required for interpolation and contouring of the entire lake surface. The TIN product calculated the surface area and volume of the entire reservoir at one-tenth of a foot intervals from the three-dimensional triangular plane surface representation. The computed reservoir volume table is presented in Appendix B and the area table in Appendix C. An elevation-area-volume graph is presented in Appendix D.

Other presentations developed from the model include a shaded relief map and a shaded depth range map. To develop the shaded relief map, the three-dimensional triangular surface was modified by a GRIDSHADE command. Colors were assigned to different elevation values of the grid. Using the command COLRRAMP, a set of colors that varied from navy to yellow was created. The lower elevation was assigned the color of navy, and the lake normal pool elevation was assigned the color of yellow. Different color shades were assigned to the different depths in between. Figure 4 presents the resulting depth shaded representation of the lake. Figure 5 presents a similar version of the same map, using bands of color for selected depth intervals. The color increases in intensity from the shallow contour bands to the deep water bands.

The DTM was then smoothed and linear smoothing algorithms were applied to the smoothed model to produce smoother contours. The resulting contour map of the bottom surface at ten-foot intervals is presented in Figure 6.

RESULTS

Staff of the TWDB collected hydrographic data on Waco Lake during the period January 9-13, 1995. During the survey period, the lake maintained a water surface elevation above the conservation pool elevation, facilitating boat access to the majority of the lake. The survey crew observed during the survey that the bathymetry of the lake seemed to correspond to the relief of the shoreline. Gentle lake bottom slopes were noted on the North Bosque River and the western banks of the Middle and South Bosque Rivers, similar to the slopes of the surrounding land. The eastern banks of the Middle and South Bosque Rivers were marked by more severe dropoffs along the cliffs or rapidly rising shoreline areas. The survey vessel was able to collect data along the North Bosque River, upstream to the Eichelberger Crossing, but encountered areas of standing and fallen trees, stumps, and silt deposits from the area of the Bosque Bend Clubhouse upstream to the Highway 105 bridge. From the 105 bridge upstream to the Eichelberger

Crossing, the lake represented more of a river segment. On the Middle and South Bosque Rivers, large silt deposits as well as stumps and fallen timber were encountered in the areas upstream of Midway Park. The survey crew also made note during the survey, that large trees and other debris were still located on the upstream slope of the dam marking the high water elevation reached during the December, 1990 flood.

Results from the 1995 survey indicate Waco Lake now encompasses around 7,194 surface acres and contains a volume of 144,830 acre-feet at the normal pool elevation of 455.0 feet. The lowest elevation encountered during the field survey was 378.66 feet, or 76.34 feet of depth and was found near the dam.

The storage volume calculated by the 1995 survey is approximately 2.9 percent less than the 1970 previous record information for the lake. The lowest gated outlet invert elevation is at elevation 400.0 feet. The dead storage volume in the lake at this elevation corresponds to 284 acre-ft. Therefore, the conservation storage capacity for the lake is calculated to be 144,546 acre-feet. This corresponds to a 2.75 percent decrease in the conservation storage capacity of the lake.

SUMMARY

Waco Dam and Lake were authorized by the Flood Control Act approved 3 September, 1954 and construction commenced in August 1958. From October 1, 1964 to February 26, 1965, the lake was operated as a detention basin only. On February 26, 1965, old Lake Waco was breached and deliberate impoundment began. Initial storage calculations estimated the volume of the lake at the conservation pool elevation of 455.0 to be 152,500 acre-feet with surface area of 7,270 acres. In 1970, a sedimentation survey of Waco Lake was performed by US Army Corps of Engineers (COE). The volume of the lake was revised to 149,189 acre-feet at the conservation pool elevation with a surface area of 7,237 acres. The COE estimated that Waco Lake had accumulated 3,311 acre-feet of sediment between 1965 and 1970. The average annual

sediment accumulation rate for the 5.85 year period was estimated at 566 acre-feet per year, or 0.34 acre-feet deposited annually per square mile of drainage area in the conservation pool area. This rate was lower than the calculated rate of 0.79 acre-feet per square mile and could have been influenced by excavation along the sedimentation range lines, during the period between the original cross-sections and the resurvey, that were used in the computations.

In January 1995, a hydrographic survey of Waco Lake was performed by the Texas Water Development Board's Hydrographic Survey Program. The 1995 survey used technological advances such as differential global positioning system and geographical information system technology to build a model of the reservoir's bathymetry. These advances allowed a survey to be performed quickly and to collect significantly more data of the bathymetry of Waco Lake than the previous surveys. Results from the survey indicate that the lake's capacity at the normal pool elevation of 455.0 feet was 144,830 acre-feet. The estimated reduction in storage capacity, if compared to the 1970 survey information, was 4,370 acre-feet, or 2.9 percent. This equates to an estimated loss of 174.8 acre-feet per year during the 25 years between the TWDB's survey and the last survey performed by the COE, or an annual deposition rate in the conservation pool area of 0.105 acre-ft per square mile of drainage area.

It is difficult to compare the surveys performed by the TWDB and the COE because the methods and procedures used were very different. However, the TWDB considers the 1995 survey to be a significant improvement over previous survey procedures and recommend that the same methodology be used to re-surveyed Waco Lake in five to ten years or after major flood events. A second survey will remove any noticeable error due to improved calculation techniques and will isolate current sedimentation rates and the storage losses occurring in Waco Lake.

CALCULATION OF DEPTH SOUNDER ACCURACY

This methodology was extracted from the Innerspace Technology, Inc. Operation Manual for the Model 443 Velocity Profiler.

For the following examples, $t = (D - d)/V$

where: t_D = travel time of the sound pulse, in seconds (at depth = D)
D = depth, in feet
d = draft = 1.2 feet
V = speed of sound, in feet per second

To calculate the error of a measurement based on differences in the actual versus average speed of sound, the same equation is used, in this format:

$$D = [t(V)]+d$$

For the water column from 2 to 30 feet: $V = 4832$ fps

$$\begin{aligned} t_{30} &= (30-1.2)/4832 \\ &= 0.00596 \text{ sec.} \end{aligned}$$

For the water column from 2 to 45 feet: $V = 4808$ fps

$$\begin{aligned} t_{45} &= (45-1.2)/4808 \\ &= 0.00911 \text{ sec.} \end{aligned}$$

For a measurement at 20 feet (within the 2 to 30 foot column with $V = 4832$ fps):

$$\begin{aligned} D_{20} &= [((20-1.2)/4832)(4808)]+1.2 \\ &= 19.9' \quad (-0.1') \end{aligned}$$

For a measurement at 30 feet (within the 2 to 30 foot column with $V = 4832$ fps):

$$\begin{aligned} D_{30} &= [((30-1.2)/4832)(4808)]+1.2 \\ &= 29.9' \quad (-0.1') \end{aligned}$$

For a measurement at 50 feet (within the 2 to 60 foot column with $V = 4799$ fps):

$$\begin{aligned} D_{50} &= [((50-1.2)/4799)(4808)]+1.2 \\ &= 50.1' \quad (+0.1') \end{aligned}$$

For the water column from 2 to 60 feet: $V = 4799$ fps Assumed $V_{80} = 4785$ fps

$$t_{60} = (60 - 1.2) / 4799 \\ = 0.01225 \text{ sec.}$$

For a measurement at 10 feet (within the 2 to 30 foot column with $V = 4832$ fps):

$$D_{10} = [((10 - 1.2) / 4832)(4799)] + 1.2 \\ = 9.9' \quad (-0.1')$$

For a measurement at 30 feet (within the 2 to 30 foot column with $V = 4832$ fps):

$$D_{30} = [((30 - 1.2) / 4832)(4799)] + 1.2 \\ = 29.8' \quad (-0.2')$$

For a measurement at 45 feet (within the 2 to 45 foot column with $V = 4808$ fps):

$$D_{45} = [((45 - 1.2) / 4808)(4799)] + 1.2 \\ = 44.9' \quad (-0.1')$$

For a measurement at 80 feet (outside the 2 to 60 foot column, assumed $V = 4785$ fps):

$$D_{80} = [((80 - 1.2) / 4785)(4799)] + 1.2 \\ = 80.2' \quad (+0.2')$$

Waco Lake January 1995 Survey

ELEV. FEET	VOLUME IN ACRE-FEET					ELEVATION INCREMENT INTERPOLATED TO ONE HUNDREDTH FOOT				
	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
388.5	23	23	23	24	24	24	24	24	24	24
388.6	24	24	24	24	24	25	25	25	25	25
388.7	25	25	25	25	25	25	25	26	26	26
388.8	26	26	26	26	26	26	26	26	27	27
388.9	27	27	27	27	27	27	27	27	27	28
389.0	28	28	28	28	28	28	28	28	28	28
389.1	29	29	29	29	29	29	29	29	29	29
389.2	29	30	30	30	30	30	30	30	30	30
389.3	30	31	31	31	31	31	31	31	31	31
389.4	31	32	32	32	32	32	32	32	32	32
389.5	32	33	33	33	33	33	33	33	33	33
389.6	34	34	34	34	34	34	34	34	34	34
389.7	35	35	35	35	35	35	35	35	35	36
389.8	36	36	36	36	36	36	36	37	37	37
389.9	37	37	37	37	37	37	38	38	38	38
390.0	38	38	38	38	38	39	39	39	39	39
390.1	39	39	39	40	40	40	40	40	40	40
390.2	40	41	41	41	41	41	41	41	41	41
390.3	42	42	42	42	42	42	42	42	43	43
390.4	43	43	43	43	43	44	44	44	44	44
390.5	44	44	44	45	45	45	45	45	45	45
390.6	45	46	46	46	46	46	46	46	47	47
390.7	47	47	47	47	47	47	48	48	48	48
390.8	48	48	48	49	49	49	49	49	49	49
390.9	49	50	50	50	50	50	50	50	51	51
391.0	51	51	51	51	51	52	52	52	52	52
391.1	52	52	53	53	53	53	53	53	53	54
391.2	54	54	54	54	54	54	55	55	55	55
391.3	55	55	56	56	56	56	56	56	56	57
391.4	57	57	57	57	57	57	58	58	58	58
391.5	58	58	59	59	59	59	59	59	59	60
391.6	60	60	60	60	60	61	61	61	61	61
391.7	61	61	62	62	62	62	62	62	63	63
391.8	63	63	63	63	64	64	64	64	64	64
391.9	65	65	65	65	65	65	65	66	66	66
392.0	66	66	66	67	67	67	67	67	67	68
392.1	68	68	68	68	68	69	69	69	69	69
392.2	69	70	70	70	70	70	71	71	71	71
392.3	71	71	72	72	72	72	72	72	73	73
392.4	73	73	73	73	74	74	74	74	74	75
392.5	75	75	75	75	75	76	76	76	76	76
392.6	76	77	77	77	77	77	78	78	78	78
392.7	78	78	79	79	79	79	79	80	80	80
392.8	80	80	81	81	81	81	81	81	82	82
392.9	82	82	82	83	83	83	83	83	84	84
393.0	84	84	84	84	85	85	85	85	85	86
393.1	86	86	86	86	87	87	87	87	87	88
393.2	88	88	88	88	89	89	89	89	89	89
393.3	90	90	90	90	90	91	91	91	91	91
393.4	92	92	92	92	92	93	93	93	93	94

Waco Lake January 1995 Survey

ELEV. FEET	VOLUME IN ACRE-FEET					ELEVATION INCREMENT INTERPOLATED TO ONE HUNDREDTH FOOT				
	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
393.5	94	94	94	94	95	95	95	95	95	96
393.6	96	96	96	96	97	97	97	97	97	98
393.7	98	98	98	98	99	99	99	99	99	100
393.8	100	100	100	101	101	101	101	101	102	102
393.9	102	102	102	103	103	103	103	104	104	104
394.0	104	104	105	105	105	105	105	106	106	106
394.1	106	107	107	107	107	107	108	108	108	108
394.2	109	109	109	109	109	110	110	110	110	111
394.3	111	111	111	111	112	112	112	112	113	113
394.4	113	113	114	114	114	114	114	115	115	115
394.5	115	116	116	116	116	117	117	117	117	117
394.6	118	118	118	118	119	119	119	119	120	120
394.7	120	120	120	121	121	121	121	122	122	122
394.8	122	123	123	123	123	124	124	124	124	125
394.9	125	125	125	125	126	126	126	126	127	127
395.0	127	127	128	128	128	128	129	129	129	129
395.1	130	130	130	130	131	131	131	131	132	132
395.2	132	132	133	133	133	133	134	134	134	134
395.3	135	135	135	135	136	136	136	136	137	137
395.4	137	137	138	138	138	138	139	139	139	139
395.5	140	140	140	141	141	141	141	142	142	142
395.6	142	143	143	143	143	144	144	144	144	145
395.7	145	145	145	146	146	146	147	147	147	147
395.8	148	148	148	148	149	149	149	149	150	150
395.9	150	151	151	151	151	152	152	152	152	153
396.0	153	153	154	154	154	154	155	155	155	155
396.1	156	156	156	157	157	157	157	158	158	158
396.2	158	159	159	159	160	160	160	160	161	161
396.3	161	162	162	162	162	163	163	163	164	164
396.4	164	164	165	165	165	166	166	166	166	167
396.5	167	167	168	168	168	168	169	169	169	170
396.6	170	170	170	171	171	171	172	172	172	172
396.7	173	173	173	174	174	174	174	175	175	175
396.8	176	176	176	177	177	177	177	178	178	178
396.9	179	179	179	179	180	180	180	181	181	181
397.0	182	182	182	182	183	183	183	184	184	184
397.1	185	185	185	186	186	186	186	187	187	187
397.2	188	188	188	189	189	189	189	190	190	190
397.3	191	191	191	192	192	192	193	193	193	193
397.4	194	194	194	195	195	195	196	196	196	197
397.5	197	197	198	198	198	199	199	199	199	200
397.6	200	200	201	201	201	202	202	202	203	203
397.7	203	204	204	204	205	205	205	206	206	206
397.8	206	207	207	207	208	208	208	209	209	209
397.9	210	210	210	211	211	211	212	212	212	213
398.0	213	213	214	214	214	215	215	215	216	216
398.1	216	217	217	217	218	218	218	219	219	219
398.2	220	220	220	221	221	221	222	222	222	223
398.3	223	223	224	224	224	225	225	225	226	226
398.4	226	227	227	227	228	228	228	229	229	229

RESERVOIR VOLUME TABLE

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Waco Lake January 1995 Survey

