

**Report to Congress for Future Water Resources Development (WRRDA 7001) Submission
Package**

Proposal Name: Reallocation Study of Whitney Lake

Submission Date: 08/27/2019

Proposal ID Number: 2913d649-b5de-49f8-9d26-e4fed1cd3534

Purpose of Proposal: Whitney Lake is a multipurpose dam and reservoir operated primarily for flood control and hydroelectric power development. Additional project purposes include water supply, recreation, and fish and wildlife habitat. The purpose of the proposed reallocation study of Whitney Lake is to evaluate potential modifications to the Lake to meet present and future water needs. Population growth, industrial development, and decreasing groundwater availability are creating the need for additional water supply development within the Brazos River basin. Whitney Lake storage allocations and plan of operation, which support the demand for flood risk management, energy, and water supply, have not been evaluated since the early 1970's. A reevaluation directed toward optimizing the use of storage in Whitney Lake for maximum benefit to the nation is needed. The Brazos River Authority has been working with the US Army Corps of Engineers Fort Worth District Office to initiate this study effort for the last five to ten years. However, no progress has been made. Most recently, a contributed funds package was prepared and submitted for approval to allow the Brazos River Authority to fund the entire study effort, but as of August 2019, it is questionable as to whether that request will be approved. Therefore, additional or new authorization is needed so that this critical study effort may proceed.

1. Administrative Details

Proposal Name: Reallocation Study of Whitney Lake

by Agency: Brazos River Authority

Locations: TX

POC Name:

POC Phone:

POC Email:

Date Submitted: 08/27/2019

Confirmation Number: 2913d649-b5de-49f8-9d26-e4fed1cd3534

Supporting Documents

File Name	Date Uploaded
Map for Aug 2019 7001 Proposal.pdf	08/27/2019
Initial Appraisal Report Whitney Reservoir-23DEC2014.pdf	08/27/2019
013-06-13, USACE, Colonel Klinge, Lake Whitney Reallocation, SSS 3143.pdf	08/27/2019
2015-06-09 FW USCOE Colonel Craig Lake Whitney Reallocation Study SS .pdf	08/27/2019
BRA Letter of Intent April 2016.pdf	08/27/2019
Reallocation Letter of Intent May 2017.docx.pdf	08/27/2019
Whitney Lake Reallocation Study - Sponsor Letter Aug 2018.pdf	08/27/2019
GHP Public Comment-Sec. 7001-Lake Whitney.pdf	08/27/2019

2. Provide the name of the primary sponsor and all non-Federal interests that have contributed or are expected to contribute toward the non-Federal share of the proposed feasibility study or modification.

Sponsor	Letter of Support
Brazos River Authority(Primary)	The Brazos River Authority has been actively coordinating with the US Army Corps of Engineers and pursuing this study effort for the last five to ten years. The study effort is supported by the Greater Houston Partnership, the Gulf Coast Water Authority, the Dow Chemical Company, and other Brazos basin water supply interests.

3. State if this proposal is for new feasibility study authority, a modification to an existing feasibility study authority, a modification to an existing USACE project authority, or a modification to an existing USACE Environmental Infrastructure Program authority. If it is a proposal for a modification to an existing study, project or program authority, provide the authorized water resources development feasibility study or project name.

New Feasibility Study Authority

4. Clearly articulate the specific project purpose(s) of the proposed study or modification. Demonstrate that the proposal is related to USACE mission and authorities and specifically address why additional or new authorization is needed.

Whitney Lake is a multipurpose dam and reservoir operated primarily for flood control and hydroelectric power development. Additional project purposes include water supply, recreation, and fish and wildlife habitat. The purpose of the proposed reallocation study of Whitney Lake is to evaluate potential modifications to the Lake to meet present and future water needs. Population growth, industrial development, and decreasing groundwater availability are creating the need for additional water supply development within the Brazos River basin. Whitney Lake storage allocations and plan of operation, which support the demand for flood risk management, energy, and water supply, have not been evaluated since the early 1970's. A reevaluation directed toward optimizing the use of storage in Whitney Lake for maximum benefit to the nation is needed. The Brazos River Authority has been working with the US Army Corps of Engineers Fort Worth District Office to initiate this study effort for the last five to ten years. However, no progress has been made. Most recently, a contributed funds package was prepared and submitted for approval to allow the Brazos River Authority to fund the entire study effort, but as of August 2019, it is questionable as to whether that request will be approved. Therefore, additional or new authorization is needed so that this critical study effort may proceed.

5. To the extent practicable, provide an estimate of the total cost, and the Federal and non-Federal share of those costs, of the proposed study and, separately, an estimate of the cost of construction or modification.

	Federal	Non-Federal	Total
Study	\$0	\$3,000,000	\$3,000,000
Construction	\$0	\$90,000,000	\$90,000,000

Explanation (if necessary)

Discussions to date with the US Army Corps of Engineers regarding this study effort have assumed the US Army Corps of Engineers' "SMART" Planning and compliance with the 3x3x3 rule, which means the study will be completed in a targeted goal of 18 months, but no more than three years; cost no greater than \$3,000,000; and be implemented at three levels of vertical coordination (District, Division, and Headquarters US ACE). The Brazos River Authority is prepared to fully fund the study effort. Due to the wide range of potential study outcomes, it is impossible to accurately estimate the cost of construction or modification prior to the study effort. For this proposal, the total project cost from the 2016 Brazos G Regional Water Plan was used. Of the roughly \$90 million estimate, approximately \$76 million is for lost hydropower benefits.

6. To the extent practicable, describe the anticipated monetary and nonmonetary benefits of the proposal including benefits to the protection of human life and property; improvement to transportation; the national economy; the environment; or the national security interests of the United States.

Increased water supply resulting from a storage reallocation at Whitney Lake is expected to have substantial benefits to the Brazos River basin, the State of Texas, and the United States. The 2017 Texas State Water Plan (SWP) projects the population of Texas to increase more than 70 percent between 2020 and 2070. Some of the fastest growing areas of the State are located within the Brazos River basin, such as Fort Bend County just south of Houston, through which the Brazos River flows. Some of these areas are also having to reduce their use of groundwater due to land subsidence. Additionally, many industrial facilities along the Texas Gulf Coast that are critical to the Texas and national economies are supplied with water from the Brazos River and upstream reservoirs, including Whitney Lake. The SWP estimates that annual economic losses resulting from water shortages if the plan is not implemented would range from approximately \$73 billion in 2020 to \$151 billion in 2070. Additional water supply from reallocation at Whitney Lake could provide a substantial new supply of water. There is also potential opportunity for greater synergy between hydroelectric power generation and water supply operations at Whitney Lake in the future. It could also result in environmental benefits by providing additional water flowing downstream in the river during critical drought periods as well as off-setting negative environmental impacts of more intrusive water supply projects that may otherwise be required.

7. Does local support exist? If 'Yes', describe the local support for the proposal.

Yes

Local Support Description

Yes, there is local support for the proposal. The study effort is supported by the Greater Houston Partnership, the Gulf Coast Water Authority, the Dow Chemical Company, and other Brazos basin water supply interests.

8. Does the primary sponsor named in (2.) above have the financial ability to provide for the required cost share?

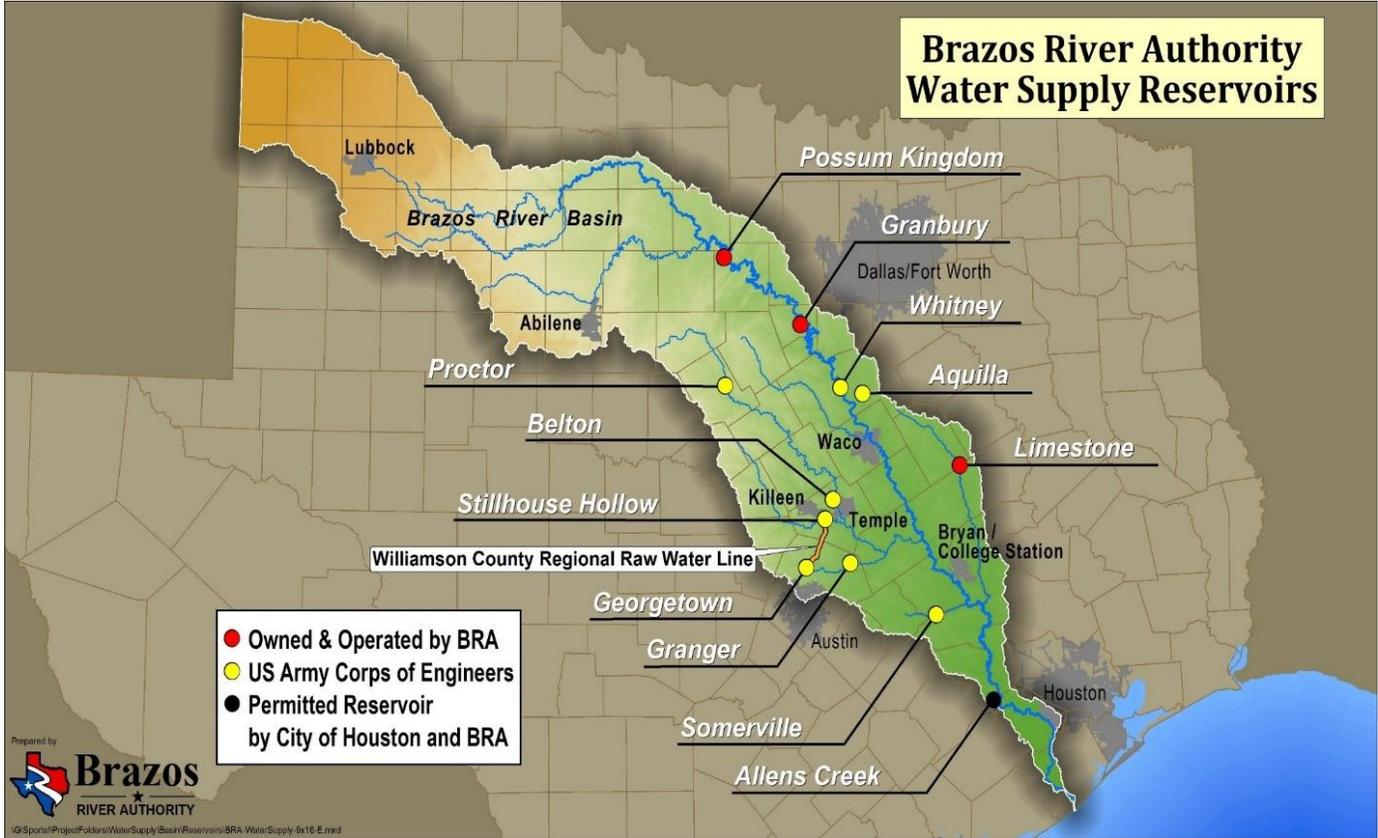
Yes

Map Document

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Map for Aug 2019 7001 Proposal.pdf

Brazos River Authority Water Supply Reservoirs



Additional Proposal Information

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Initial Appraisal Report Whitney Reservoir_23DEC2014.pdf



**US Army Corps
of Engineers®**
Fort Worth District

WHITNEY RESERVOIR

Brazos River, Texas

SECTION 216 INITIAL APPRAISAL REPORT

DECEMBER 22, 2014

TABLE OF CONTENTS

List of Figures	iii
List of Tables	iii
Executive summary	iv
1.0 Purpose	1
2.0 Initial Appraisal Authority	1
3.0 Project Location and Authorizations	1
3.1. <i>Project Location</i>	1
3.2. <i>Project Authorizations</i>	2
4.0 Prior Studies, Reports and Existing Water Projects.....	4
4.1. <i>House Document 390, District Engineer Report, 1939 & Definite Project Report on Whitney Reservoir, Brazos River, Texas, 1945</i>	4
4.2. <i>Whitney Dam and Reservoir – Raising Power Pool</i>	4
4.3. <i>Whitney Lake Revised Master Plan, 1972</i>	5
4.4. <i>USACE Brazos River Master Regulation Manual & Whitney Lake Reservoir Regulation Manual, 1972 & 1974</i>	5
4.5. <i>Brazos River Basin Systems Assessment Interim Feasibility Study, Phase I, July 2008</i>	5
4.6. <i>2011 Brazos G and H Regional Water Plan</i>	5
4.7. <i>Other Related Brazos River Water Projects</i>	6
5.0 Project Description & Reservoir Regulation	7
5.1. <i>Reservoir Project Description</i>	8
5.2. <i>Regulation of Conservation Storage</i>	9
5.3. <i>Regulation of Flood Control Storage</i>	10
5.4. <i>Recreation & Fish and Wildlife</i>	10
6.0 Preliminary Plan Formulation	11
6.1. <i>Study Area</i>	11
6.2. <i>Problems and Opportunities</i>	11
6.3. <i>Preliminary Array of Alternatives</i>	18
7.0 Environmental Setting	19
7.1. <i>Land Use Classification/Topography/Soils</i>	20
7.2. <i>General Vegetative Description</i>	21
7.3. <i>Species of Concern</i>	22
7.4. <i>Other Wildlife Resources</i>	23
7.5. <i>Fishery Management</i>	23
7.6. <i>Water and Air Quality</i>	24

7.7. *Cultural Resources*..... 24
7.8. *Recreation Resources* 24
7.9. *Socioeconomic*..... 26
7.10. *Dam Safety* 26
8.0 Federal Interest..... 27
9.0 Potential Sponsor..... 26
10.0 Feasibility Study & Next Steps 27
11.0 Views of the Public and Resource Agencies 28
12.0 Conclusion..... 28
13.0 Recommendation..... 28

LIST OF FIGURES

Figure 1. Whitney Lake	2
Figure 2. Reservoirs within the Brazos River Basin.....	7
Figure 3. Region G Planning Area	13
Figure 4. Comparison of Supplies and Demands for Brazos G Region	14
Figure 5. Region H Planning Area.....	15
Figure 6. Whitney Lake Overview	20
Figure 7. Parks located at Whitney Lake.....	25

LIST OF TABLES

Table 1. Brazos River Water Projects.....	6
Table 2. Whitney Reservoir Storage Capacities	8
Table 3. Region H Water Demand Projections (ac-ft/yr).....	15
Table 4. Surface Water Supplies Available for 2010, 2030, and 2030 (ac-ft/yr)	16
Table 5. Region H Projected Shortages (ac-ft/yr)	16
Table 6. Threatened, Endangered or Candidate Species in Hill County	22
Table 7. Preliminary Assessment of Federal Interest at Whitney Reservoir	25

EXECUTIVE SUMMARY

This initial appraisal report supports the decision to develop a Project Management Plan (PMP) and Feasibility Cost Share Agreement (FCSA) for a feasibility study to investigate potential changes to the structure or operation and/or reallocation for water supply or other purposes at the Whitney Reservoir Project. The Brazos River Authority (BRA) has indicated their interest in proceeding to a FCSA for a feasibility study at the Whitney Reservoir Project. Before a FCSA is signed between the U.S. Army Corps of Engineers (USACE) and the BRA, a PMP would be developed to outline the scope, schedule and cost for the feasibility study. The purpose of the Whitney Lake feasibility study would be for the Fort Worth District, in partnership with the local non-Federal sponsor, to make a recommendation to higher USACE decision makers, and if necessary to the U.S. Congress for authorization on the advisability of modification to the existing federal project (Whitney Reservoir Project).

The Whitney Reservoir Project storage allocations and plan of operation, which support the demand for flood risk management, energy and water supply, have not been evaluated since the early 1970's. A reevaluation directed toward optimizing the use of storage for maximum benefit to the nation warrants further investigation in a feasibility study. Preliminary plan formulation has been performed in this initial appraisal to support moving forward to a feasibility study. This included identifying problems and opportunities at the Whitney Reservoir Project that were developed based on a preliminary review of the existing and future conditions in the study area detailed in this initial appraisal report. The problem and opportunity statements would be further developed in the study process. The primary concern is addressing authorized purposes of water supply, hydropower and flood risk. Other purposes include recreation and fish and wildlife resources.

Problems

- Brazos River Regions G and H are projected to experience increasing water shortages through 2060.
- Fluctuation of water levels at the Whitney Reservoir Project due to operations (or natural conditions) generally does not benefit recreation and environmental resources.

Opportunities

- USACE could analyze alternative plans for the Whitney Reservoir Project for purposes of assuring optimal operation in the interest of all authorized project purposes.
- USACE could analyze alternative drought management plans for the Whitney Reservoir Project.

Without the feasibility study, there will be no changes to the existing management of the Whitney Reservoir Project and problems related to water supply, hydropower generation, flood

risk, environmental and recreation will prevail and opportunities would go unrealized. The feasibility study will identify the most effective use of the Whitney Reservoir Project under conditions today, including the potential recommendation to change operation and uses of the reservoir storage. The following measures listed below offer possible ways to modify the operation of the Whitney Reservoir Project to address the problems or opportunities in the basin since the construction of the project. In this initial appraisal, the measures are listed without detail regarding potential impacts, costs or benefits. They are titled measures but could become stand-alone alternatives or combined into alternatives in the future study. The sources of the measures developed to date include previous investigations, conversations with stakeholders, the USACE Water Supply Manual and professional judgment. The measures/alternatives identified in this initial appraisal for future consideration in a feasibility study are:

- Measure #1 – Reallocation of various amounts of flood storage to conservation storage;
- Measure #2 – Change existing storage allocations within the Conservation Pool to optimize the balance between hydropower and water supply storage;
- Measure #3 – Reallocation of some amount of the current power head reserve (below elevation 520) to water supply and/or hydropower storage or dead pool;
- Measure #4 – Develop a Drought Management Plan;
- Measure #5 – Implement ecosystem restoration measures;
- Measure #6 – Seasonal use of flood control space during dry seasons;
- Measure #7 – Modification of reservoir water control plans and method of regulation;
- Measure #8 – Raising the dam; and,
- Measure #9 – Change in system regulation of Corps and non-Corps reservoirs.

These measures/alternatives are not an all-inclusive list, and have not gone through any screening in this initial appraisal, since initial screening would be performed early in the planning process using SMART Planning principles. Dam safety is a top priority for decision-making when considering modifications to the structure or operation of a USACE reservoir. Additional detail of the measures is provided in the main body of this initial appraisal. Other potential measures may be added during the course of future studies.

In summary, this initial appraisal report supports the decision to develop a Project Management Plan (PMP) and Feasibility Cost Share Agreement (FCSA) for a feasibility study at the Whitney Reservoir Project. The PMP would identify studies to establish baseline conditions for environmental, recreation, economic and hydrologic and hydraulic conditions. This would be for National Environmental Policy Act (NEPA) compliance, and analysis to determine impacts and benefits for all authorized purposes under the various measures/alternatives. The PMP will

identify requirements for complying with NEPA, as well as for maintaining the safety of the existing federal project per Engineering Regulation 1110-2-1156. Studies will be required establish baseline conditions for flood risk management, environmental, hydropower, recreation, economic and loading conditions in order to evaluate the potential impacts to authorized purposes and/or benefits associated with each of the proposed measures/alternatives. The feasibility study will be implemented under “SMART” Planning. This effort would support the USACE Planning Modernization goal of completing high quality feasibility studies with shorter timeframes and lower costs.

INITIAL APPRAISAL REPORT WHITNEY RESERVOIR, BRAZOS RIVER, TEXAS

1.0 PURPOSE

This initial appraisal report was developed to support initiation of a feasibility study to evaluate potential modifications to the existing Whitney Reservoir Project (or Whitney Lake) to meet present and future water and related land resource needs. Recent estimates indicate an expectation of significant population growth, accompanied by an increased demand for water supply through 2060. Whitney Lake storage allocations and plan of operation, which support the demand for flood risk management, energy and water supply, have not been evaluated since the early 1970's. A reevaluation directed toward optimizing the use of storage in Whitney Lake for maximum benefit to the nation is thus being pursued.