ELEV. FEET	VOLUME IN ACRE-FEET					ELEVATION INCREMENT INTERPOLATED TO ONE HUNDREDTH FOOT				
	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
398.5	230	230	230	231	231	231	232	232	232	233
398.6	233	233	234	234	234	235	235	236	236	236
398.7	237	237	237	238	238	238	239	239	239	240
398.8	240	240	241	241	241	242	242	243	243	243
398.9	244	244	244	245	245	245	246	246	246	247
399.0	247	247	248	248	249	249	249	250	250	250
399.1	251	251	251	252	252	252	253	253	254	254
399.2	254	255	255	255	256	256	256	257	257	258
399.3	258	258	259	259	259	260	260	260	261	261
399.4	262	262	262	263	263	263	264	264	264	265
399.5	265	266	266	266	267	267	267	268	268	269
399.6	269	269	270	270	270	271	271	272	272	272
399.7	273	273	273	274	274	275	275	275	276	276
399.8	276	277	277	278	278	278	279	279	279	280
399.9	280	281	281	281	282	282	282	283	283	284
400.0	284	284	285	285	286	286	286	287	287	287
400.1	288	288	289	289	289	290	290	291	291	291
400.2	292	292	292	293	293	294	294	294	295	295
400.3	296	296	296	297	297	298	298	298	299	299
400.4	300	300	300	301	301	301	302	302	303	303
400.5	303	304	304	305	305	305	306	306	307	307
400.6	307	308	308	309	309	309	310	310	311	311
400.7	311	312	312	313	313	313	314	314	315	315
400.8	315	316	316	317	317	318	318	318	319	319
400.9	320	320	320	321	321	322	322	322	323	323
401.0	324	324	324	325	325	326	326	327	327	327
401.1	328	328	329	329	329	330	330	331	331	332
401.2	332	332	333	333	334	334	334	335	335	336
401.3	336	337	337	337	338	338	339	339	340	340
401.4	340	341	341	342	342	343	343	343	344	344
401.5	345	345	346	346	346	347	347	348	348	349
401.6	349	349	350	350	351	351	352	352	352	353
401.7	353	354	354	355	355	356	356	356	357	357
401.8	358	358	359	359	359	360	360	361	361	362
401.9	362	363	363	363	364	364	365	365	366	366
402.0	367	367	367	368	368	369	369	370	370	371
402.1	371	372	372	372	373	373	374	374	375	375
402.2	376	376	377	377	377	378	378	379	379	380
402.3	380	381	381	382	382	383	383	383	384	384
402.4	385	385	386	386	387	387	388	388	389	389
402.5	389	390	390	391	391	392	392	393	393	394
402.6	394	395	395	396	396	397	397	397	398	398
402.7	399	399	400	400	401	401	402	402	403	403
402.8	404	404	405	405	406	406	407	407	408	408
402.9	408	409	409	410	410	411	411	412	412	413
403.0	413	414	414	415	415	416	416	417	417	418
403.1	418	419	419	420	420	421	421	422	422	423
403.2	423	424	424	425	425	426	426	427	427	428
403.3	428	429	429	430	430	431	431	432	432	433
403.4	433	434	434	435	435	436	436	437	437	438

RESERVOIR VOLUME TABLE

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Waco Lake January 1995 Survey

ELEV. FEET	VOLUME IN ACRE-FEET					ELEVATION INCREMENT INTERPOLATED TO ONE HUNDREDTH FOOT				
	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
403.5	438	439	439	440	440	441	441	442	442	443
403.6	443	444	444	445	445	446	446	447	447	448
403.7	448	449	449	450	450	451	451	452	453	453
403.8	454	454	455	455	456	456	457	457	458	458
403.9	459	459	460	460	461	461	462	462	463	464
404.0	464	465	465	466	466	467	467	468	468	469
404.1	469	470	470	471	471	472	473	473	474	474
404.2	475	475	476	476	477	477	478	478	479	480
404.3	480	481	481	482	482	483	483	484	484	485
404.4	486	486	487	487	488	488	489	489	490	491
404.5	491	492	492	493	493	494	494	495	495	496
404.6	497	497	498	498	499	499	500	501	501	502
404.7	502	503	503	504	504	505	506	506	507	507
404.8	508	508	509	510	510	511	511	512	512	513
404.9	514	514	515	515	516	516	517	518	518	519
405.0	519	520	521	521	522	522	523	523	524	525
405.1	525	526	526	527	528	528	529	529	530	531
405.2	531	532	532	533	534	534	535	535	536	537
405.3	537	538	539	539	540	540	541	542	542	543
405.4	544	544	545	545	546	547	547	548	549	549
405.5	550	551	551	552	553	553	554	554	555	556
405.6	556	557	558	558	559	560	560	561	562	563
405.7	563	564	565	565	566	567	567	568	569	569
405.8	570	571	572	572	573	574	574	575	576	576
405.9	577	578	579	579	580	581	582	582	583	584
406.0	584	585	586	587	587	588	589	590	590	591
406.1	592	593	593	594	595	596	596	597	598	599
406.2	599	600	601	602	603	603	604	605	606	606
406.3	607	608	609	610	610	611	612	613	613	614
406.4	615	616	617	617	618	619	620	621	621	622
406.5	623	624	625	625	626	627	628	629	630	630
406.6	631	632	633	634	634	635	636	637	638	639
406.7	639	640	641	642	643	644	645	645	646	647
406.8	648	649	650	650	651	652	653	654	655	656
406.9	656	657	658	659	660	661	662	663	663	664
407.0	665	666	667	668	669	670	671	671	672	673
407.1	674	675	676	677	678	679	680	681	681	682
407.2	683	684	685	686	687	688	689	690	691	692
407.3	693	694	694	695	696	697	698	699	700	701
407.4	702	703	704	705	706	707	708	709	710	711
407.5	712	713	714	715	716	717	718	719	720	721
407.6	722	723	724	725	726	727	728	729	730	731
407.7	732	733	734	735	736	737	738	739	740	741
407.8	742	743	744	745	746	747	748	749	750	751
407.9	752	753	754	755	756	757	758	759	761	762
408.0	763	764	765	766	767	768	769	770	771	772
408.1	773	775	776	777	778	779	780	781	782	783
408.2	784	785	787	788	789	790	791	792	793	794
408.3	795	797	798	799	800	801	802	803	804	806
408.4	807	808	809	810	811	812	814	815	816	817

RESERVOIR VOLUME TABLE

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Waco Lake January 1995 Survey

ELEV. FEET	VOLUME IN ACRE-FEET					ELEVATION INCREMENT INTERPOLATED TO ONE HUNDREDTH FOOT				
	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
408.5	818	819	820	822	823	824	825	826	827	829
408.6	830	831	832	833	834	835	837	838	839	840
408.7	841	842	844	845	846	847	848	850	851	852
408.8	853	854	855	857	858	859	860	861	863	864
408.9	865	866	867	869	870	871	872	873	875	876
409.0	877	878	879	881	882	883	884	885	887	888
409.1	889	890	891	893	894	895	896	897	899	900
409.2	901	902	904	905	906	907	908	910	911	912
409.3	913	915	916	917	918	919	921	922	923	924
409.4	926	927	928	929	931	932	933	934	936	937
409.5	938	939	941	942	943	944	946	947	948	949
409.6	951	952	953	954	956	957	958	959	961	962
409.7	963	964	966	967	968	969	971	972	973	975
409.8	976	977	978	980	981	982	983	985	986	987
409.9	989	990	991	992	994	995	996	998	999	1000
410.0	1002	1003	1004	1005	1007	1008	1009	1011	1012	1013
410.1	1014	1016	1017	1018	1020	1021	1022	1024	1025	1026
410.2	1027	1029	1030	1031	1033	1034	1035	1037	1038	1039
410.3	1041	1042	1043	1044	1046	1047	1048	1050	1051	1052
410.4	1054	1055	1056	1058	1059	1060	1062	1063	1064	1066
410.5	1067	1068	1070	1071	1072	1074	1075	1076	1078	1079
410.6	1080	1082	1083	1084	1086	1087	1088	1090	1091	1092
410.7	1094	1095	1096	1098	1099	1100	1102	1103	1105	1106
410.8	1107	1109	1110	1111	1113	1114	1115	1117	1118	1119
410.9	1121	1122	1124	1125	1126	1128	1129	1130	1132	1133
411.0	1134	1136	1137	1139	1140	1141	1143	1144	1145	1147
411.1	1148	1149	1151	1152	1154	1155	1156	1158	1159	1160
411.2	1162	1163	1165	1166	1167	1169	1170	1172	1173	1174
411.3	1176	1177	1178	1180	1181	1183	1184	1185	1187	1188
411.4	1190	1191	1192	1194	1195	1197	1198	1199	1201	1202
411.5	1204	1205	1206	1208	1209	1211	1212	1213	1215	1216
411.6	1218	1219	1220	1222	1223	1225	1226	1228	1229	1230
411.7	1232	1233	1235	1236	1237	1239	1240	1242	1243	1245
411.8	1246	1247	1249	1250	1252	1253	1255	1256	1257	1259
411.9	1260	1262	1263	1265	1266	1268	1269	1270	1272	1273
412.0	1275	1276	1278	1279	1281	1282	1283	1285	1286	1288
412.1	1289	1291	1292	1294	1295	1296	1298	1299	1301	1302
412.2	1304	1305	1307	1308	1310	1311	1313	1314	1315	1317
412.3	1318	1320	1321	1323	1324	1326	1327	1329	1330	1332
412.4	1333	1335	1336	1338	1339	1341	1342	1343	1345	1346
412.5	1348	1349	1351	1352	1354	1355	1357	1358	1360	1361
412.6	1363	1364	1366	1367	1369	1370	1372	1373	1375	1376
412.7	1378	1379	1381	1382	1384	1385	1387	1388	1390	1391
412.8	1393	1394	1396	1397	1399	1400	1402	1403	1405	1406
412.9	1408	1409	1411	1412	1414	1416	1417	1419	1420	1422
413.0	1423	1425	1426	1428	1429	1431	1432	1434	1435	1437
413.1	1438	1440	1442	1443	1445	1446	1448	1449	1451	1452
413.2	1454	1455	1457	1459	1460	1462	1463	1465	1466	1468
413.3	1469	1471	1472	1474	1476	1477	1479	1480	1482	1483
413.4	1485	1487	1488	1490	1491	1493	1494	1496	1498	1499

RESERVOIR VOLUME TABLE

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Waco Lake January 1995 Survey

ELEV. FEET	VOLUME IN ACRE-FEET									
	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
413.5	1501	1502	1504	1505	1507	1509	1510	1512	1513	1515
413.6	1516	1518	1520	1521	1523	1524	1526	1528	1529	1531
413.7	1532	1534	1535	1537	1539	1540	1542	1543	1545	1547
413.8	1548	1550	1551	1553	1555	1556	1558	1559	1561	1563
413.9	1564	1566	1568	1569	1571	1572	1574	1576	1577	1579
414.0	1580	1582	1584	1585	1587	1589	1590	1592	1593	1595
414.1	1597	1598	1600	1601	1603	1605	1606	1608	1610	1611
414.2	1613	1615	1616	1618	1620	1621	1623	1624	1626	1628
414.3	1629	1631	1633	1634	1636	1638	1639	1641	1643	1644
414.4	1646	1648	1649	1651	1653	1654	1656	1658	1659	1661
414.5	1663	1664	1666	1668	1669	1671	1673	1674	1676	1678
414.6	1679	1681	1683	1684	1686	1688	1689	1691	1693	1694
414.7	1696	1698	1699	1701	1703	1705	1706	1708	1710	1711
414.8	1713	1715	1716	1718	1720	1721	1723	1725	1727	1728
414.9	1730	1732	1733	1735	1737	1739	1740	1742	1744	1745
415.0	1747	1749	1751	1752	1754	1756	1757	1759	1761	1763
415.1	1764	1766	1768	1770	1771	1773	1775	1776	1778	1780
415.2	1782	1783	1785	1787	1789	1790	1792	1794	1796	1797
415.3	1799	1801	1803	1804	1806	1808	1810	1811	1813	1815
415.4	1817	1818	1820	1822	1824	1826	1827	1829	1831	1833
415.5	1834	1836	1838	1840	1841	1843	1845	1847	1848	1850
415.6	1852	1854	1856	1857	1859	1861	1863	1865	1866	1868
415.7	1870	1872	1874	1875	1877	1879	1881	1883	1884	1886
415.8	1888	1890	1892	1893	1895	1897	1899	1901	1902	1904
415.9	1906	1908	1910	1911	1913	1915	1917	1919	1921	1922
416.0	1924	1926	1928	1930	1931	1933	1935	1937	1939	1941
416.1	1942	1944	1946	1948	1950	1952	1954	1955	1957	1959
416.2	1961	1963	1965	1966	1968	1970	1972	1974	1976	1978
416.3	1979	1981	1983	1985	1987	1989	1991	1993	1994	1996
416.4	1998	2000	2002	2004	2006	2008	2009	2011	2013	2015
416.5	2017	2019	2021	2023	2025	2027	2028	2030	2032	2034
416.6	2036	2038	2040	2042	2044	2046	2047	2049	2051	2053
416.7	2055	2057	2059	2061	2063	2065	2067	2069	2071	2073
416.8	2074	2076	2078	2080	2082	2084	2086	2088	2090	2092
416.9	2094	2096	2098	2100	2102	2104	2106	2108	2110	2111
417.0	2113	2115	2117	2119	2121	2123	2125	2127	2129	2131
417.1	2133	2135	2137	2139	2141	2143	2145	2147	2149	2151
417.2	2153	2155	2157	2159	2161	2163	2165	2167	2169	2171
417.3	2173	2175	2177	2179	2181	2183	2185	2187	2189	2191
417.4	2193	2195	2197	2199	2201	2203	2206	2208	2210	2212
417.5	2214	2216	2218	2220	2222	2224	2226	2228	2230	2232
417.6	2234	2236	2238	2240	2243	2245	2247	2249	2251	2253
417.7	2255	2257	2259	2261	2263	2265	2268	2270	2272	2274
417.8	2276	2278	2280	2282	2284	2287	2289	2291	2293	2295
417.9	2297	2299	2301	2304	2306	2308	2310	2312	2314	2317
418.0	2319	2321	2323	2325	2327	2330	2332	2334	2336	2338
418.1	2340	2343	2345	2347	2349	2351	2354	2356	2358	2360
418.2	2363	2365	2367	2369	2372	2374	2376	2378	2381	2383
418.3	2385	2387	2390	2392	2394	2396	2399	2401	2403	2406
418.4	2408	2410	2413	2415	2417	2420	2422	2424	2427	2429