Whitney Lake is a multipurpose dam and reservoir operated primarily for flood control and hydroelectric power development. Additional project purposes include water supply, recreation and fish and wildlife habitat. The federal interest for a project that modifies the existing Whitney Lake structure or operation cannot be fully determined at this initial appraisal stage. However, conditions at Whitney Lake as described in this report merits further examination in a feasibility study. A summary of federal interest to pursue a feasibility study is provided in Section 8.0. For purposes of this initial appraisal report, future work is expected to be performed in a feasibility study while a reallocation study for water supply would be a component of that study.

2.0 INITIAL APPRAISAL AUTHORITY

This initial appraisal report is prepared under Section 216 of the River and Harbor Act of 1970 (Public Law [P.L.] 91-611), as amended which states:

The Secretary of the Army, acting through the Chief of Engineers, is authorized to review the operation of projects the construction of which has been completed and which were constructed by the Corps of Engineers in the interest of navigation, flood control, water supply, and related purposes, when found advisable due to significantly changed physical or economic conditions, and to report thereon to Congress with recommendations on the advisability of modifying the structures or their operation, and for improving the quality of the environment in the overall public interest.

3.0 PROJECT LOCATION AND AUTHORIZATIONS

3.1. Project Location

Whitney Lake is located on the Brazos River (river mile 442.4) in Hill and Bosque Counties, Texas. The reservoir is approximately 38 river miles upstream from Waco, Texas, 19 miles southwest of Hillsboro and 81 miles by highway southwest from Dallas, Texas. The closest

municipality is Whitney, Texas. See Figure 1 for a Whitney Lake Map. The drainage area controlled by the dam is approximately 17,660 square miles of contributing drainage and 8,950 square miles non-contributing. The Brazos River Basin upstream of Whitney Dam extends northwest across a generally semi-arid region of Texas to its headwaters just across the Texas-New Mexico state line. The Brazos River flows to the Gulf of Mexico, with the mouth located near Freeport, Texas. Whitney Lake lies in the jurisdiction of the 25th Congressional District of Texas with Representative Roger Williams. Current U.S. Senators from Texas are John Cornyn and Ted Cruz.

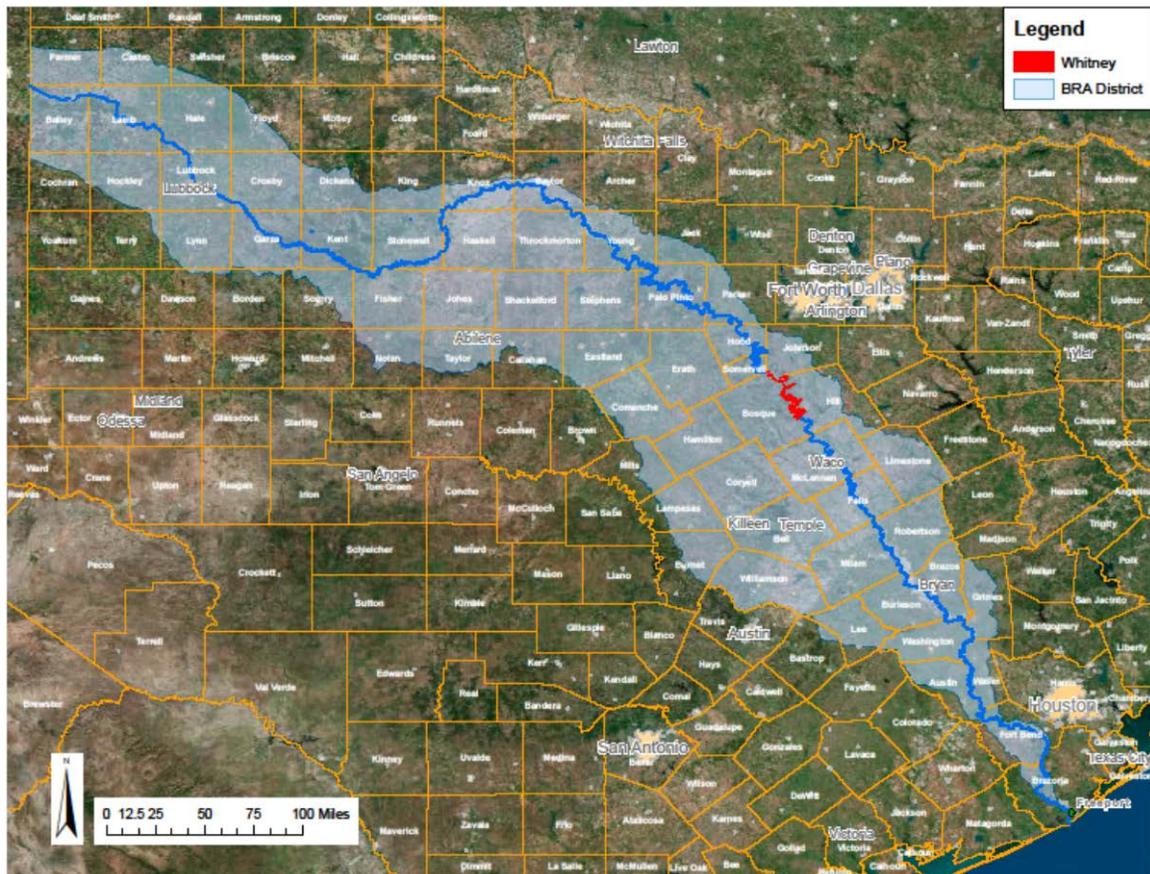


Figure 1. Whitney Lake

3.2. Project Authorizations

Congressional authority for construction of the Whitney Reservoir Project for flood control and other purposes is contained in the Flood Control Act approved August 18, 1941 (P.L. 77-228). The pertinent part of which reads as follows:

Section 3. That the following works of improvement for the benefit of navigation and the control of destructive flood waters and other purposes are hereby adopted and authorized in the interest of national security and the stabilization of employment, and shall be prosecuted as speedily as may be consistently with budgetary requirement, under the direction of the Secretary of War and the supervision of the Chief of Engineers in accordance with the plans in their respective reports hereinafter designated and subject to the conditions set forth therein: Provided, that penstocks or other similar facilities adapted to possible future use in the development of hydroelectric power shall be installed in any dam herein authorized when approved by the Secretary of War upon the recommendation of the Chief of Engineers and of the Federal Power Commission:

The plan for Whitney Reservoir on the Brazos River in Texas, for flood control and other purposes in accordance with the recommendation of the Chief of Engineers in House Document Numbered 390, Seventy-sixth Congress, first session, is approved and there is hereby authorized \$5,000,000 for the initiation and partial accomplishment of the project.

In House Document 390, the Chief of Engineers recommended construction of the Whitney Reservoir Project on the Brazos River, Texas for the control of floods, the development of hydroelectric power, and for other beneficial uses, as outlined in the report of the District Engineer.

Completion of the Whitney Reservoir Project and power generation was authorized by the Flood Control Act of 1944 (P.L. 78-534), which reads in part as follows:

In addition to previous authorizations, there is hereby authorized the completion of Whitney Reservoir in accordance with the plan approved in the Act of August 18, 1941, for the Brazos River Basin, at an estimated cost of \$15,000,000.

The Southwestern Power Administration, which was created by the Secretary of the Interior in 1943, is designated as the agency to market available surplus electric power and energy, pursuant to Section 5 of the Flood Control Act of 1944 at Whitney Reservoir.

The project authorization was modified in the Social Security Act approved August 30, 1957 (P.L. 85-230) to make available 50,000 acre-feet (ac-ft) of storage for domestic and industrial use, which reads as follows:

To increase the storage capacity of the Whitney Dam and Reservoir and to make available fifty thousand acre-feet of water from the reservoir for domestic and industrial use.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled. That the Whitney Reservoir project approved by the Flood Control Act approved August 18, 1941, is hereby modified to authorize the Secretary of the Army, acting

through the Chief of Engineers, to allocate fifty thousand acre-feet of water supply storage in Whitney Reservoir, Texas, in such manner as to provide the best overall use of the project.

SEC. 2. The Secretary of the Army, acting through the Chief of Engineers, is authorized to enter into agreements with local interests for payment of the costs of the water supply storage, including annual operation and maintenance costs, based on an equitable cost allocation to be made by the Chief of Engineers: Provided, That the term of the contract shall not exceed the economic life of the project or fifty years, whichever is less. Approved August 30, 1957.

4.0 PRIOR STUDIES, REPORTS AND EXISTING WATER PROJECTS

The following reports were used in the development of this report. These reports were developed by the Corps, or local entities on Whitney Lake or the Brazos River Basin for a variety of water related purposes. This section provides a brief synopsis of the reports. The remainder of this initial appraisal contains additional information from these reports for purposes of explaining management, regulation or other pertinent topics related to Whitney Lake.

4.1. House Document 390, District Engineer Report, 1939 & Definite Project Report on Whitney Reservoir, Brazos River, Texas, 1945

House Document (HD) 390 contains the Chief of Engineers recommendation to construct the project outlined in the District Engineer report. The District report proposed a project for construction on the Brazos River near Whitney, Texas. The purposes include controlling floods and generating hydroelectric energy, improving facilities for recreation and wildlife conservation, and for other incidental beneficial purposes. The Definite Project Report (DPR), as revised in September 1945 and approved by the Chief of Engineers in 1946, contains the project plan for the Whitney Reservoir and was the basis for design of the Whitney Reservoir Project.

4.2. Whitney Dam and Reservoir – Raising Power Pool

Prior to 1972, Whitney Lake was operated with 10 feet of power drawdown storage between top of conservation/power pool elevation of 520.0 feet and top of dead pool/power head reserve elevation 510.0 feet. In 1972, the top of power pool was raised to elevation 533.0 feet, and the top of power head reserve was raised to elevation 520.0 feet. It was determined this set of elevations were most advantageous for project purposes. The raise in the power pool was the result of a specific study conducted by USACE to determine the most efficient way to operate for hydropower. A 1968 report is the primary document relating studies for raising the power pool. A 1970 supplement provides updated economic and cost allocation information.

4.3. Whitney Lake Revised Master Plan, 1972

A Master Plan was developed originally in 1952 to provide a comprehensive plan for effective conservation, protection, development, use, enhancement, and/or management of visitors, water, land, vegetation, and wildlife in the broad public interest. A Revised Master Plan was prepared for development and management of the resources at Whitney Lake in 1972 to obtain optimum utilization of the project area for public use and provide proper stewardship of the natural resources.

4.4. USACE Brazos River Master Regulation Manual & Whitney Lake Reservoir Regulation Manual, 1972 & 1974

The USACE Brazos River Master Regulation Manual provides documentation of the plans for regulation of the USACE reservoir projects in the basin. Specific reservoir regulations for all the individual projects were prepared. The Whitney Lake Reservoir Regulation Manual outlines the lake regulation organization and procedures for Whitney Lake.

4.5. Brazos River Basin Systems Assessment Interim Feasibility Study, Phase I, July 2008

This interim study identified water resource problems, needs and opportunities within the Brazos River Basin, with emphasis on USACE reservoirs (listed in Table 1 below), on the potential to develop alternatives to optimize a plan to meet local water supply needs in conjunction with the existing project purposes. Alternative reallocation amounts for each of the nine reservoir projects were identified for possible detailed analysis in a second study phase. To date, the Aquilla Lake has moved into the Phase II study effort.

4.6. 2011 Brazos G and H Regional Water Plan

The most recent State Water Plan for Texas was approved by the State in 2012. The 2011 Regional Water Plans are a component of the overall State Water Plan. The State of Texas owns the surface water resources of the State, and issues water rights to utilize surface water. The Brazos G Region comprises 37 Texas counties and Region H comprises all or part of 15 counties in the lower part of the Brazos River Basin (See figures in Section 6.0). The purpose of the water plans was to identify water needs in the area, whether existing sources meet those needs, to identify shortfalls, and to identify potential new sources of water supply. The results of these reports are discussed further in Section 6.2, Problems and Opportunities. These reports help establish the need to analyze Whitney Lake in a feasibility study from a water supply perspective.

4.7. Other Related Brazos River Water Projects

Major Brazos River reservoir projects with which the Whitney Reservoir Project operations are coordinated for purposes of flood control and water supply are listed in Table 1 in downstream order. Whitney Lake is listed to show its position relative to the other projects. All reservoirs listed as “Federal” are part of the USACE Brazos River Reservoir System. See Figure 2 for a map showing the reservoir locations. The listing of reservoirs in Table 1 are those pertinent to operation of the Whitney Lake. There are 48 reservoirs, with capacities greater than 5,000 ac-ft, within the Brazos River Basin. Nine of the largest reservoirs, including Whitney Lake, are USACE reservoirs.

Table 1. Brazos River Water Projects

Project Name	Stream	Primary Purpose	Owner
Possum Kingdom Lake	Brazos River	Water Supply	State of Texas (Brazos River Authority)
Lake Granbury	Brazos River	Water Supply	State of Texas (Brazos River Authority)
Whitney Lake	Brazos River	Flood Control, Hydropower, and Water Supply	Federal
Aquilla Lake	Aquilla Creek	Flood Control and Water Supply	Federal
Waco Lake	Bosque River	Flood Control and Water Supply	Federal
Proctor Lake	Leon River	Flood Control and Water Supply	Federal
Belton Lake	Leon River	Flood Control and Water Supply	Federal
Stillhouse Hollow Lake	Lampasas River	Flood Control and Water Supply	Federal
Georgetown Lake	North Fork of San Gabriel River	Flood Control and Water Supply	Federal
Granger Lake	San Gabriel River	Flood Control and Water Supply	Federal
Somerville Lake	Yegua Creek	Flood Control and Water Supply	Federal
Lake Limestone	Navasota River	Water Supply	State of Texas (Brazos River Authority)

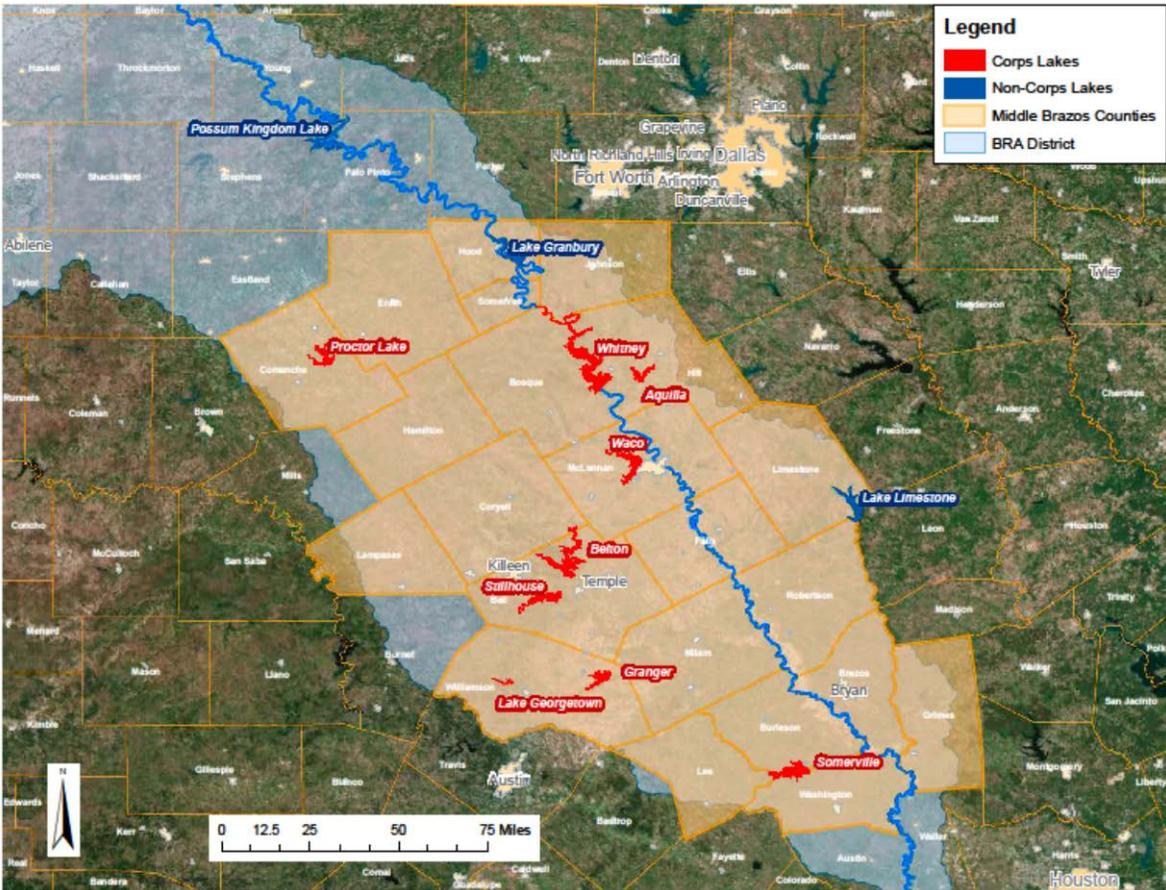


Figure 2. Reservoirs within the Brazos River Basin

5.0 PROJECT DESCRIPTION & RESERVOIR REGULATION

The Whitney Reservoir Project is a multipurpose dam and reservoir operated primarily for flood control and hydroelectric power development. Additional project purposes include water supply, recreation and fish and wildlife habitat. Whitney Lake is an integral part of a USACE nine-lake system of reservoirs that provide flood control on the Lower Brazos River and its tributaries. Whitney Lake’s strategic location on the main stem of the Brazos River provides for control of floods originating in the upper basin. Figure 2 includes the USACE nine-lake reservoir system. The three BRA water supply reservoirs are also featured in Figure 2. The following sections provide a description of the reservoir and its regulation.

5.1. Reservoir Project Description

Construction began on May 12, 1947, deliberate impoundment began December 10, 1951, and commercial hydropower operation began June 1, 1955. Whitney dam consists of a 1,674 foot-long concrete gravity section; 8,201 feet of rolled earth fill principal embankments; and 7,820 feet of earth fill dikes. Top of the concrete gravity section is at elevation 584.0 feet; top of the earthen embankments are at elevation 580 feet. Crest of the ogee spillway is at elevation 533.0 feet, and it is equipped with 17 each 40-foot wide by 38-foot high tainter gates. The flood control outlet works consist of 16 each 5-foot wide by 9-foot high conduits through the base of the concrete gravity section, all with invert elevation 448.83 feet. Each flood control conduit is equipped with a hydraulically operated slide gate. The power house is located just downstream from the right bank concrete abutment. Power intakes consist of two 16-foot-diameter steel penstocks with intake inverts at elevation 476.0. Flows through the penstocks are controlled by one 17-foot wide by 30-foot high gate in each penstock. The existing tainter gates were recently rehabilitated at the project. The Kopperl Levee was constructed as part of the original authorization in lieu of relocating the town of Kopperl, Texas. The levee is located approximately 21 miles upstream and is an appurtenant structure of the Whitney dam.

5.1.1 Reservoir Capacities

The storage capacity allocations of Whitney Lake are presented in Table 2. All elevations in the report are in the National Geodetic Vertical Datum (NGVD) of 1929.