Waco Lake January 1995 Survey

ELEV. FEET	VOLUME IN ACRE-FEET									
	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
418.5	2431	2434	2436	2438	2441	2443	2445	2448	2450	2452
418.6	2455	2457	2460	2462	2464	2467	2469	2472	2474	2476
418.7	2479	2481	2484	2486	2488	2491	2493	2496	2498	2501
418.8	2503	2506	2508	2510	2513	2515	2518	2520	2523	2525
418.9	2528	2530	2533	2535	2538	2540	2543	2545	2548	2550
419.0	2553	2555	2558	2560	2563	2565	2568	2571	2573	2576
419.1	2578	2581	2583	2586	2589	2591	2594	2596	2599	2602
419.2	2604	2607	2609	2612	2615	2617	2620	2623	2625	2628
419.3	2631	2633	2636	2638	2641	2644	2647	2649	2652	2655
419.4	2658	2660	2663	2666	2668	2671	2674	2677	2680	2683
419.5	2685	2688	2691	2694	2697	2700	2702	2705	2708	2711
419.6	2714	2717	2720	2723	2726	2729	2732	2735	2738	2741
419.7	2744	2747	2750	2753	2756	2759	2762	2765	2768	2771
419.8	2774	2777	2780	2783	2786	2789	2792	2796	2799	2802
419.9	2805	2808	2811	2814	2818	2821	2824	2827	2830	2833
420.0	2837	2840	2843	2846	2849	2853	2856	2859	2862	2866
420.1	2869	2872	2875	2879	2882	2885	2889	2892	2895	2899
420.2	2902	2905	2909	2912	2916	2919	2922	2926	2929	2933
420.3	2936	2940	2943	2947	2950	2954	2957	2961	2964	2968
420.4	2971	2975	2978	2982	2986	2989	2993	2996	3000	3004
420.5	3007	3011	3015	3019	3022	3026	3030	3034	3037	3041
420.6	3045	3049	3053	3056	3060	3064	3068	3072	3076	3080
420.7	3084	3088	3092	3096	3100	3104	3108	3112	3116	3121
420.8	3125	3129	3133	3137	3142	3146	3150	3155	3159	3163
420.9	3168	3172	3177	3181	3186	3190	3195	3199	3204	3208
421.0	3213	3217	3222	3227	3231	3236	3241	3246	3250	3255
421.1	3260	3265	3270	3275	3280	3284	3289	3294	3299	3304
421.2	3310	3315	3320	3325	3330	3335	3340	3346	3351	3356
421.3	3362	3367	3372	3378	3383	3389	3394	3400	3405	3411
421.4	3417	3423	3428	3434	3440	3446	3452	3458	3464	3470
421.5	3476	3482	3488	3494	3500	3506	3513	3519	3525	3532
421.6	3538	3544	3551	3557	3564	3571	3577	3584	3591	3597
421.7	3604	3611	3618	3624	3631	3638	3645	3652	3659	3666
421.8	3673	3680	3687	3694	3701	3709	3716	3723	3730	3738
421.9	3745	3752	3760	3767	3775	3782	3790	3797	3805	3813
422.0	3820	3828	3836	3843	3851	3859	3867	3874	3882	3890
422.1	3898	3906	3914	3922	3930	3938	3946	3954	3962	3971
422.2	3979	3987	3995	4004	4012	4021	4029	4038	4046	4055
422.3	4063	4072	4081	4089	4098	4107	4116	4125	4133	4142
422.4	4151	4160	4169	4178	4188	4197	4206	4215	4225	4234
422.5	4243	4253	4262	4272	4281	4291	4300	4310	4319	4329
422.6	4339	4349	4358	4368	4378	4388	4398	4408	4418	4428
422.7	4438	4448	4458	4469	4479	4489	4499	4510	4520	4530
422.8	4541	4551	4562	4572	4583	4594	4604	4615	4626	4637
422.9	4647	4658	4669	4680	4691	4702	4713	4725	4736	4747
423.0	4758	4770	4781	4792	4804	4815	4827	4838	4850	4862
423.1	4873	4885	4897	4909	4921	4932	4944	4956	4968	4980
423.2	4993	5005	5017	5029	5041	5054	5066	5079	5091	5103
423.3	5116	5129	5141	5154	5166	5179	5192	5205	5217	5230
423.4	5243	5256	5269	5282	5295	5308	5321	5334	5347	5361

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ELEV. FEET	VOLUME IN ACRE-FEET									
	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
423.5	5374	5387	5401	5414	5428	5441	5455	5468	5482	5495
423.6	5509	5523	5536	5550	5564	5578	5592	5606	5620	5634
423.7	5648	5662	5676	5690	5705	5719	5733	5748	5762	5776
423.8	5791	5805	5820	5835	5849	5864	5879	5893	5908	5923
423.9	5938	5952	5967	5982	5997	6012	6027	6042	6058	6073
424.0	6088	6103	6118	6133	6149	6164	6179	6195	6210	6226
424.1	6241	6257	6272	6288	6303	6319	6335	6350	6366	6382
424.2	6398	6413	6429	6445	6461	6477	6493	6509	6525	6541
424.3	6557	6573	6589	6605	6622	6638	6654	6670	6687	6703
424.4	6720	6736	6752	6769	6785	6802	6819	6835	6852	6869
424.5	6885	6902	6919	6936	6953	6969	6986	7003	7020	7037
424.6	7055	7072	7089	7106	7123	7140	7158	7175	7192	7210
424.7	7227	7245	7262	7280	7297	7315	7332	7350	7368	7386
424.8	7403	7421	7439	7457	7475	7493	7511	7529	7547	7565
424.9	7584	7602	7620	7638	7657	7675	7693	7712	7730	7749
425.0	7767	7786	7804	7823	7842	7860	7879	7898	7917	7935
425.1	7954	7973	7992	8011	8030	8049	8068	8087	8106	8125
425.2	8144	8163	8182	8201	8220	8239	8259	8278	8297	8316
425.3	8336	8355	8374	8394	8413	8433	8452	8471	8491	8510
425.4	8530	8549	8569	8589	8608	8628	8647	8667	8687	8707
425.5	8726	8746	8766	8786	8806	8825	8845	8865	8885	8905
425.6	8925	8945	8965	8985	9005	9025	9045	9066	9086	9106
425.7	9126	9146	9167	9187	9207	9227	9248	9268	9288	9309
425.8	9329	9349	9370	9390	9411	9431	9451	9472	9493	9513
425.9	9534	9554	9575	9595	9616	9636	9657	9678	9698	9719
426.0	9740	9761	9781	9802	9823	9843	9864	9885	9906	9927
426.1	9948	9968	9989	10010	10031	10052	10073	10094	10115	10136
426.2	10157	10178	10199	10220	10241	10262	10283	10304	10325	10346
426.3	10368	10389	10410	10431	10452	10474	10495	10516	10537	10558
426.4	10580	10601	10622	10644	10665	10686	10708	10729	10750	10772
426.5	10793	10815	10836	10857	10879	10900	10922	10943	10965	10987
426.6	11008	11030	11051	11073	11094	11116	11138	11159	11181	11203
426.7	11224	11246	11268	11290	11311	11333	11355	11377	11399	11421
426.8	11442	11464	11486	11508	11530	11552	11574	11596	11618	11640
426.9	11662	11684	11706	11728	11750	11772	11794	11816	11838	11861
427.0	11883	11905	11927	11949	11972	11994	12016	12038	12061	12083
427.1	12105	12128	12150	12172	12195	12217	12240	12262	12284	12307
427.2	12329	12352	12374	12397	12419	12442	12465	12487	12510	12532
427.3	12555	12578	12600	12623	12646	12668	12691	12714	12737	12759
427.4	12782	12805	12828	12851	12873	12896	12919	12942	12965	12988
427.5	13011	13034	13057	13080	13103	13126	13149	13172	13195	13218
427.6	13242	13265	13288	13311	13334	13358	13381	13404	13427	13451
427.7	13474	13497	13521	13544	13568	13591	13614	13638	13661	13685
427.8	13708	13732	13756	13779	13803	13826	13850	13874	13897	13921
427.9	13945	13968	13992	14016	14040	14063	14087	14111	14135	14159
428.0	14183	14207	14230	14254	14278	14302	14326	14350	14374	14398
428.1	14423	14447	14471	14495	14519	14543	14567	14592	14616	14640
428.2	14665	14689	14713	14738	14762	14786	14811	14835	14860	14884
428.3	14909	14933	14958	14983	15007	15032	15057	15081	15106	15131
428.4	15156	15181	15206	15230	15255	15280	15305	15330	15355	15380

Waco Lake January 1995 Survey

ELEV. FEET	VOLUME IN ACRE-FEET				ELEVATION INCREMENT INTERPOLATED TO ONE HUNDREDTH FOOT					
	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
428.5	15405	15431	15456	15481	15506	15531	15556	15582	15607	15632
428.6	15658	15683	15709	15734	15759	15785	15811	15836	15862	15887
428.7	15913	15939	15964	15990	16016	16042	16067	16093	16119	16145
428.8	16171	16197	16223	16249	16275	16301	16327	16353	16379	16405
428.9	16431	16457	16484	16510	16536	16562	16589	16615	16641	16668
429.0	16694	16721	16747	16774	16800	16827	16853	16880	16906	16933
429.1	16960	16987	17013	17040	17067	17094	17121	17148	17174	17201
429.2	17228	17255	17283	17310	17337	17364	17391	17418	17445	17473
429.3	17500	17527	17554	17582	17609	17637	17664	17691	17719	17746
429.4	17774	17801	17829	17857	17884	17912	17940	17967	17995	18023
429.5	18051	18078	18106	18134	18162	18190	18218	18246	18274	18302
429.6	18330	18358	18386	18414	18442	18470	18498	18526	18554	18583
429.7	18611	18639	18667	18696	18724	18752	18781	18809	18838	18866
429.8	18895	18923	18952	18980	19009	19037	19066	19094	19123	19152
429.9	19181	19209	19238	19267	19296	19324	19353	19382	19411	19440
430.0	19469	19498	19527	19556	19585	19614	19643	19672	19701	19730
430.1	19760	19789	19818	19847	19877	19906	19935	19965	19994	20023
430.2	20053	20082	20112	20141	20171	20200	20230	20259	20289	20319
430.3	20348	20378	20408	20438	20468	20497	20527	20557	20587	20617
430.4	20647	20677	20707	20737	20767	20797	20828	20858	20888	20918
430.5	20949	20979	21009	21039	21070	21100	21131	21161	21191	21222
430.6	21253	21283	21314	21344	21375	21406	21436	21467	21498	21528
430.7	21559	21590	21621	21652	21682	21713	21744	21775	21806	21837
430.8	21868	21899	21930	21961	21992	22023	22054	22086	22117	22148
430.9	22179	22211	22242	22273	22305	22336	22367	22399	22430	22461
431.0	22493	22524	22556	22587	22619	22651	22682	22714	22745	22777
431.1	22809	22841	22872	22904	22936	22968	23000	23031	23063	23095
431.2	23127	23159	23191	23223	23255	23287	23319	23351	23383	23415
431.3	23447	23480	23512	23544	23576	23609	23641	23673	23705	23738
431.4	23770	23802	23835	23867	23900	23932	23965	23997	24030	24062
431.5	24095	24127	24160	24193	24225	24258	24291	24323	24356	24389
431.6	24422	24454	24487	24520	24553	24586	24619	24652	24685	24718
431.7	24751	24784	24817	24850	24883	24916	24949	24982	25015	25049
431.8	25082	25115	25148	25182	25215	25248	25282	25315	25348	25382
431.9	25415	25449	25482	25516	25549	25583	25616	25650	25684	25717
432.0	25751	25784	25818	25852	25886	25919	25953	25987	26021	26054
432.1	26088	26122	26156	26190	26224	26258	26292	26326	26360	26394
432.2	26428	26462	26496	26530	26564	26598	26632	26666	26701	26735
432.3	26769	26803	26837	26872	26906	26940	26974	27009	27043	27078
432.4	27112	27146	27181	27215	27250	27284	27319	27353	27388	27422
432.5	27457	27491	27526	27561	27595	27630	27665	27699	27734	27769
432.6	27804	27838	27873	27908	27943	27977	28012	28047	28082	28117
432.7	28152	28187	28222	28257	28292	28327	28362	28397	28432	28467
432.8	28502	28537	28573	28608	28643	28678	28713	28748	28784	28819
432.9	28854	28890	28925	28960	28996	29031	29066	29102	29137	29173
433.0	29208	29244	29279	29315	29350	29386	29421	29457	29492	29528
433.1	29564	29599	29635	29671	29706	29742	29778	29813	29849	29885
433.2	29921	29957	29992	30028	30064	30100	30136	30172	30208	30244
433.3	30280	30316	30352	30388	30424	30460	30496	30532	30568	30604
433.4	30640	30676	30713	30749	30785	30821	30857	30894	30930	30966

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ELEV. FEET	VOLUME IN ACRE-FEET									
	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
433.5	31002	31039	31075	31111	31148	31184	31220	31257	31293	31329
433.6	31366	31402	31439	31475	31512	31548	31585	31621	31658	31694
433.7	31731	31767	31804	31841	31877	31914	31950	31987	32024	32061
433.8	32097	32134	32171	32207	32244	32281	32318	32354	32391	32428
433.9	32465	32502	32539	32576	32612	32649	32686	32723	32760	32797
434.0	32834	32871	32908	32945	32982	33019	33056	33093	33130	33167
434.1	33205	33242	33279	33316	33353	33390	33428	33465	33502	33539
434.2	33577	33614	33651	33689	33726	33763	33801	33838	33875	33913
434.3	33950	33987	34025	34062	34100	34137	34175	34212	34250	34287
434.4	34325	34362	34400	34437	34475	34513	34550	34588	34626	34663
434.5	34701	34739	34776	34814	34852	34890	34927	34965	35003	35041
434.6	35079	35116	35154	35192	35230	35268	35306	35344	35382	35420
434.7	35458	35496	35534	35572	35610	35648	35686	35724	35762	35800
434.8	35838	35876	35914	35952	35991	36029	36067	36105	36143	36182
434.9	36220	36258	36296	36335	36373	36411	36450	36488	36526	36565
435.0	36603	36642	36680	36718	36757	36795	36834	36872	36911	36949
435.1	36988	37027	37065	37104	37142	37181	37220	37258	37297	37336
435.2	37375	37413	37452	37491	37529	37568	37607	37646	37685	37724
435.3	37762	37801	37840	37879	37918	37957	37996	38035	38074	38113
435.4	38152	38191	38230	38269	38308	38347	38386	38425	38464	38503
435.5	38542	38581	38621	38660	38699	38738	38777	38817	38856	38895
435.6	38934	38974	39013	39052	39092	39131	39170	39210	39249	39288
435.7	39328	39367	39407	39446	39486	39525	39565	39604	39644	39683
435.8	39723	39762	39802	39842	39881	39921	39960	40000	40040	40080
435.9	40119	40159	40199	40238	40278	40318	40358	40398	40437	40477
436.0	40517	40557	40597	40637	40677	40717	40757	40797	40836	40876
436.1	40916	40956	40996	41037	41077	41117	41157	41197	41237	41277
436.2	41317	41357	41398	41438	41478	41518	41558	41599	41639	41679
436.3	41719	41760	41800	41840	41881	41921	41961	42002	42042	42082
436.4	42123	42163	42204	42244	42285	42325	42366	42406	42447	42487
436.5	42528	42568	42609	42649	42690	42731	42771	42812	42853	42893
436.6	42934	42975	43015	43056	43097	43138	43178	43219	43260	43301
436.7	43342	43383	43423	43464	43505	43546	43587	43628	43669	43710
436.8	43751	43792	43833	43874	43915	43956	43997	44038	44079	44120
436.9	44161	44202	44244	44285	44326	44367	44408	44449	44491	44532
437.0	44573	44614	44656	44697	44738	44780	44821	44862	44904	44945
437.1	44987	45028	45069	45111	45152	45194	45235	45277	45318	45360
437.2	45401	45443	45485	45526	45568	45609	45651	45693	45734	45776
437.3	45818	45859	45901	45943	45985	46026	46068	46110	46152	46194
437.4	46235	46277	46319	46361	46403	46445	46487	46529	46571	46613
437.5	46655	46697	46739	46781	46823	46865	46907	46949	46991	47033
437.6	47076	47118	47160	47202	47244	47286	47329	47371	47413	47456
437.7	47498	47540	47583	47625	47667	47710	47752	47794	47837	47879
437.8	47922	47964	48007	48049	48092	48134	48177	48219	48262	48305
437.9	48347	48390	48433	48475	48518	48561	48603	48646	48689	48732
438.0	48774	48817	48860	48903	48946	48989	49031	49074	49117	49160
438.1	49203	49246	49289	49332	49375	49418	49461	49504	49547	49590
438.2	49634	49677	49720	49763	49806	49849	49892	49936	49979	50022
438.3	50065	50109	50152	50195	50239	50282	50325	50369	50412	50455
438.4	50499	50542	50586	50629	50673	50716	50760	50803	50847	50890

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ELEV. FEET	VOLUME IN ACRE-FEET									
	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
438.5	50934	50977	51021	51065	51108	51152	51195	51239	51283	51327
438.6	51370	51414	51458	51501	51545	51589	51633	51677	51720	51764
438.7	51808	51852	51896	51940	51984	52028	52072	52116	52160	52204
438.8	52248	52292	52336	52380	52424	52468	52512	52556	52600	52644
438.9	52688	52733	52777	52821	52865	52909	52953	52998	53042	53086
439.0	53131	53175	53219	53264	53308	53352	53397	53441	53485	53530
439.1	53574	53619	53663	53708	53752	53797	53841	53886	53930	53975
439.2	54019	54064	54108	54153	54198	54242	54287	54332	54376	54421
439.3	54466	54510	54555	54600	54645	54689	54734	54779	54824	54869
439.4	54914	54958	55003	55048	55093	55138	55183	55228	55273	55318
439.5	55363	55408	55453	55498	55543	55588	55633	55678	55723	55768
439.6	55813	55859	55904	55949	55994	56039	56085	56130	56175	56220
439.7	56266	56311	56356	56402	56447	56492	56538	56583	56628	56674
439.8	56719	56765	56810	56856	56901	56947	56992	57038	57083	57129
439.9	57174	57220	57266	57311	57357	57403	57448	57494	57540	57585
440.0	57631	57677	57723	57769	57814	57860	57906	57952	57998	58044
440.1	58090	58136	58182	58228	58274	58319	58366	58412	58458	58504
440.2	58550	58596	58642	58688	58734	58780	58827	58873	58919	58965
440.3	59012	59058	59104	59150	59197	59243	59289	59336	59382	59429
440.4	59475	59522	59568	59614	59661	59708	59754	59801	59847	59894
440.5	59940	59987	60034	60080	60127	60173	60220	60267	60314	60360
440.6	60407	60454	60501	60548	60594	60641	60688	60735	60782	60829
440.7	60876	60923	60970	61017	61063	61110	61158	61204	61252	61299
440.8	61346	61393	61440	61487	61534	61581	61628	61676	61723	61770
440.9	61817	61865	61912	61959	62006	62054	62101	62148	62196	62243
441.0	62291	62338	62385	62433	62480	62528	62575	62623	62670	62718
441.1	62766	62813	62861	62908	62956	63004	63051	63099	63147	63194
441.2	63242	63290	63338	63385	63433	63481	63529	63577	63625	63672
441.3	63720	63768	63816	63864	63912	63960	64008	64056	64104	64152
441.4	64200	64248	64296	64344	64392	64440	64488	64537	64585	64633
441.5	64681	64729	64777	64826	64874	64922	64971	65019	65067	65115
441.6	65164	65212	65261	65309	65357	65406	65454	65503	65551	65600
441.7	65648	65697	65745	65794	65842	65891	65939	65988	66036	66085
441.8	66134	66182	66231	66280	66328	66377	66426	66475	66523	66572
441.9	66621	66670	66719	66767	66816	66865	66914	66963	67012	67061
442.0	67110	67159	67207	67256	67306	67354	67404	67453	67502	67551
442.1	67600	67649	67698	67747	67796	67845	67895	67944	67993	68042
442.2	68092	68141	68190	68239	68289	68338	68387	68437	68486	68535
442.3	68585	68634	68684	68733	68783	68832	68882	68931	68981	69030
442.4	69080	69129	69179	69229	69278	69328	69377	69427	69477	69527
442.5	69576	69626	69676	69726	69775	69825	69875	69925	69975	70025
442.6	70074	70124	70174	70224	70274	70324	70374	70424	70474	70524
442.7	70574	70624	70674	70724	70774	70824	70875	70925	70975	71025
442.8	71075	71125	71176	71226	71276	71326	71376	71427	71477	71528
442.9	71578	71628	71679	71729	71779	71830	71880	71931	71981	72031
443.0	72082	72133	72183	72233	72284	72335	72385	72436	72486	72537
443.1	72588	72638	72689	72740	72790	72841	72892	72942	72993	73044
443.2	73095	73145	73196	73247	73298	73349	73400	73450	73501	73552
443.3	73603	73654	73705	73756	73807	73858	73909	73960	74011	74062
443.4	74113	74164	74215	74266	74317	74368	74420	74471	74522	74573

RESERVOIR VOLUME TABLE

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Waco Lake January 1995 Survey

ELEV. FEET	VOLUME IN ACRE-FEET					ELEVATION INCREMENT INTERPOLATED TO ONE HUNDREDTH FOOT				
	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
443.5	74624	74676	74727	74778	74829	74881	74932	74983	75034	75086
443.6	75137	75188	75240	75291	75343	75394	75446	75497	75549	75600
443.7	75652	75703	75755	75806	75858	75909	75961	76012	76064	76116
443.8	76167	76219	76271	76322	76374	76426	76478	76529	76581	76633
443.9	76685	76737	76788	76840	76892	76944	76996	77048	77100	77152
444.0	77204	77256	77308	77360	77412	77464	77516	77568	77620	77672
444.1	77724	77776	77828	77880	77933	77985	78037	78089	78141	78194
444.2	78246	78298	78351	78403	78455	78508	78560	78612	78665	78717
444.3	78769	78822	78874	78927	78979	79032	79084	79137	79190	79242
444.4	79295	79347	79400	79452	79505	79558	79610	79663	79716	79768
444.5	79821	79874	79927	79980	80032	80085	80138	80191	80244	80297
444.6	80350	80402	80455	80508	80561	80614	80667	80720	80773	80826
444.7	80879	80932	80985	81039	81092	81145	81198	81251	81304	81357
444.8	81411	81464	81517	81570	81624	81677	81730	81783	81837	81890
444.9	81944	81997	82050	82104	82157	82211	82264	82318	82371	82425
445.0	82478	82532	82585	82639	82693	82746	82800	82853	82907	82961
445.1	83015	83068	83122	83176	83230	83283	83337	83391	83445	83499
445.2	83553	83606	83661	83714	83768	83822	83876	83930	83984	84038
445.3	84092	84146	84200	84254	84308	84362	84416	84471	84525	84579
445.4	84633	84687	84742	84796	84850	84904	84959	85013	85067	85122
445.5	85176	85230	85285	85339	85393	85448	85502	85557	85611	85666
445.6	85720	85775	85829	85884	85938	85993	86047	86102	86157	86211
445.7	86266	86320	86375	86430	86484	86539	86594	86649	86703	86758
445.8	86813	86868	86923	86977	87032	87087	87142	87197	87252	87307
445.9	87362	87417	87472	87527	87582	87637	87692	87747	87802	87857
446.0	87912	87967	88022	88077	88132	88187	88243	88298	88353	88408
446.1	88464	88519	88574	88629	88685	88740	88795	88851	88906	88961
446.2	89017	89072	89128	89183	89238	89294	89350	89405	89461	89516
446.3	89572	89627	89683	89738	89794	89850	89905	89961	90017	90072
446.4	90128	90184	90240	90295	90351	90407	90463	90518	90574	90630
446.5	90686	90742	90798	90854	90910	90965	91021	91077	91133	91189
446.6	91246	91301	91358	91414	91470	91526	91582	91638	91694	91750
446.7	91807	91863	91919	91975	92031	92088	92144	92200	92257	92313
446.8	92369	92426	92482	92538	92595	92651	92708	92764	92821	92877
446.9	92934	92990	93047	93103	93160	93217	93273	93330	93386	93443
447.0	93500	93557	93613	93670	93727	93783	93840	93897	93954	94011
447.1	94067	94124	94181	94238	94295	94352	94409	94466	94523	94580
447.2	94637	94694	94751	94808	94865	94922	94979	95036	95093	95150
447.3	95207	95265	95322	95379	95436	95493	95551	95608	95665	95723
447.4	95780	95837	95895	95952	96009	96067	96124	96181	96239	96296
447.5	96354	96411	96469	96526	96584	96641	96699	96757	96814	96872
447.6	96929	96987	97045	97102	97160	97218	97276	97333	97391	97449
447.7	97507	97564	97622	97680	97738	97796	97854	97912	97970	98028
447.8	98085	98143	98201	98259	98317	98376	98434	98492	98550	98608
447.9	98666	98724	98783	98841	98899	98957	99015	99074	99132	99190
448.0	99249	99307	99365	99424	99482	99541	99599	99658	99716	99775
448.1	99833	99892	99951	100010	100070	100130	100190	100240	100300	100360
448.2	100420	100480	100540	100600	100660	100710	100770	100830	100890	100950
448.3	101010	101070	101130	101190	101240	101300	101360	101420	101480	101540
448.4	101600	101660	101720	101780	101840	101900	101950	102010	102070	102130

Waco Lake January 1995 Survey

ELEV. FEET	VOLUME IN ACRE-FEET									ELEVATION INCREMENT INTERPOLATED TO ONE HUNDREDTH FOOT										
	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
453.5	134330	134400	134470	134540	134610	134670	134740	134810	134880	134950										
453.6	135020	135090	135160	135230	135300	135370	135440	135500	135570	135640										
453.7	135710	135780	135850	135920	135990	136060	136130	136200	136270	136340										
453.8	136410	136470	136540	136610	136680	136750	136820	136890	136960	137030										
453.9	137100	137170	137240	137310	137380	137450	137520	137590	137660	137730										
454.0	137800	137870	137940	138010	138080	138140	138210	138280	138350	138420										
454.1	138490	138560	138630	138700	138770	138840	138910	138980	139050	139120										
454.2	139190	139260	139330	139400	139470	139540	139610	139680	139750	139820										
454.3	139890	139960	140030	140100	140170	140240	140310	140380	140450	140520										
454.4	140590	140660	140740	140810	140880	140950	141020	141090	141160	141230										
454.5	141300	141370	141440	141510	141580	141650	141720	141790	141860	141930										
454.6	142000	142070	142140	142210	142280	142350	142430	142500	142570	142640										
454.7	142710	142780	142850	142920	142990	143060	143130	143200	143270	143340										
454.8	143410	143490	143560	143630	143700	143770	143840	143910	143980	144050										
454.9	144120	144190	144270	144340	144410	144480	144550	144620	144690	144760										
455.0	144830																			

APPENDIX C - RESERVOIR AREA TABLE

RESERVOIR AREA TABLE

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Waco Lake January 1995 Survey