Table 2. Whitney Reservoir Storage Capacities

Feature	Elevation [ft, NGVD]	Surface Area [ac]	Cumulative Storage Volume [ac-ft]	Incremental Storage Volume [ac-ft]
Top of Dam	580.0	--	--	--
Max Design Pool/ Top of Surcharge	573.0	51,190	2,027,700	100,900
Top of Flood Pool	571.0	49,820	1,926,800	1,372,600
Top of Conservation/ Power Pool	533.0	23,220	554,200	233,500
Top of Power Head Reserve	520.0	14,300	320,700	123,600
Top of Dead Pool/ Sediment Storage	510.0	10,160	197,100	197,100

Note: Values up to elevation 533.0 based on 2005 volumetric survey. Values above elevation 533.0 are from historic surveys.

5.2. Regulation of Conservation Storage

Conservation storage is regulated for hydropower generation and municipal and industrial water supply (M&I). The conservation pool lies between elevations 520.0 and 533.0 feet. The storage space below elevation 520.0 serves for power head reserve and sedimentation. Water above elevation 533.0 is released for flood risk management purposes in accordance with the reservoir regulation plan. Whitney Lake has no required minimum rate of release; however, approximately 25 cubic feet per second (cfs) passes downstream due to gate leakage.

Hydropower generated at Whitney Lake is marketed by the Southwestern Power Administration (an agency of the U.S. Department of Energy [SWPA]). Hydroelectric generating facilities were installed at Whitney Lake with a capacity of each of the two original turbines at 15 megawatts (MW). A turbine rehabilitation project is currently underway, with rehabilitation of one turbine completed and the second in progress. Capacity of each rehabilitated turbine is currently estimated to be approximately 22 MW, making total capacity 44 MW.

The United States Government entered into a contract with the Brazos River Authority (BRA), an agency for the State of Texas, for water storage space in Whitney Lake, June 3, 1982. The contract allows the BRA the right to utilize an undivided 22.017 percent (estimated to contain 50,000 ac-ft after adjustment for sediment deposits) of the usable storage space in Whitney Lake between elevations 520.0 feet above mean sea level and 533.0 feet above mean sea level, which usable conservation storage space is estimated to contain 227,100 ac-ft after adjustments for sediment deposits. The undivided 22.017 percent of the total usable storage space between elevations 520.0 and 533.0 is to be used to impound water for present demand or need for municipal and industrial water supply. The remaining percent of conservation storage space is 77.983 and is used for hydropower generation.

The BRA currently contracts for 50,000 ac-ft of storage for municipal and industrial (M&I) water supply between elevations 520.0 and 533.0 feet at Whitney Lake. From this storage, the BRA is allowed to divert and use 18,336 ac-ft per year (ac-ft/yr) for M&I purposes. This amount was determined to be the dependable yield related to a storage of 50,000 ac-ft during the water rights adjudication process in the 1980s. However, their authorization with the State of Texas allows them to exceed this amount through the BRA System Operation Order, with maximum diversions of 25,000 ac-ft/yr for municipal water supply and 25,000 ac-ft/yr for industrial purposes from Whitney Lake. All diversions beyond the 18,336 ac-ft/yr in any given year are charged against BRA priority rights in other reservoirs in the BRA system.

While the BRA is the only holder of M&I storage contracts with USACE, four other entities have contracts with BRA for water from this storage space. The City of Whitney (Hill County)

has a contract for 750 ac-ft/yr and the City of Cleburne (Johnson County) has a contract for 9,700 ac-ft/yr. However, neither of these municipalities have infrastructure in place to divert water from the reservoir. White Bluff has a contract for 1,000 ac-ft/yr for irrigation and a private entity has a contract of 60 ac-ft/yr, both of which have diversion points at the lake.

At the height of the drought of 2011, the single year drought of record in Texas, Whitney Lake receded to elevation 516.8 feet, being 3.2 feet below the bottom of the normal power pool (elevation 520.0). Elevation 520.0 feet is also the lower limit of the BRA's water supply storage space. During this drought period the State of Texas requested water supply releases from Whitney Lake for the primary purpose of supporting the needs of the downstream petro-chemical industry. Recognizing the critical need to support the water supply community during this period of record drought, USACE brought the major stakeholders together and agreed upon a hydropower generation schedule that also supported downstream water supply needs.

While this sensitive situation was amicably resolved to the satisfaction of all concerned, USACE does not have an emergency drought plan that would allow releases to meet water supply needs from Whitney Lake power head reserve storage space. Water supply needs from Whitney Lake are expected from downstream interests in the future without-project condition.

Currently, all withdrawals from Whitney Lake occur downstream of the reservoir, as there are no M&I water intakes on the reservoir itself. One of the BRA customers, Calpine Bosque Energy Center, a power plant just downstream of the dam, diverts water directly from the Brazos River. These diversions are typically charged to diversions from Whitney Lake or from one of the upstream BRA reservoirs, Lake Granbury or Possum Kingdom Lake.

5.3. Regulation of Flood Control Storage

The Whitney Reservoir Project is an integral part of the USACE Brazos River Reservoir System of nine projects which contribute to flood control on the Lower Brazos River. Whitney Lake is the most upstream of these flood control projects, and has more than twice the flood control storage space of the second largest project (Belton Lake). Located on the main stem of the Brazos River, Whitney Lake controls flood runoff from the upper 49% of the contributing drainage area of the Brazos River Basin. Releases from Whitney Lake are coordinated with releases from the other nine reservoirs, insofar as practicable, to maintain approximately the same amount of flood control storage space available at each project.

5.4. Recreation & Fish and Wildlife

USACE has developed recreation and fish and wildlife facilities at the Whitney Lake with the other established purposes for flood control and the conservation pool regulation. Water is not controlled at Whitney Lake for recreation and fish and wildlife. Recreation and fish and wildlife

are considered incidental benefits of operating the lake for the primary purposes of hydropower, flood control and water supply.

6.0 PRELIMINARY PLAN FORMULATION

6.1. Study Area

The study area would be refined in future study. The study area could encompass most of the Brazos River Basin (Figure 1) due to the potential impacts identified in this initial appraisal. The focal point for the study would be on Whitney Lake, and Brazos Region G and H, along the Brazos River.

6.2. Problems and Opportunities

This preliminary plan formulation section addresses the existing and future conditions in the study area and how those conditions may impact the project purposes. Changes in the existing and future conditions would be a consideration for reviewing project purposes and evaluating measures/alternatives to change the Whitney Reservoir Project and its operation. The following review of existing and future without project conditions provided a basis to develop problem and opportunity statements presented in Section 6.2.4, and subsequent development of preliminary measures/alternatives to address those problems and opportunities in Section 6.3.

6.2.1 Current Flood Risk Management and Hydropower Generation Purposes

The USACE Brazos River Reservoir System was built in part to address destructive flooding in the Brazos River Basin. Flood releases from all of the projects are coordinated on a system basis to furnish flood protection to the basin as a whole. Measured in September 2013 prices, damages prevented within the basin from 1953 to September 2013 equaled \$2,748,118,400. The portion attributable to Whitney Lake is \$958,087,600, which represents structural and agricultural damages prevented along the main stem of the Brazos River to its mouth at the Gulf of Mexico. As part of the original project purposes, Whitney Lake includes hydropower production which went online in 1955. The powerhouse contains two electric generating turbines. The installed capacity was 30,000 kilowatts with an estimated annual production of 73 million kilowatt hours (kWh). In 2012, the actual net energy generated was 24 million kWh. For 50 years, the Whitney powerhouse has been operating as a peaking plant providing electricity when system demand is approaching the capacity of the base load plants during peak times, with an average of 200 start-stops per unit per year. An average base loaded plant will have a range of five to ten start-stops per unit per year. Recently, the powerplant has been undergoing a \$23,000,000 major rehabilitation with new turbines being installed, which increase capacity by an additional 5-7 MW per turbine, providing a total 44 MW potential. It is expected the rehabilitation project will

make hydropower generation at Whitney Lake more efficient at current conservation pool operation.

Although a formal sedimentation study has not been conducted for Whitney Lake, comparison of results of the most recent (2005) volumetric survey of Whitney Lake to the 1959 re-survey indicates the experienced annual average rate of sedimentation over the intervening 46-year period has been about 1,600 ac-ft per year, about half the approximately 3,200 ac-ft per year anticipated in the original design (DPR of September 1945). Thus the design sedimentation storage allocation in Whitney Reservoir, originally estimated to suffice for about 80 years, may be expected to suffice for a significantly longer period of time. Aside from the inaccuracy inherent in estimating a long term rate of sedimentation, a part of the difference between the projected and the experienced rate of sedimentation in Whitney Lake may be attributable to the construction of Granbury Lake on the main stem of the Brazos River upstream of Whitney Lake as well as construction of several smaller reservoirs on Brazos River tributaries between Granbury Lake and Whitney Lake (see Figure 2 for location map). Impoundment of Granbury Lake began in September of 1969.

The project currently meets its flood risk management and hydropower purposes and is expected to meet its flood risk management and hydropower purposes in the future without-project condition. The project remains an integral part of the Brazos River Reservoir System. Sedimentation storage allocation in Whitney Lake is estimated to suffice for longer than the originally estimated 80 years in the future without-project condition.

6.2.2 Increased Water Demand

The following sections summarize the results of the Regional Water Plans for Region G and Region H. Whitney Lake is located on the Brazos River within the Brazos G Regional Water Planning Group area. Region G is one of 16 water planning areas set up by the Texas Water Development Board (TWDB). Region G encompasses all or portions of 37 counties. Whitney Lake, located in Hill County, is approximately at the center between the upstream and downstream extents of Region G, along the Brazos River.