ELEV. FEET	AREA IN ACRES									
	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
398.5	34	34	34	34	34	34	34	34	34	34
398.6	34	34	34	34	35	35	35	35	35	35
398.7	35	35	35	35	35	35	35	35	35	35
398.8	35	35	35	35	35	35	35	35	35	35
398.9	35	35	35	35	35	35	35	35	35	35
399.0	36	36	36	36	36	36	36	36	36	36
399.1	36	36	36	36	36	36	36	36	36	36
399.2	36	36	36	36	36	36	36	36	36	36
399.3	36	36	36	36	36	36	36	36	36	36
399.4	37	37	37	37	37	37	37	37	37	37
399.5	37	37	37	37	37	37	37	37	37	37
399.6	37	37	37	37	37	37	37	37	37	37
399.7	37	37	37	38	38	38	38	38	38	38
399.8	38	38	38	38	38	38	38	38	38	38
399.9	38	38	38	38	38	38	38	38	38	38
400.0	38	38	38	38	38	38	38	38	38	38
400.1	39	39	39	39	39	39	39	39	39	39
400.2	39	39	39	39	39	39	39	39	39	39
400.3	39	39	39	39	39	39	39	39	39	39
400.4	39	39	39	39	39	39	39	39	39	39
400.5	40	40	40	40	40	40	40	40	40	40
400.6	40	40	40	40	40	40	40	40	40	40
400.7	40	40	40	40	40	40	40	40	40	40
400.8	41	41	41	41	41	41	41	41	41	41
400.9	41	41	41	41	41	41	41	41	41	41
401.0	41	41	41	41	41	41	41	41	41	41
401.1	41	41	42	42	42	42	42	42	42	42
401.2	42	42	42	42	42	42	42	42	42	42
401.3	42	42	42	42	42	42	42	42	42	42
401.4	43	43	43	43	43	43	43	43	43	43
401.5	43	43	43	43	43	43	43	43	43	43
401.6	43	43	43	43	43	43	43	43	43	43
401.7	44	44	44	44	44	44	44	44	44	44
401.8	44	44	44	44	44	44	44	44	44	44
401.9	44	44	44	45	45	45	45	45	45	45
402.0	45	45	45	45	45	45	45	45	45	45
402.1	45	45	45	45	45	45	45	45	45	45
402.2	46	46	46	46	46	46	46	46	46	46
402.3	46	46	46	46	46	46	46	46	46	46
402.4	46	46	46	46	46	46	46	46	46	46
402.5	47	47	47	47	47	47	47	47	47	47
402.6	47	47	47	47	47	47	47	47	47	47
402.7	48	48	48	48	48	48	48	48	48	48
402.8	48	48	48	48	48	48	48	48	48	48
402.9	48	48	48	48	48	49	49	49	49	49
403.0	49	49	49	49	49	49	49	49	49	49
403.1	49	49	49	49	49	49	49	49	49	49
403.2	49	50	50	50	50	50	50	50	50	50
403.3	50	50	50	50	50	50	50	50	50	50
403.4	50	50	50	50	50	50	51	51	51	51

Waco Lake January 1995 Survey

ELEV. FEET	AREA IN ACRES									
	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
408.5	115	115	115	115	115	116	116	116	116	116
408.6	116	116	116	116	117	117	117	117	117	117
408.7	117	117	117	117	118	118	118	118	118	118
408.8	118	118	118	118	118	119	119	119	119	119
408.9	119	119	119	119	119	120	120	120	120	120
409.0	120	120	120	120	120	121	121	121	121	121
409.1	121	121	121	121	121	121	122	122	122	122
409.2	122	122	122	122	122	122	122	123	123	123
409.3	123	123	123	123	123	123	123	123	124	124
409.4	124	124	124	124	124	124	124	124	124	124
409.5	125	125	125	125	125	125	125	125	125	125
409.6	125	126	126	126	126	126	126	126	126	126
409.7	126	126	127	127	127	127	127	127	127	127
409.8	127	127	127	127	128	128	128	128	128	128
409.9	128	128	128	128	128	128	129	129	129	129
410.0	129	129	129	129	129	129	129	129	130	130
410.1	130	130	130	130	130	130	130	130	130	130
410.2	131	131	131	131	131	131	131	131	131	131
410.3	131	131	132	132	132	132	132	132	132	132
410.4	132	132	132	132	133	133	133	133	133	133
410.5	133	133	133	133	133	133	134	134	134	134
410.6	134	134	134	134	134	134	134	134	134	135
410.7	135	135	135	135	135	135	135	135	135	135
410.8	135	135	135	135	136	136	136	136	136	136
410.9	136	136	136	136	136	136	136	136	136	137
411.0	137	137	137	137	137	137	137	137	137	137
411.1	137	137	137	137	138	138	138	138	138	138
411.2	138	138	138	138	138	138	138	138	139	139
411.3	139	139	139	139	139	139	139	139	139	139
411.4	139	140	140	140	140	140	140	140	140	140
411.5	140	140	140	140	141	141	141	141	141	141
411.6	141	141	141	141	141	141	141	142	142	142
411.7	142	142	142	142	142	142	142	142	142	143
411.8	143	143	143	143	143	143	143	143	143	143
411.9	144	144	144	144	144	144	144	144	144	144
412.0	144	144	145	145	145	145	145	145	145	145
412.1	145	145	145	145	145	146	146	146	146	146
412.2	146	146	146	146	146	146	146	147	147	147
412.3	147	147	147	147	147	147	147	147	147	148
412.4	148	148	148	148	148	148	148	148	148	148
412.5	148	149	149	149	149	149	149	149	149	149
412.6	149	149	149	150	150	150	150	150	150	150
412.7	150	150	150	150	150	151	151	151	151	151
412.8	151	151	151	151	151	151	151	152	152	152
412.9	152	152	152	152	152	152	152	152	153	153
413.0	153	153	153	153	153	153	153	153	153	153
413.1	154	154	154	154	154	154	154	154	154	154
413.2	154	155	155	155	155	155	155	155	155	155
413.3	155	155	156	156	156	156	156	156	156	156
413.4	156	156	156	157	157	157	157	157	157	157

RESERVOIR AREA TABLE

Waco Lake January 1995 Survey

ELEV. FEET	AREA IN ACRES									
	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
413.5	157	157	157	157	158	158	158	158	158	158
413.6	158	158	158	158	159	159	159	159	159	159
413.7	159	159	159	159	159	160	160	160	160	160
413.8	160	160	160	160	160	160	161	161	161	161
413.9	161	161	161	161	161	161	162	162	162	162
414.0	162	162	162	162	162	162	162	163	163	163
414.1	163	163	163	163	163	163	163	163	164	164
414.2	164	164	164	164	164	164	164	164	165	165
414.3	165	165	165	165	165	165	165	165	165	166
414.4	166	166	166	166	166	166	166	166	166	167
414.5	167	167	167	167	167	167	167	167	167	168
414.6	168	168	168	168	168	168	168	168	168	169
414.7	169	169	169	169	169	169	169	169	169	170
414.8	170	170	170	170	170	170	170	170	171	171
414.9	171	171	171	171	171	171	171	172	172	172
415.0	172	172	172	172	172	172	172	173	173	173
415.1	173	173	173	173	173	173	173	174	174	174
415.2	174	174	174	174	174	174	175	175	175	175
415.3	175	175	175	175	175	175	176	176	176	176
415.4	176	176	176	176	176	177	177	177	177	177
415.5	177	177	177	177	177	178	178	178	178	178
415.6	178	178	178	178	178	179	179	179	179	179
415.7	179	179	179	179	180	180	180	180	180	180
415.8	180	180	180	181	181	181	181	181	181	181
415.9	181	181	182	182	182	182	182	182	182	182
416.0	183	183	183	183	183	183	183	183	183	184
416.1	184	184	184	184	184	184	185	185	185	185
416.2	185	185	185	185	186	186	186	186	186	186
416.3	186	187	187	187	187	187	187	187	187	188
416.4	188	188	188	188	188	188	189	189	189	189
416.5	189	189	189	190	190	190	190	190	190	190
416.6	191	191	191	191	191	191	191	192	192	192
416.7	192	192	192	192	193	193	193	193	193	193
416.8	194	194	194	194	194	194	194	195	195	195
416.9	195	195	195	195	196	196	196	196	196	196
417.0	196	197	197	197	197	197	197	198	198	198
417.1	198	198	198	198	199	199	199	199	199	199
417.2	200	200	200	200	200	200	201	201	201	201
417.3	201	201	202	202	202	202	202	202	203	203
417.4	203	203	203	204	204	204	204	204	204	205
417.5	205	205	205	205	206	206	206	206	206	206
417.6	207	207	207	207	208	208	208	208	208	209
417.7	209	209	209	209	210	210	210	210	210	211
417.8	211	211	211	212	212	212	212	213	213	213
417.9	213	214	214	214	214	215	215	215	216	216
418.0	216	216	217	217	217	218	218	218	219	219
418.1	219	220	220	221	221	221	222	222	222	223
418.2	223	223	224	224	225	225	225	226	226	226
418.3	227	227	227	228	228	228	229	229	229	231
418.4	231	231	232	232	232	233	233	234	234	234

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ELEV. FEET	AREA IN ACRES									
	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
418.5	235	235	235	236	236	236	237	237	237	238
418.6	238	238	239	239	239	240	240	240	241	241
418.7	241	242	242	242	243	243	243	244	244	245
418.8	245	245	246	246	246	247	247	247	248	248
418.9	249	249	249	250	250	250	251	251	252	252
419.0	252	253	253	254	254	254	255	255	256	256
419.1	257	257	257	258	258	259	259	260	260	261
419.2	261	262	262	263	263	264	264	265	266	266
419.3	267	267	268	269	269	270	271	271	272	273
419.4	274	275	275	276	277	278	279	280	281	282
419.5	283	284	285	286	287	288	289	290	291	292
419.6	292	293	294	295	295	296	297	298	298	299
419.7	299	300	301	301	302	303	303	304	305	305
419.8	306	307	307	308	309	309	310	311	311	312
419.9	313	314	314	315	316	317	317	318	319	320
420.0	320	321	322	322	323	324	325	325	326	327
420.1	328	328	329	330	331	331	332	333	334	335
420.2	336	337	338	339	340	340	341	342	343	344
420.3	345	346	347	348	349	350	352	353	354	355
420.4	356	357	359	360	361	362	363	365	366	367
420.5	368	370	371	372	373	375	376	378	379	381
420.6	382	383	385	386	388	390	391	393	395	396
420.7	398	400	402	404	406	408	411	413	415	417
420.8	419	422	424	426	428	430	432	434	436	438
420.9	440	442	444	446	448	450	452	455	457	459
421.0	461	464	466	468	470	473	475	477	479	481
421.1	483	485	487	489	492	494	497	499	502	504
421.2	507	510	512	515	518	521	524	527	530	533
421.3	536	539	541	545	548	551	555	558	562	566
421.4	569	573	577	580	584	589	593	596	599	603
421.5	606	610	613	617	621	625	628	632	635	639
421.6	642	646	649	652	656	659	663	666	669	672
421.7	675	678	681	683	686	690	694	697	700	703
421.8	706	709	713	715	718	721	724	727	730	733
421.9	736	739	742	745	748	751	754	756	759	762
422.0	765	768	770	773	776	778	781	784	787	790
422.1	793	796	799	802	805	808	812	815	819	822
422.2	826	829	833	836	840	844	847	851	854	858
422.3	862	866	869	873	877	882	885	889	892	896
422.4	900	903	907	910	914	919	924	927	931	935
422.5	939	942	946	950	953	957	961	964	968	971
422.6	975	978	982	985	988	992	995	999	1002	1006
422.7	1009	1013	1017	1020	1024	1028	1032	1035	1039	1043
422.8	1047	1051	1054	1058	1062	1066	1070	1074	1078	1082
422.9	1086	1090	1094	1098	1102	1108	1112	1116	1121	1125
423.0	1129	1134	1138	1142	1147	1151	1155	1160	1164	1168
423.1	1172	1176	1180	1184	1188	1192	1197	1201	1205	1210
423.2	1214	1218	1222	1226	1230	1234	1238	1242	1246	1250
423.3	1253	1257	1261	1264	1268	1272	1276	1279	1283	1286
423.4	1290	1294	1297	1301	1305	1309	1313	1317	1321	1325

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ELEV. FEET	AREA IN ACRES									
	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
423.5	1329	1333	1338	1342	1346	1350	1354	1358	1361	1365
423.6	1369	1373	1377	1381	1385	1389	1393	1397	1402	1406
423.7	1410	1414	1418	1422	1427	1431	1435	1439	1442	1446
423.8	1449	1453	1457	1460	1464	1467	1471	1474	1478	1481
423.9	1484	1488	1491	1495	1498	1502	1505	1508	1511	1515
424.0	1518	1521	1524	1527	1530	1533	1537	1540	1543	1546
424.1	1548	1552	1555	1558	1561	1564	1567	1570	1573	1577
424.2	1580	1583	1586	1589	1592	1595	1598	1601	1604	1607
424.3	1610	1613	1616	1619	1622	1625	1629	1632	1635	1638
424.4	1641	1645	1648	1651	1654	1657	1661	1665	1668	1672
424.5	1675	1678	1682	1685	1688	1692	1696	1699	1702	1706
424.6	1709	1712	1716	1719	1723	1727	1730	1734	1737	1741
424.7	1744	1748	1751	1755	1759	1763	1767	1771	1775	1778
424.8	1782	1786	1790	1793	1797	1802	1805	1809	1812	1816
424.9	1820	1823	1827	1830	1834	1838	1841	1844	1848	1851
425.0	1854	1857	1860	1863	1867	1870	1873	1875	1878	1881
425.1	1883	1886	1888	1891	1893	1896	1898	1901	1903	1906
425.2	1908	1911	1913	1915	1918	1920	1922	1924	1927	1929
425.3	1931	1933	1935	1937	1940	1942	1944	1946	1948	1951
425.4	1953	1955	1957	1959	1962	1964	1967	1969	1972	1974
425.5	1977	1979	1981	1983	1986	1988	1990	1993	1995	1997
425.6	1999	2001	2003	2006	2008	2010	2012	2014	2016	2018
425.7	2020	2021	2023	2025	2027	2029	2031	2032	2034	2036
425.8	2037	2039	2041	2042	2044	2046	2048	2049	2051	2053
425.9	2054	2056	2057	2059	2061	2062	2064	2065	2067	2069
426.0	2070	2072	2074	2075	2077	2079	2080	2082	2083	2085
426.1	2086	2088	2089	2091	2092	2094	2095	2096	2098	2099
426.2	2100	2102	2103	2104	2106	2107	2109	2110	2111	2113
426.3	2114	2115	2117	2118	2120	2121	2122	2124	2125	2126
426.4	2128	2129	2131	2132	2133	2135	2136	2138	2139	2140
426.5	2142	2143	2145	2146	2147	2149	2150	2152	2153	2155
426.6	2156	2158	2159	2161	2162	2164	2165	2167	2168	2170
426.7	2171	2173	2174	2176	2178	2179	2181	2182	2184	2185
426.8	2187	2188	2190	2191	2193	2194	2196	2198	2199	2201
426.9	2202	2204	2205	2207	2208	2210	2212	2213	2215	2216
427.0	2218	2219	2221	2222	2224	2225	2227	2228	2230	2231
427.1	2233	2234	2236	2237	2239	2240	2242	2243	2245	2246
427.2	2248	2250	2251	2253	2254	2256	2257	2259	2260	2262
427.3	2263	2265	2267	2268	2270	2271	2273	2275	2276	2278
427.4	2280	2282	2283	2285	2287	2289	2291	2292	2294	2296
427.5	2298	2299	2301	2303	2305	2306	2308	2310	2312	2314
427.6	2316	2318	2319	2321	2323	2325	2327	2329	2330	2332
427.7	2334	2336	2338	2340	2342	2344	2346	2347	2349	2351
427.8	2353	2355	2356	2358	2360	2362	2363	2365	2367	2369
427.9	2371	2372	2374	2376	2378	2380	2382	2384	2386	2388
428.0	2389	2391	2393	2395	2397	2399	2401	2403	2405	2407
428.1	2409	2411	2413	2416	2418	2420	2422	2424	2426	2429
428.2	2431	2433	2436	2438	2441	2444	2446	2449	2451	2454
428.3	2457	2459	2462	2464	2467	2470	2472	2475	2478	2480
428.4	2483	2486	2489	2491	2494	2496	2499	2501	2504	2506

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ELEV. FEET	AREA IN ACRES									
	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
428.5	2509	2512	2515	2518	2520	2523	2526	2529	2531	2534
428.6	2537	2540	2543	2546	2549	2553	2555	2558	2561	2563
428.7	2566	2569	2571	2574	2576	2579	2581	2583	2586	2588
428.8	2591	2593	2596	2598	2601	2604	2606	2609	2611	2614
428.9	2616	2619	2622	2624	2627	2630	2633	2635	2638	2641
429.0	2643	2646	2649	2652	2655	2657	2660	2663	2666	2668
429.1	2671	2674	2677	2680	2683	2686	2689	2692	2694	2697
429.2	2700	2703	2706	2708	2711	2714	2717	2719	2722	2725
429.3	2728	2730	2733	2736	2738	2741	2744	2746	2749	2751
429.4	2754	2756	2759	2761	2764	2766	2769	2771	2773	2776
429.5	2778	2781	2783	2786	2788	2791	2793	2795	2798	2800
429.6	2802	2804	2807	2809	2811	2813	2816	2818	2820	2823
429.7	2825	2827	2830	2832	2834	2837	2839	2841	2844	2846
429.8	2848	2851	2853	2855	2858	2860	2862	2865	2867	2869
429.9	2872	2874	2876	2879	2881	2884	2886	2888	2891	2893
430.0	2895	2898	2900	2903	2905	2907	2910	2912	2914	2917
430.1	2919	2922	2924	2927	2929	2932	2934	2937	2939	2942
430.2	2944	2947	2949	2952	2954	2957	2960	2962	2965	2968
430.3	2971	2973	2976	2979	2982	2986	2989	2992	2995	2998
430.4	3001	3003	3006	3009	3012	3015	3017	3020	3023	3025
430.5	3028	3030	3033	3035	3038	3041	3043	3046	3048	3051
430.6	3053	3056	3058	3060	3063	3066	3068	3070	3073	3075
430.7	3078	3080	3082	3085	3087	3090	3092	3094	3097	3099
430.8	3101	3104	3106	3108	3111	3113	3115	3118	3120	3122
430.9	3125	3127	3129	3132	3134	3136	3139	3141	3143	3146
431.0	3148	3150	3152	3155	3157	3159	3162	3164	3166	3169
431.1	3171	3173	3175	3178	3180	3182	3185	3187	3189	3191
431.2	3193	3195	3198	3200	3202	3204	3206	3208	3211	3213
431.3	3215	3217	3219	3221	3223	3225	3228	3230	3232	3234
431.4	3236	3238	3241	3243	3245	3247	3249	3251	3254	3256
431.5	3258	3260	3262	3265	3267	3269	3271	3273	3275	3277
431.6	3279	3282	3284	3286	3288	3290	3292	3294	3297	3299
431.7	3301	3303	3305	3307	3310	3312	3314	3316	3319	3321
431.8	3323	3325	3327	3330	3332	3334	3336	3338	3340	3343
431.9	3345	3347	3349	3351	3353	3355	3357	3359	3361	3363
432.0	3365	3367	3369	3371	3373	3375	3377	3379	3381	3383
432.1	3385	3387	3389	3390	3392	3394	3396	3398	3400	3402
432.2	3404	3406	3407	3409	3411	3413	3415	3416	3418	3420
432.3	3422	3424	3425	3427	3429	3431	3432	3434	3436	3438
432.4	3440	3442	3443	3445	3447	3449	3451	3453	3454	3456
432.5	3458	3460	3461	3463	3465	3467	3468	3470	3472	3474
432.6	3475	3477	3479	3481	3483	3484	3486	3488	3490	3492
432.7	3493	3495	3497	3499	3500	3503	3504	3506	3508	3510
432.8	3512	3514	3515	3517	3519	3521	3523	3524	3526	3528
432.9	3530	3531	3533	3535	3537	3538	3540	3542	3543	3545
433.0	3547	3548	3550	3552	3553	3555	3557	3559	3560	3562
433.1	3563	3565	3567	3569	3570	3572	3574	3575	3577	3579
433.2	3581	3582	3584	3586	3587	3589	3591	3592	3594	3596
433.3	3597	3599	3600	3602	3604	3605	3607	3609	3610	3612
433.4	3613	3615	3616	3618	3619	3621	3622	3624	3625	3627

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ELEV. FEET	AREA IN ACRES									
	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
433.5	3628	3630	3631	3633	3634	3635	3637	3638	3640	3641
433.6	3643	3644	3645	3647	3648	3650	3651	3652	3654	3655
433.7	3657	3658	3659	3661	3662	3664	3665	3666	3668	3669
433.8	3671	3672	3673	3675	3676	3678	3679	3680	3682	3683
433.9	3685	3686	3687	3689	3690	3692	3693	3694	3696	3697
434.0	3699	3700	3701	3703	3704	3706	3707	3708	3710	3711
434.1	3713	3714	3715	3717	3718	3720	3721	3723	3724	3726
434.2	3727	3728	3730	3731	3733	3734	3735	3737	3738	3740
434.3	3741	3742	3744	3745	3747	3748	3750	3751	3752	3754
434.4	3755	3757	3758	3759	3761	3762	3764	3765	3766	3768
434.5	3769	3771	3772	3773	3775	3777	3778	3779	3781	3782
434.6	3784	3785	3786	3788	3789	3791	3792	3793	3795	3796
434.7	3797	3799	3800	3801	3803	3804	3806	3807	3808	3810
434.8	3811	3812	3814	3815	3817	3818	3819	3821	3822	3824
434.9	3825	3826	3828	3829	3831	3832	3834	3835	3837	3839
435.0	3840	3842	3844	3845	3847	3849	3850	3852	3854	3855
435.1	3857	3858	3860	3862	3863	3865	3866	3868	3869	3870
435.2	3872	3873	3875	3876	3878	3879	3881	3882	3883	3885
435.3	3886	3888	3889	3890	3892	3893	3894	3896	3897	3898
435.4	3900	3901	3902	3904	3905	3906	3908	3909	3910	3912
435.5	3913	3915	3916	3917	3919	3920	3922	3923	3925	3926
435.6	3928	3929	3931	3932	3934	3935	3937	3938	3939	3941
435.7	3942	3944	3945	3947	3948	3950	3951	3953	3954	3955
435.8	3957	3958	3960	3961	3963	3964	3966	3967	3969	3970
435.9	3972	3973	3975	3976	3977	3979	3980	3982	3983	3985
436.0	3986	3988	3989	3991	3992	3993	3995	3996	3998	3999
436.1	4001	4002	4003	4005	4006	4008	4009	4010	4012	4013
436.2	4015	4016	4017	4019	4020	4021	4023	4024	4026	4027
436.3	4028	4030	4031	4032	4034	4035	4036	4038	4039	4041
436.4	4042	4043	4045	4046	4047	4049	4050	4052	4053	4054
436.5	4056	4057	4059	4060	4062	4063	4064	4066	4067	4068
436.6	4070	4071	4073	4074	4076	4077	4078	4080	4081	4083
436.7	4084	4085	4087	4088	4090	4091	4092	4094	4095	4097
436.8	4098	4099	4101	4102	4104	4105	4106	4108	4109	4111
436.9	4112	4113	4115	4116	4117	4119	4120	4122	4123	4125
437.0	4126	4127	4129	4130	4132	4133	4135	4136	4138	4139
437.1	4141	4142	4144	4146	4147	4149	4150	4152	4153	4155
437.2	4156	4158	4159	4160	4162	4163	4165	4166	4168	4169
437.3	4171	4172	4173	4175	4177	4178	4180	4181	4183	4184
437.4	4186	4187	4189	4190	4192	4193	4195	4196	4197	4199
437.5	4200	4202	4203	4205	4206	4208	4209	4211	4212	4214
437.6	4215	4217	4218	4220	4221	4223	4225	4226	4228	4229
437.7	4231	4232	4234	4235	4237	4239	4240	4242	4243	4245
437.8	4247	4248	4250	4252	4253	4255	4256	4258	4260	4261
437.9	4263	4264	4267	4268	4270	4272	4273	4275	4277	4278
438.0	4280	4281	4283	4285	4286	4288	4290	4291	4293	4294
438.1	4296	4297	4299	4300	4302	4303	4305	4307	4308	4310
438.2	4311	4313	4314	4316	4317	4319	4320	4322	4323	4325
438.3	4327	4328	4330	4331	4333	4334	4336	4337	4339	4340
438.4	4342	4344	4345	4347	4348	4350	4351	4353	4354	4356

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ELEV. FEET	AREA IN ACRES									
	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
438.5	4357	4359	4361	4362	4364	4365	4367	4368	4369	4371
438.6	4372	4374	4375	4377	4378	4380	4381	4382	4384	4385
438.7	4387	4388	4389	4391	4392	4394	4395	4396	4398	4399
438.8	4401	4402	4404	4405	4406	4408	4409	4411	4412	4414
438.9	4415	4417	4418	4420	4421	4423	4424	4426	4427	4428
439.0	4430	4431	4433	4434	4435	4437	4438	4439	4441	4442
439.1	4444	4445	4446	4448	4449	4451	4452	4453	4455	4456
439.2	4457	4459	4460	4462	4463	4464	4466	4467	4468	4470
439.3	4471	4473	4474	4475	4477	4478	4480	4481	4482	4484
439.4	4485	4487	4488	4489	4491	4492	4494	4495	4497	4498
439.5	4499	4501	4502	4504	4505	4507	4508	4509	4511	4512
439.6	4514	4515	4517	4518	4520	4521	4523	4524	4526	4527
439.7	4529	4530	4532	4533	4535	4536	4538	4539	4541	4543
439.8	4544	4546	4547	4549	4551	4552	4554	4555	4557	4559
439.9	4560	4562	4563	4565	4567	4568	4570	4572	4573	4575
440.0	4576	4578	4580	4581	4583	4585	4586	4588	4590	4591
440.1	4593	4595	4596	4598	4600	4601	4603	4605	4606	4608
440.2	4610	4611	4613	4615	4617	4618	4620	4622	4623	4625
440.3	4627	4628	4630	4632	4633	4636	4637	4639	4640	4642
440.4	4644	4645	4647	4649	4650	4652	4654	4655	4657	4658
440.5	4660	4662	4664	4665	4667	4669	4670	4672	4673	4675
440.6	4677	4678	4680	4681	4683	4685	4686	4688	4689	4691
440.7	4693	4694	4696	4697	4699	4701	4702	4704	4705	4707
440.8	4709	4710	4712	4714	4715	4717	4718	4720	4722	4723
440.9	4725	4726	4728	4730	4731	4733	4735	4736	4738	4740
441.0	4741	4743	4745	4746	4748	4749	4751	4753	4754	4756
441.1	4758	4759	4761	4763	4764	4766	4767	4769	4771	4772
441.2	4774	4775	4777	4778	4780	4781	4783	4785	4786	4788
441.3	4789	4791	4792	4794	4795	4797	4798	4800	4801	4803
441.4	4804	4806	4807	4809	4810	4812	4813	4815	4816	4818
441.5	4819	4821	4822	4824	4825	4827	4829	4830	4832	4833
441.6	4835	4836	4838	4839	4841	4842	4844	4845	4847	4848
441.7	4850	4851	4853	4854	4856	4857	4859	4860	4862	4863
441.8	4865	4866	4868	4869	4871	4872	4873	4875	4876	4878
441.9	4879	4881	4882	4884	4885	4887	4888	4890	4891	4893
442.0	4894	4896	4897	4898	4900	4901	4903	4904	4906	4907
442.1	4909	4911	4912	4914	4915	4917	4918	4920	4922	4924
442.2	4925	4927	4929	4930	4932	4934	4935	4937	4938	4940
442.3	4942	4943	4945	4947	4948	4950	4952	4953	4955	4956
442.4	4958	4959	4961	4962	4964	4966	4967	4969	4970	4972
442.5	4973	4975	4976	4978	4979	4981	4982	4984	4985	4987
442.6	4988	4990	4991	4993	4994	4996	4997	4999	5000	5002
442.7	5003	5005	5006	5008	5010	5011	5013	5014	5016	5018
442.8	5019	5021	5023	5024	5026	5027	5029	5030	5031	5033
442.9	5034	5036	5037	5039	5040	5042	5043	5044	5046	5047
443.0	5049	5050	5052	5053	5055	5056	5057	5059	5060	5062
443.1	5063	5065	5066	5067	5069	5070	5072	5073	5075	5076
443.2	5078	5079	5080	5082	5083	5085	5086	5088	5089	5090
443.3	5092	5093	5095	5096	5098	5099	5100	5102	5103	5105
443.4	5106	5108	5109	5111	5112	5114	5115	5117	5118	5120