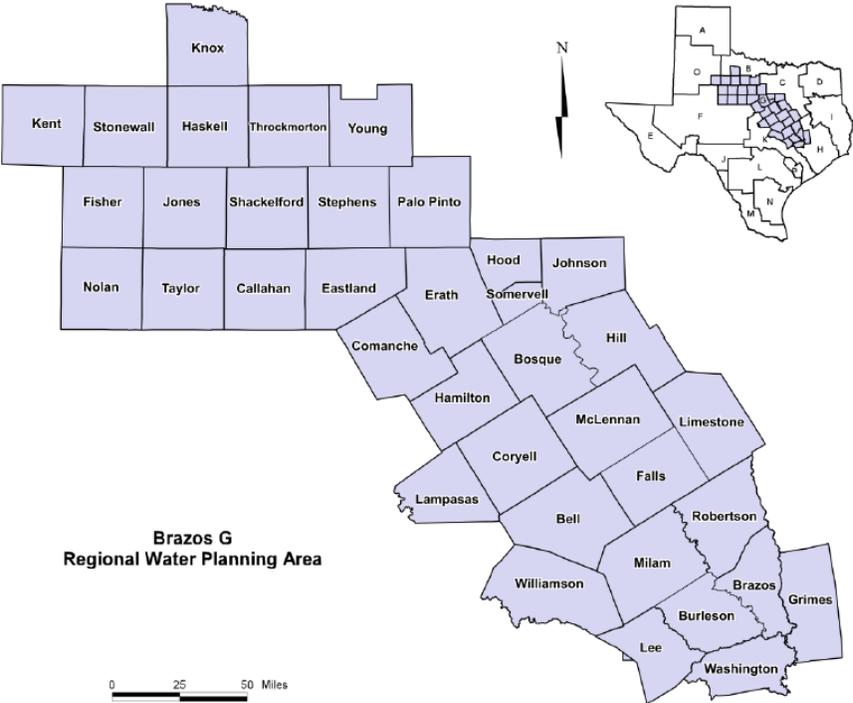


Figure 3. Region G Planning Area

For the entire region, total water use is projected to increase from 795,183 ac-ft in 2000 to 1,248,514 ac-ft in 2060, a 57% increase. Municipal water use is expected to be the source of the overall increase in water use. Manufacturing use is projected to remain constant, while mining, irrigation and livestock use are projected to decrease. By 2060, municipal water use in the region is projected to be 40% of total water supply, steam-electric power, 26%; irrigation, 17%; livestock, 4%, manufacturing and mining each 2%.

Projections for Region G show declining water supplies over the 2010-2060 planning period and increasing demands, with demand outstripping supplies by 2045. Because these are system wide projections, shortages for individual water supply entities will occur prior to 2045. Of the 37 counties in Region G, only eight have no projected shortages (Burleson, Comanche, Erath, Fisher, Hamilton, Stonewall, Washington, and Young). Shortages for water supply are expected to occur in the Brazos Region G in the future without-project condition.

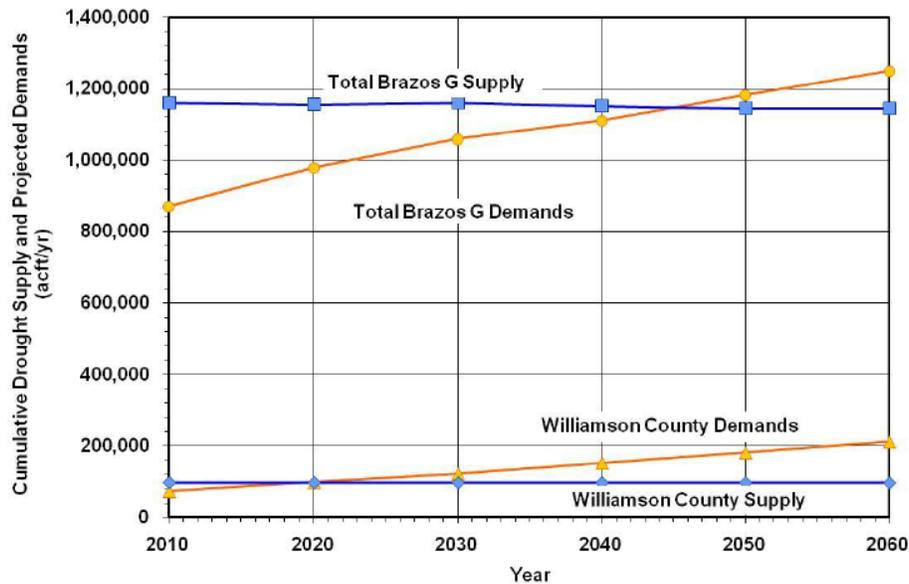


Figure 4. Comparison of Supplies and Demands for Brazos G Region

Source: This figure was provided by the Region G Water Plan; Williamson County is not intended to be specifically addressed in this initial appraisal.

Region H is comprised of all or part of fifteen counties and includes the majority of the San Jacinto River basin and the lower reaches of the Brazos and Trinity River basins. Region H is an economic powerhouse, with two thirds of the U.S. petrochemical production and almost one third of the nation's petroleum industries. The region, which includes the cities of Houston and Galveston, is generally characterized by urban land uses, with agricultural prominence outside of the urban core. The Brazos River passes through four of the region's counties: Austin County, Waller County, Fort Bend County, and Brazoria County before emptying into the Gulf of Mexico.



Figure 5. Region H Planning Area

The region’s (Region H) population is projected to grow from 6.0 million in 2010 to approximately 11.3 million in 2060. The region’s water demands are projected to increase from approximately 2.38 million ac-ft per year in 2010 to over 3.52 million ac-ft per year by 2060. Increases in demand are projected to come from municipal, manufacturing, steam-electric power generation, and mining, while demand from livestock uses is projected to remain constant and a decline for irrigation uses.

Total Regional H projected water demands are shown in Table 3:

Table 3. Region H Water Demand Projections (ac-ft/yr)

Use	2010	2020	2030	2040	2050	2060
Municipal	1,042,864	1,192,922	1,338,586	1,485,843	1,655,262	1,844,817
Manufacturing	722,873	783,835	836,897	886,668	927,860	950,102
Steam-Electric	91,231	112,334	131,332	154,491	182,720	217,132
Mining	57,043	60,782	63,053	65,285	67,051	69,457
Irrigation	450,175	438,257	433,686	430,930	463,930	430,930

Livestock	12,228	12,228	12,228	12,228	12,228	12,228
Total Water Use	2,376,414	2,600,348	2,815,482	3,035,445	3,276,501	3,524,666

Source: Region H Water Plan

Table 4. Surface Water Supplies Available for 2010, 2030, and 2060 (ac-ft/yr)

Source	2010	2030	2060
Neches River Basin ¹	63,863	63,946	64,177
Neches-Trinity Coastal Basin	21,754	21,754	21,754
Trinity River Basin	1,568,530	1,489,530	1,568,530
Trinity-San Jacinto Coastal Basin	34,313	34,313	34,313
San Jacinto River Basin	321,800	314,000	302,300
San Jacinto-Brazos Coastal Basin	33,051	33,051	33,051
Brazos River Basin ²	573,081	573,278	573,342
Brazos-Colorado Coastal Basin	12,019	12,019	12,019
Local Supplies, all basins ³	30,549	31,559	31,895
Total	2,658,960	2,573,490	3,641,381

Source: Region H Water Plan

¹ Supplies represent current allocations to Region H only. Supplies include 63,863 acre-ft per year of firm water currently contracted from upstream LNVA to Region H customers. Total LNVA supply is greater but may not be available to Region H.

² Supplies include 155,031 acre-ft per year of firm water currently contracted from upstream BRA system reservoirs to Region H customers. The total BRA supply is greater but is not available to Region H. The remaining Brazos River Basin supply is comprised of Lower Brazos Basin permits owned by Dow Chemical, GCWA, NRG, Brazosport Water Authority, and private irrigators.

³ Local supplies refer to stock ponds and similar supplies that meet localized demands, predominantly from livestock or mining activities.

Table 5 shows the projected shortages for Region H through 2060:

Table 5. Region H Projected Shortages (ac-ft/yr)

Use	2010	2020	2030	2040	2050	2060
Municipal	-55,151	-228,106	-360,236	-453,142	-579,269	-758,934
Irrigation	-151,380	-141,296	-138,035	-137,153	-140,773	-144,841
Manufacturing	-75,164	-131,531	-168,597	-202,219	-231,118	-255,604
Mining	-5,992	-10,595	-13,597	-16,278	-18,736	-20,984
Electric-Steam	-3,203	-12,609	-18,058	-24,726	-34,976	-55,972
Total	-290,890	-524,137	-698,776	-883,518	-1,004,872	-1,236,335

Source: Region H Water Plan

Region H contains a number of raw surface water conveyance systems (pipelines, canals, and pump stations), primarily located in the coastal basins to transfer water from the river. The Gulf Cost Water Authority (GCWA) system consists of three main canals that deliver water from the Brazos River to Fort Bend, Brazoria and Galveston Counties. Dow Chemical Company diverts water from the Brazos River into the Harris and Brazoria Reservoirs in Brazoria County.

6.2.3 Recreation and Fish & Wildlife

Approximately 13,500 acres of government-owned land surrounding Whitney Lake are dedicated as natural areas. Primarily used for flood storage, this land is also intended for low impact public use with a minimum of facilities provided. The impacts from high pool elevations due to flood storage would be expected to continue, and some vegetation including some larger trees due to prolonged inundation would be lost (in flooding conditions). Large mud flats start to become exposed at approximately elevation 525.0 feet and over time have started to grow significant amounts of salt cedar and some *willow bacharris*. This issue could be magnified due to longer periods of lower reservoir levels.

Lands surrounding Whitney Lake have multiple use designations for parks, hunting, and wildlife areas. Many recreation facilities including private floating boat slips and USACE boat ramps are impacted under reservoir water level fluctuations. Impacts are expected to continue to occur in the future without-project condition as lake levels fluctuate. Multiple facilities are directly dependent on water access to be usable.

In future studies, USACE will coordinate with state and federal agencies to identify potential measures to create National Ecosystem Restoration (NER) or Environmental Quality benefits, such as seasonal discharge pulsing as well as recommended pool levels and fluctuation to minimize impacts to habitat and protected species due to operation for primary purposes.

6.2.4 Preliminary Problem and Opportunity Statements

An overarching goal for the study would be to increase contribution to the National Economic Development Objective (NED), and the National Ecosystem Restoration (NER) Objective at the Whitney Reservoir Project in the Brazos River Reservoir System. The Whitney Reservoir Project storage allocations and plan of operation, which support the demand for flood risk management, energy and water supply, have not been evaluated since the early 1970's. A reevaluation directed toward optimizing the use of storage for maximum benefit to the nation warrants further investigation in a feasibility study. The following list presents problem and opportunity statements developed for the Whitney Reservoir Project in this preliminary plan formulation section based on the review of the existing and future conditions in the study area. Additional problems and opportunities could be identified in the next study phase. Goals, objectives and constraints, measurements and decision criteria would be developed in the next study phase.

Objectives (or constraints) have not been developed at this stage, but would likely center on mission areas of hydropower, flood control, water supply, recreation and fish and wildlife resources.

Problems

- Brazos River Regions G and H are projected to experience increasing water shortages through 2060.
- Fluctuation of water levels at the Whitney Reservoir Project due to operations (or natural conditions) generally does not benefit recreation and environmental resources.

Opportunities

- USACE could analyze alternative plans for the Whitney Reservoir Project for purposes of assuring optimal operation in the interest of all authorized project purposes.
- USACE could analyze alternative drought management plans for the Whitney Reservoir Project.

6.3. Preliminary Array of Alternatives

The following describes the potential alternatives to consider in the feasibility study. All potential alternatives will be evaluated against the “No Action Plan” in the future study. The No Action Plan is the future condition of the Whitney Reservoir Project without federal action. In other words, the No Action Plan is the continuation of the current management and operation of the lake as summarized in Section 5.0.

All alternatives begin by determining different measures which may be taken as a solution to the problem under study. A measure may become an alternative by itself or may be combined with another measure or several measures to become an alternative. The following measures listed below offer possible ways to modify the operation of the Whitney Reservoir Project to address the problems or opportunities in the basin since the construction of the project. In this initial appraisal, the measures are listed without detail regarding potential impacts, costs or benefits. The sources of the measures developed to date include previous investigations, conversations with stakeholders, the USACE Water Supply Manual and professional judgment. The measures identified in this initial appraisal for future consideration in a feasibility study are:

- Measure #1 – Reallocation of various amounts of flood storage to conservation storage;
- Measure #2 – Change existing storage allocations within the Conservation Pool to optimize the balance between hydropower and water supply storage;
- Measure #3 – Reallocation of some amount of the current power head reserve (below elevation 520) to water supply and/or hydropower storage or dead pool. This could

include the temporary use of storage allocated for future conservation purposes and sediment;

- Measure #4 – Develop a Drought Management Plan. This could include a more formalized way to address emergency water calls or provide general guides that allow for dynamic management of projects, or systems of projects, to address drought needs. It would be difficult to develop a detailed management plan due to the nature of the drought issue. It is expected water calls in the future during drought could be dealt with on a case by case basis;
- Measure #5 – Implement ecosystem restoration measures. Specific ecosystem restoration measures were not developed in this initial appraisal. In future studies, USACE will coordinate with state and federal agencies to identify potential measures to create NER or Environmental Quality benefits, such as seasonal discharge pulsing as well as recommended pool levels and fluctuation to minimize impacts to habitat and protected species due to operations for primary purposes;
- Measure #6 – Seasonal use of flood control space during dry seasons;
- Measure #7 – Modification of reservoir water control plans and method of regulation;
- Measure #8 – Raising the dam; and,
- Measure #9 – Change in system regulation of Corps and non-Corps reservoirs.

These measures are not an all inclusive list of measures. Other potential measures may be added during the course of future studies, and evaluated in accordance with Engineer Regulation 1105-2-100 and subsequent guidance.

In further studies, it is recommended that an assessment be completed to establish a baseline conditions for environmental, recreation, economic and hydrologic and hydraulic conditions. This would be for National Environmental Policy Act (NEPA) compliance, and determining NED and NER impacts and benefits for all authorized purposes. Whether the NEPA document would result in a Finding of No Significant Impact or require an Environmental Impact Statement would be further clarified in the initial phases of development of the PMP.

7.0 ENVIRONMENTAL SETTING

The environmental setting is described for the lands adjacent the Whitney Reservoir. Figure 6 presents an overview of the Whitney Reservoir Project. For a description of the environmental setting for the Brazos River Basin, see the Brazos System Assessment Phase I report.

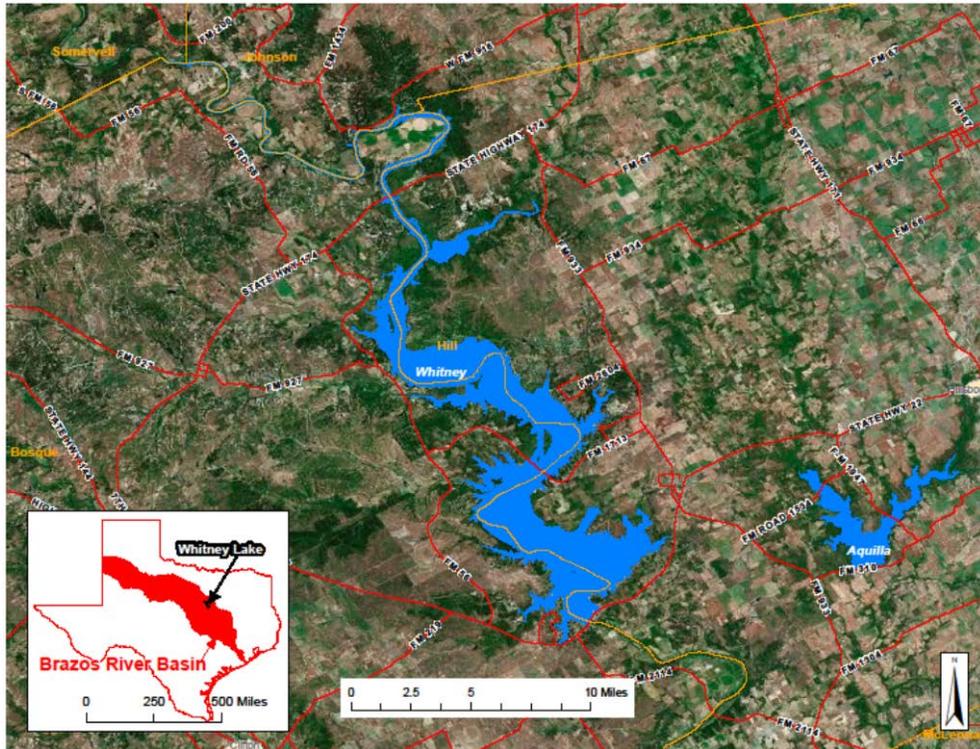


Figure 6. Whitney Lake Overview

7.1. Land Use Classification/Topography/Soils

Approximately 13,500 acres of government-owned land surrounding the lake are dedicated as natural areas. Primarily used for flood storage, this land is also intended for low impact public use with a minimum of facilities provided. Management of this resource is the responsibility of USACE.

Relief within project boundaries ranges from gently sloping to near vertical bluffs. The majority of the area is hilly with numerous limestone bluffs, with bottom areas bisected by creeks or tributaries. Tributary flood plains have flat to less than five percent slopes, and terrace lands slope from five to 20 percent. Uplands are rolling to steep.

Whitney Lake is situated at the juncture of two major soil complexes. The eastern side in Hill County falls in the East Cross Timbers Ecological Region. This resource area contains sandy soils and Brazos River terrace soils of two major associations. The Bastrop-Travis Association is made up of deep, sandy soils located on level to gently sloping, old and high terraces. The Purves-Brackett-Bolar Association is comprised of moderately deep clayey soils on limestone slopes that range from gentle to steep in grade.

The western or Bosque County side is located in the Grand Prairie Ecological Region. The three major soil associations are: Bastrop-Travis fine sandy loams; Tarrant-Brackett clays; and Denton-Tarrant clays. Physically, Bosque County soils are arranged much like those in Hill County except for frequent barren limestone outcroppings that are characteristic of the Grand Prairie Blacklands.

Factors imposing the most serious limitations on the use of project lands are the following: severe rocky texture, limited permeability, depth of bedrock, and high shrink/swell potential. In general, the soils of Whitney Lake are in good condition, with the possible exception of some eroded areas in the upper regions of the project watershed.

7.2. General Vegetative Description

Whitney Lake is located in the Cross Timbers/Prairies Region of central Texas. Formations in this area are composed primarily of alternating woodlands and prairies. Vegetative associations range from open prairies to closed stands of hardwoods and junipers. Associations east of the lake (Hill County) are dominated by classic Cross Timbers/Prairie type species such as post oaks and red oaks, and grasses such as little bluestem and switchgrass. While the Hill county portion of the project supports vegetation indicative of cross timbers, the west side (Bosque County) is an ecotonal area supporting not only Cross Timbers vegetative types but many species such as live oak, Ashe juniper, and honey mesquite that are more closely associated with the Edwards Plateau. Live oak and Ashe juniper form dense stands in the southern end of the Bosque County side of the project, while vegetation more typical of the Cross Timbers, i.e., post oak, blackjack oak and cedar elm dominates northern portions of the county.

Lowlands in both counties have similar vegetation, including stands of trees such as post oak, cottonwoods and willows. Old fields compose a large area of the lowland, and are typically dominated by such species as mesquite, baccharis, and a variety of forbs such as broomweed and western ragweed, and bermuda grasses.

Uplands in Hill County are dominated by hardwoods, such as post oak and mesquite in association with species of the tall and mid-grasses. The upland areas of northern Bosque County have typical Cross Timbers vegetation similar to that in Hill County. Southern Bosque uplands are dominated by Ashe juniper, mesquite and mid-grass and short grass species such as sideoats grama, silver bluestem and buffalo grass.