Waco Lake January 1995 Survey

ELEV. FEET	AREA IN ACRES									
	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
443.5	5121	5123	5124	5126	5127	5129	5130	5132	5133	5135
443.6	5136	5138	5139	5141	5142	5144	5145	5147	5148	5150
443.7	5151	5152	5154	5155	5157	5158	5160	5161	5163	5164
443.8	5166	5167	5169	5170	5172	5173	5175	5177	5178	5180
443.9	5181	5183	5184	5186	5187	5189	5190	5192	5193	5195
444.0	5196	5198	5200	5201	5203	5204	5206	5207	5209	5210
444.1	5212	5213	5215	5216	5218	5220	5221	5223	5224	5226
444.2	5228	5229	5231	5232	5234	5236	5237	5239	5240	5242
444.3	5243	5245	5246	5248	5250	5251	5253	5254	5256	5257
444.4	5259	5260	5262	5263	5265	5266	5268	5270	5271	5273
444.5	5274	5276	5278	5279	5281	5282	5284	5285	5287	5288
444.6	5290	5291	5293	5295	5296	5298	5299	5301	5302	5304
444.7	5306	5307	5309	5310	5312	5314	5315	5317	5318	5320
444.8	5322	5323	5325	5326	5328	5330	5331	5333	5335	5336
444.9	5338	5340	5341	5343	5345	5346	5348	5350	5351	5353
445.0	5355	5356	5358	5360	5361	5363	5365	5367	5368	5370
445.1	5372	5373	5375	5376	5378	5380	5381	5383	5385	5386
445.2	5388	5389	5391	5393	5394	5396	5397	5399	5400	5402
445.3	5404	5405	5407	5408	5410	5412	5413	5415	5416	5418
445.4	5419	5421	5423	5424	5426	5427	5429	5430	5432	5433
445.5	5435	5436	5438	5439	5441	5442	5444	5445	5447	5448
445.6	5450	5451	5453	5454	5456	5457	5459	5460	5462	5463
445.7	5465	5466	5468	5469	5471	5472	5474	5475	5477	5478
445.8	5480	5481	5483	5484	5486	5487	5488	5490	5491	5493
445.9	5494	5496	5497	5499	5500	5502	5503	5505	5506	5508
446.0	5509	5511	5512	5514	5515	5517	5518	5520	5521	5523
446.1	5525	5526	5528	5529	5531	5532	5534	5535	5537	5538
446.2	5540	5542	5543	5545	5546	5548	5550	5551	5553	5554
446.3	5556	5558	5559	5561	5562	5564	5565	5567	5569	5570
446.4	5572	5573	5575	5576	5578	5580	5581	5583	5584	5586
446.5	5588	5589	5591	5592	5594	5596	5597	5599	5600	5602
446.6	5603	5605	5606	5608	5610	5611	5613	5614	5616	5618
446.7	5619	5621	5622	5624	5626	5627	5629	5631	5632	5634
446.8	5636	5637	5639	5641	5642	5644	5646	5647	5649	5651
446.9	5652	5654	5655	5657	5659	5660	5662	5664	5665	5667
447.0	5668	5670	5672	5673	5675	5676	5678	5680	5681	5683
447.1	5684	5686	5688	5689	5691	5692	5694	5696	5697	5699
447.2	5700	5702	5703	5705	5707	5708	5710	5711	5713	5714
447.3	5716	5718	5719	5721	5722	5724	5725	5727	5729	5730
447.4	5732	5733	5735	5737	5738	5740	5741	5743	5745	5746
447.5	5748	5749	5751	5752	5754	5756	5757	5759	5760	5762
447.6	5764	5765	5767	5769	5770	5772	5774	5775	5777	5779
447.7	5780	5782	5784	5785	5787	5789	5790	5792	5794	5796
447.8	5798	5800	5802	5803	5805	5807	5809	5811	5813	5815
447.9	5816	5818	5820	5822	5824	5826	5828	5830	5832	5834
448.0	5836	5838	5840	5842	5844	5846	5848	5850	5852	5854
448.1	5856	5858	5860	5862	5864	5867	5869	5871	5872	5874
448.2	5876	5878	5880	5882	5884	5886	5888	5890	5892	5894
448.3	5896	5898	5900	5902	5904	5906	5908	5910	5912	5914
448.4	5916	5918	5920	5921	5924	5926	5928	5929	5931	5933

Waco Lake January 1995 Survey

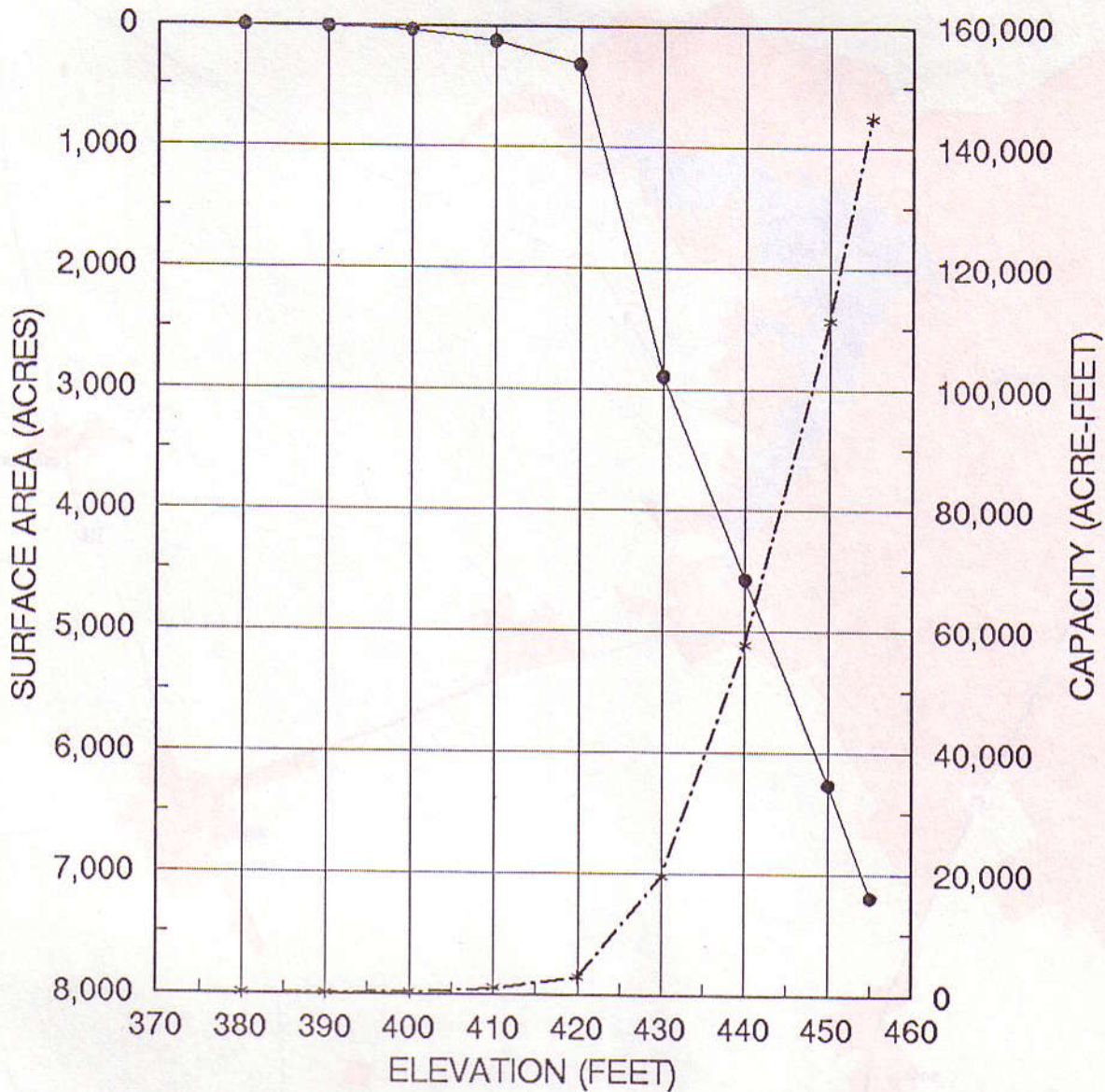
ELEV. FEET	AREA IN ACRES			ELEVATION INCREMENT IS INTERPOLATED TO ONE HUNDREDTH FOOT						
	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
448.5	5935	5937	5939	5941	5943	5945	5947	5949	5951	5953
448.6	5955	5957	5959	5961	5963	5965	5967	5969	5971	5973
448.7	5975	5977	5979	5981	5983	5985	5987	5989	5991	5993
448.8	5995	5997	5999	6001	6003	6005	6007	6009	6011	6013
448.9	6015	6017	6019	6021	6023	6025	6027	6029	6031	6033
449.0	6035	6037	6039	6041	6043	6045	6047	6049	6051	6053
449.1	6055	6057	6059	6061	6063	6065	6067	6069	6071	6073
449.2	6075	6078	6080	6082	6084	6086	6088	6090	6092	6094
449.3	6096	6098	6100	6102	6105	6107	6109	6111	6113	6115
449.4	6117	6119	6121	6123	6125	6127	6129	6131	6133	6135
449.5	6137	6139	6142	6143	6146	6148	6150	6152	6153	6156
449.6	6157	6159	6161	6163	6165	6167	6169	6171	6173	6175
449.7	6177	6179	6181	6183	6185	6187	6189	6191	6193	6195
449.8	6197	6199	6201	6203	6205	6207	6209	6211	6213	6215
449.9	6217	6219	6221	6223	6225	6227	6229	6231	6233	6235
450.0	6237	6239	6241	6243	6245	6247	6249	6251	6254	6256
450.1	6258	6260	6262	6264	6266	6268	6270	6272	6274	6276
450.2	6278	6280	6282	6284	6285	6287	6289	6291	6293	6295
450.3	6297	6298	6300	6302	6304	6306	6308	6310	6311	6313
450.4	6315	6317	6319	6321	6323	6324	6326	6328	6330	6332
450.5	6334	6336	6338	6340	6342	6343	6345	6347	6349	6351
450.6	6353	6355	6357	6358	6360	6362	6364	6366	6368	6370
450.7	6372	6373	6375	6377	6379	6381	6383	6385	6386	6388
450.8	6390	6392	6394	6396	6397	6399	6401	6403	6405	6407
450.9	6408	6410	6412	6414	6416	6418	6419	6421	6423	6425
451.0	6427	6429	6431	6432	6434	6436	6438	6440	6442	6444
451.1	6446	6447	6449	6451	6453	6455	6457	6459	6461	6462
451.2	6464	6466	6468	6470	6472	6474	6476	6478	6479	6481
451.3	6483	6485	6487	6489	6491	6493	6494	6496	6498	6500
451.4	6502	6504	6506	6507	6509	6511	6513	6515	6517	6519
451.5	6520	6522	6524	6526	6528	6530	6532	6534	6535	6537
451.6	6539	6541	6543	6545	6547	6549	6551	6552	6554	6556
451.7	6558	6560	6562	6564	6566	6568	6570	6572	6574	6576
451.8	6578	6580	6582	6584	6586	6587	6590	6591	6593	6595
451.9	6597	6599	6601	6603	6605	6607	6609	6611	6613	6614
452.0	6616	6618	6620	6622	6624	6626	6628	6630	6632	6634
452.1	6636	6637	6640	6642	6644	6646	6648	6650	6652	6654
452.2	6656	6658	6660	6662	6664	6666	6668	6670	6672	6674
452.3	6676	6678	6681	6683	6685	6687	6689	6691	6693	6695
452.4	6697	6699	6701	6704	6706	6708	6711	6713	6715	6717
452.5	6720	6722	6724	6727	6729	6732	6735	6737	6739	6742
452.6	6744	6746	6752	6753	6755	6758	6760	6762	6764	6766
452.7	6768	6771	6773	6775	6777	6789	6791	6792	6794	6795
452.8	6797	6799	6800	6802	6803	6805	6806	6808	6809	6811
452.9	6812	6814	6815	6817	6818	6820	6821	6823	6824	6826
453.0	6827	6828	6830	6831	6833	6834	6836	6837	6838	6840
453.1	6841	6843	6844	6846	6847	6848	6850	6851	6853	6854
453.2	6856	6857	6858	6860	6861	6863	6864	6866	6867	6868
453.3	6870	6871	6873	6874	6875	6877	6878	6880	6881	6883
453.4	6884	6885	6887	6888	6890	6891	6893	6894	6895	6897

Waco Lake January 1995 Survey

ELEV. FEET	AREA IN ACRES									
	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
453.5	6898	6899	6901	6902	6904	6905	6907	6908	6909	6911
453.6	6912	6914	6915	6917	6918	6919	6921	6922	6924	6925
453.7	6926	6928	6929	6930	6932	6933	6935	6936	6938	6939
453.8	6940	6942	6943	6945	6946	6947	6949	6950	6952	6953
453.9	6954	6956	6957	6959	6960	6961	6963	6964	6965	6967
454.0	6968	6970	6971	6972	6974	6975	6977	6978	6979	6981
454.1	6982	6984	6985	6986	6988	6989	6990	6992	6993	6995
454.2	6996	6997	6999	7000	7001	7003	7004	7006	7007	7008
454.3	7010	7011	7012	7014	7015	7017	7018	7019	7021	7022
454.4	7023	7025	7026	7028	7029	7030	7032	7033	7034	7036
454.5	7037	7039	7040	7041	7043	7044	7045	7047	7048	7049
454.6	7051	7052	7054	7055	7056	7058	7059	7060	7062	7063
454.7	7064	7066	7067	7068	7070	7071	7073	7074	7075	7077
454.8	7078	7079	7081	7082	7083	7085	7086	7087	7089	7090
454.9	7091	7093	7094	7095	7097	7098	7100	7101	7102	7104
455.0	7194									

APPENDIX D - ARE V-ELEVATION-CAPACITY GRAPH

FIGURE 1
WACO LAKE
Location Map

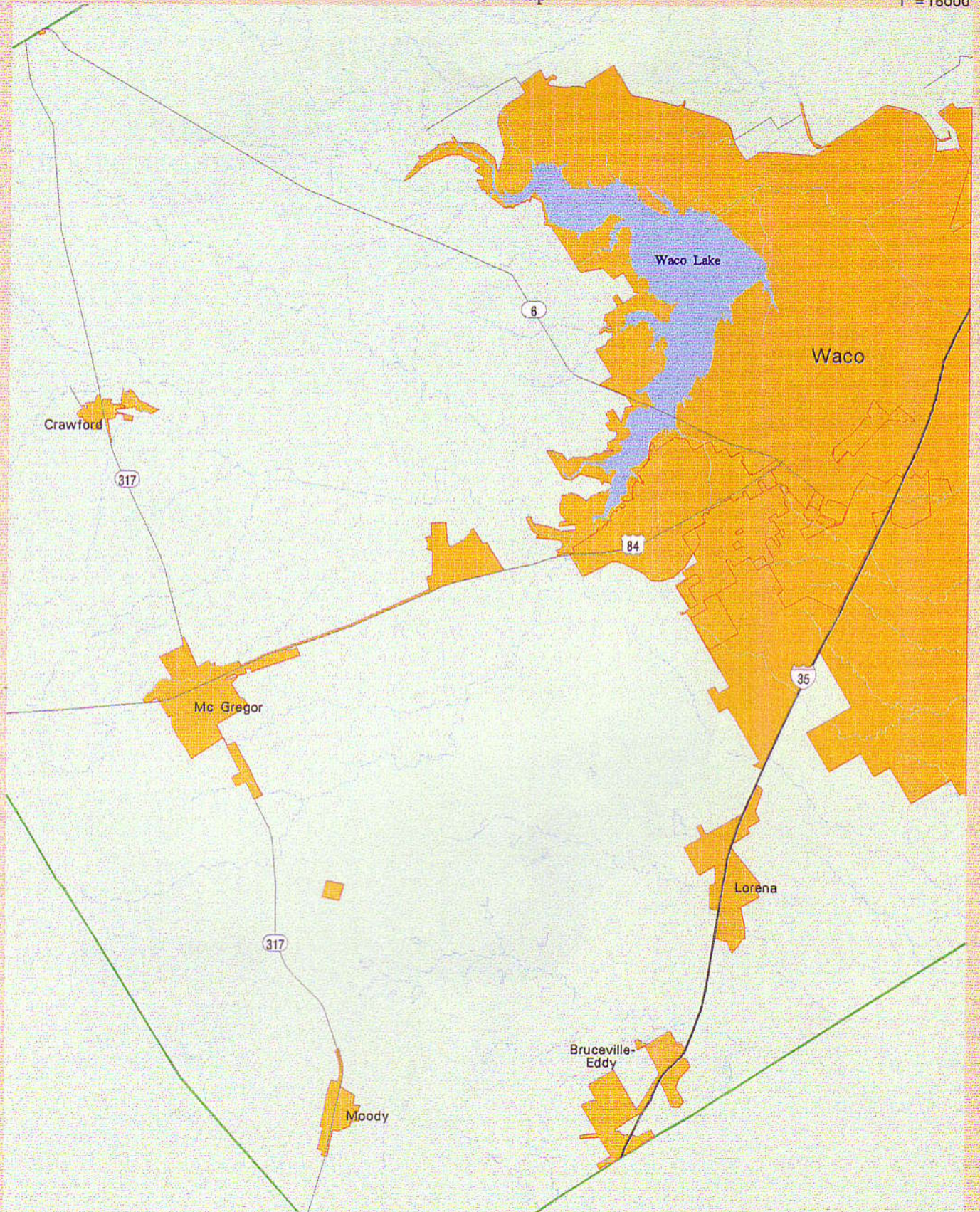


SURFACE AREA CAPACITY
—●— -*-

WACO LAKE
JANUARY 1995 SURVEY
Prepared by: TWDB March 1995

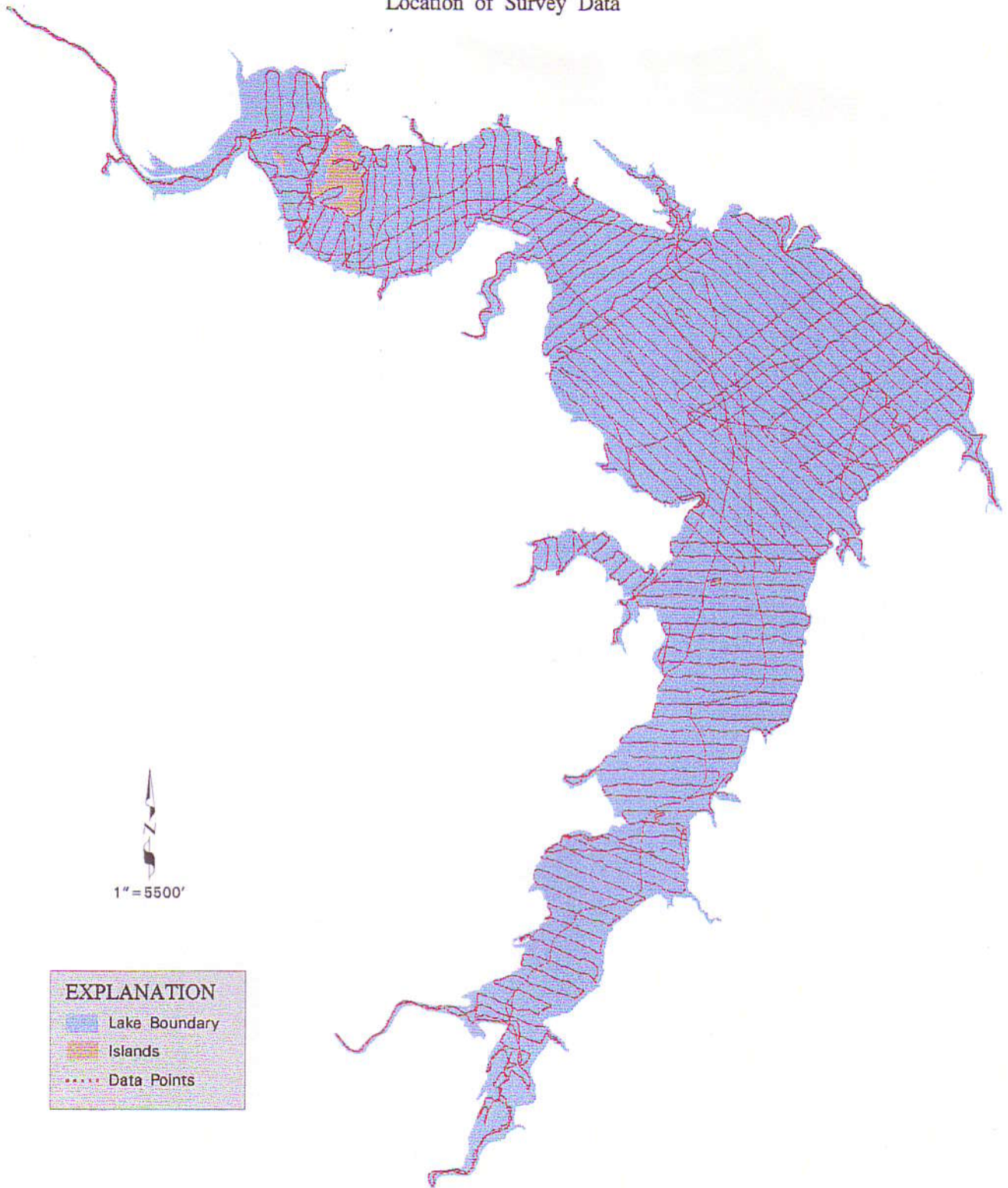
FIGURE 1
WACO LAKE
Location Map

1" = 16000'



PREPARED BY: TWDB MARCH 1995

FIGURE 2
WACO LAKE
Location of Survey Data

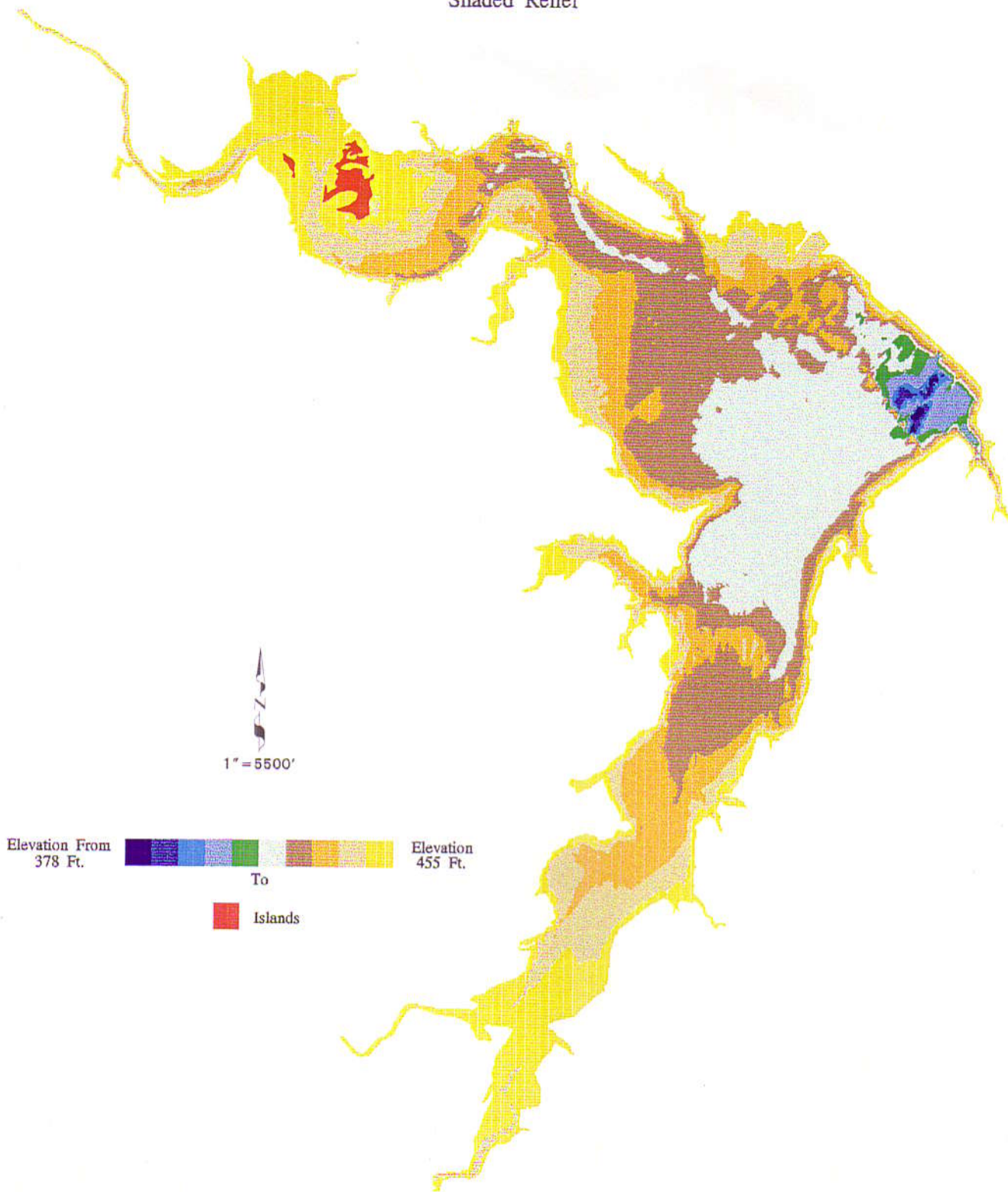


PREPARED BY: TWDB MARCH 1995

FIGURE 3
WACO LAKE
Location of Survey Control Point #G900-1Q

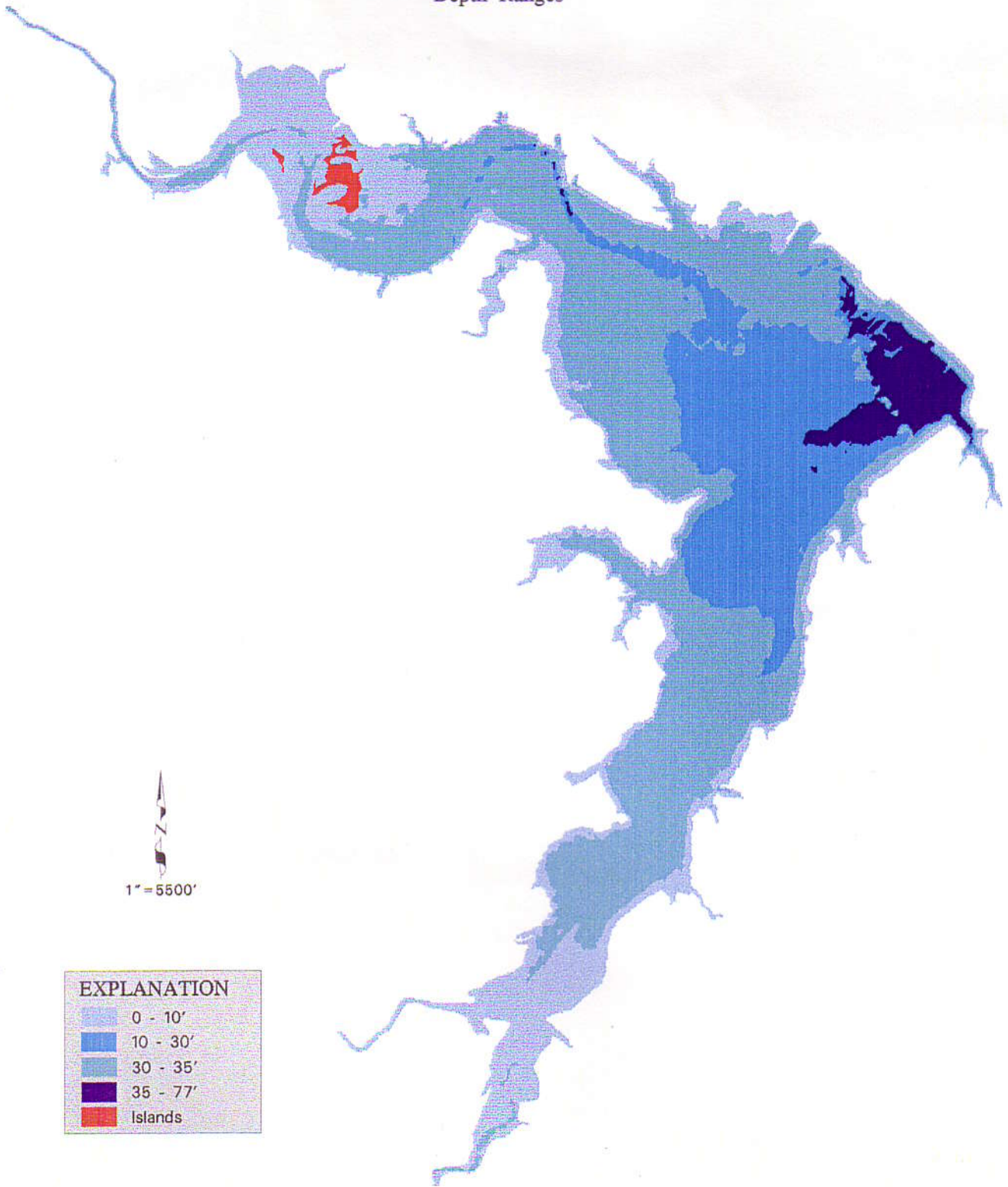


FIGURE 4
WACO LAKE
Shaded Relief



PREPARED BY: TWDB MARCH 1995

FIGURE 5
WACO LAKE
Depth Ranges



PREPARED BY: TWDB MARCH 1995