The lake inundates approximately 23,550 acres at the top of conservation pool elevation. The water has a slightly alkaline pH, relatively low turbidity, and maximum depths approaching 110 feet. Prior to impoundment, approximately 60 percent of the standing timber was cleared. The remaining 40 percent is located primarily in the upper reaches of the lake. The lake's large size and diverse habitat support a number of native and introduced species of fish. The lake is a common stopping, resting and feeding area for ducks, geese, shore birds and other waterfowl.

7.3. Species of Concern

The U.S. Fish and Wildlife Service (USFWS) and Texas Parks and Wildlife Department (TPWD) list the status of several species in Bosque and Hill Counties as Threatened, Endangered or Candidate. Table 6 presents the number of species present and lists the potential species of concern in the last column. Bald Eagles have not been observed in the Lake Whitney areas in the last several years. Red wolves are not known to occur at Lake Whitney. No listed mollusks were identified during recent surveys on mussels during a dewatering event below the Whitney Dam.

Table 6. Threatened, Endangered or Candidate Species in Hill County

Bosque and Hill County Listed Species						Potential species of concern: *indicates Bosque County only
	Federal			State		
	Candidate	Threatened	Endangered	Threatened	Endangered	
Birds	1		4	5	3	Bald Eagle, Black-capped Vireo*, Golden-cheeked Warbler, Sprague's Pipit, Whooping Crane
Fish			2 (proposed)			Sharptnose shiner, Smalleye shiner
Mammal			1		1	Red wolf
Mollusks	2			3		Smooth pimpleback, Texas fawnsfoot
Reptiles				3		
Plants	No known species of concern. Coordination with USFWS and TPWD recommended if further studied.					

The endangered golden-cheeked warbler (GCW), black-capped vireo (BCV) and whooping crane are the only known threatened and endangered species that are either known to utilize or have the possibility of inhabiting government property.

According to the USFWS Golden-Cheeked Warbler Recovery Plan, the second GCW ever collected in the United States was obtained by G.H. Ragsdale in 1878 along the banks of the Brazos River in Bosque County. This same document specifically states that the construction of Whitney Lake destroyed a GCW population. Because the lake's terrain still meets the habitat criteria set forth by the aforementioned document and the proximity of an established colony of

GCW's 18 miles west at Meridian State Park in Bosque County, it has been determined that large tracts of government land around Whitney Lake are possible GCW habitat. This is also true for the BCV. A habitat assessment of the entire fee area was conducted in 1996, which found approximately 2,800 acres suitable habitat for GCW with marginal amounts of habitat for the BCV. Surveys have been conducted periodically throughout the last decade. Counts have fluctuated from as few as four to as many as 28 GCW in recent years and three BCV.

Bald eagles seasonally utilize Whitney Lake during the winter. Surveys are performed each year by state officials and other environmental organizations. Counts have fluctuated from as few as one eagle to as many as 10 in recent years. The eagles are not endangered or disturbed by project operations or the visiting public at present. In November 1989, Park Rangers observed two Whooping Cranes utilizing the lake for a short time. No further sightings of the Whooping Crane have been reported since then.

7.4. Other Wildlife Resources

The relatively narrow band of government property surrounding the lake area supports a moderate number of deer. The habitat of adjacent private property plays a major role in determining the size of the deer herd, however certain habitat improvements on government property are planned to benefit a number of wildlife species.

The Texas Parks and Wildlife Department's mid-winter duck count surveys conducted in January 2002 showed an overall increase (statewide) in ducks compared to the average during 2000-2001, however there appears to have been a decrease in the number of waterfowl utilizing the lake. This decrease could be attributed to varying water levels during the year, affecting the lake's ability to attract and hold migrating species of waterfowl. The decrease use may also be attributed to the increase of surface water impoundments in the migration path in general.

7.5. Fishery Management

A proper fish management program is essential to the maintenance of a developed fishery. This responsibility currently lies primarily with the Inland Fisheries Branch of the TPWD. Netting, electro-shocking, creel and cove rotenone surveys are the primary analytical tools for determining densities, species composition, and condition and population dynamics. State-regulated bag and possession limits and length requirements on certain species are expected to improve the quality of the available fishery, and mitigate the impact of increasing fishing pressure.

In addition, successful sport fisheries have been developed with hatchery stockings of introduced species, which exploit previously under-utilized niches. The varied topographical features of the project reservoir provide a wide variety of fish habitats. Deep, open water relatively free of structure is utilized by introduced pelagic species. Littoral features including creek channels,

sandy points and rock ledges provide diverse habitat for native and introduced species. Adequate primary production contributes to an abundant forage base throughout the lake. Lake draw-downs during periods of power generation, re-growth of shoreline vegetation, and subsequent flooding tend to further enhance primary and secondary production, overall fish condition, and provide prime spawning habitat.

Fish kills attributed to golden algal blooms killed approximately 7,000,000 fish in the Brazos River System in 2004. A task force was formed in 2003 to study the algae, and develop management strategies. Several university studies are ongoing, and Texas Parks and Wildlife biologists and teams continue to monitor the fish kills and algae numbers. During the winters of 2006, 2007, and 2009 golden algal blooms were mild in comparison to previous seasons.

7.6. Water and Air Quality

According to the 2010 Texas Water Quality Inventory, water quality sampling at Whitney Lake indicates all evaluated water uses are either fully supported or present no concern. Bosque and Hill Counties are not designated for non-attainment for Air Quality standards. There is also known high salinity content at Whitney Lake.

7.7. Cultural Resources

The initial archeological investigations at Whitney Lake were conducted between 1947 and 1951. During that period, 61 sites were recorded, five of which were excavated. Limited work since then has added to the number of known archeological sites. Of the over 20,000 acres of federal land located above the conservation pool, only about 6% (1,176 acres) has been inventoried to current survey standards. Currently, 124 archeological sites have been recorded at the Whitney Reservoir. Only 23 of these sites have been evaluated to determine their eligibility for the National Register of Historic Places (6 listed, 7 eligible, 10 ineligible). The remaining 101 sites have not yet been evaluated.

7.8. Recreation Resources

Whitney Lake contains multiple areas primarily designated for recreational use. Some areas are managed by USACE and others are managed through outgrants (the land remains under the ownership of USACE, but under the management of a third party). See Figure 7 to view a list of the parks located at the Whitney Lake.

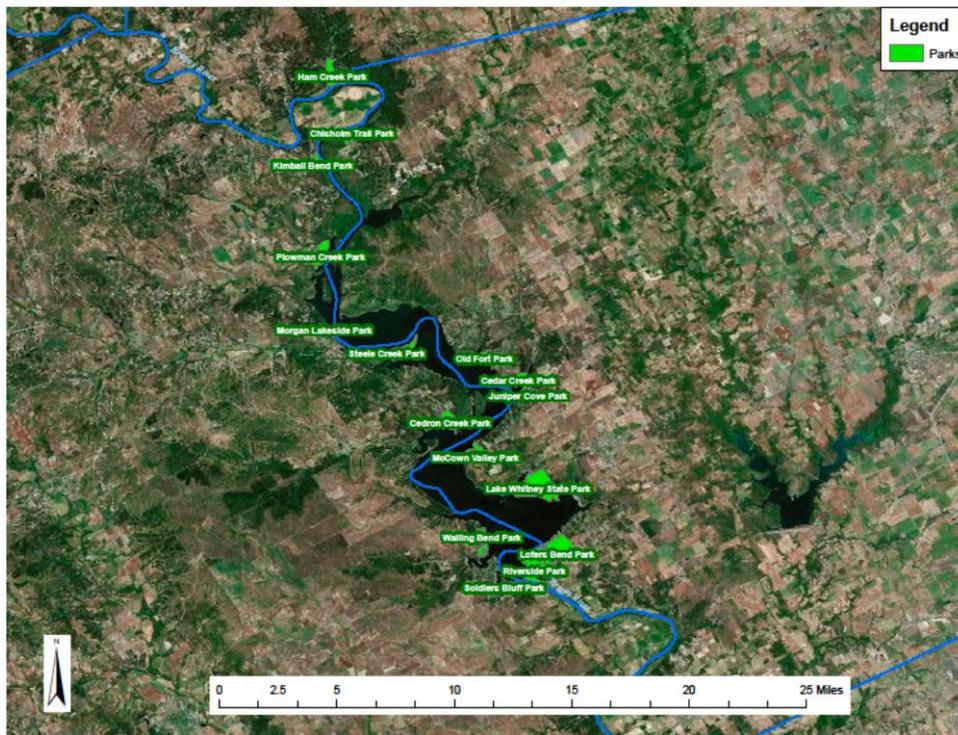


Figure 7. Parks located at Whitney Lake

Recreation facilities at Whitney Lake include 91 picnic sites, 872 camping sites, 9 playgrounds, three swimming areas, three fishing docks, 28 boat ramps and 419 marina slips. Total annual visits (person-trips, 2012) were 1,558,313. Visits by activity were:

- 85,884 picnickers
- 85,194 campers
- 297,961 swimmers
- 55,648 water skiers
- 256,663 boaters
- 632,749 sightseers
- 533,058 fishermen
- 118,235 other

These visits generated \$49.4 million in visitor spending within 30 miles of the lake and \$24.5 million in sales within 30 miles. These expenditures directly support 403 jobs and \$8.9 million of labor income. Total impacts attributable to the recreation expenditures are \$38.5 million in total sales, 523 jobs, \$12.9 in labor income and \$23.7 million in valued added to the nation's economy. This information was obtained from the USACE, Value to the Nation Fast Facts (<http://www.corpsresults.us/recreation/fastfacts/lake.cfm?LakeID=439>) and OMBIL Database.

7.9. Socioeconomic

Lake Whitney is located in the Brazos G Regional Water Planning Group area which comprises all or part of 37 counties, and 90 percent of the region lies in the Brazos River Basin. The region's area is approximately 31,600 square miles, or 12 percent of the State's total area. Region G also includes all or part of the following metropolitan statistical areas (MSAs): Abilene, Waco, Dallas-Fort Worth-Arlington, Killeen-Temple-Fort Hood, Austin-Round Rock, and College Station-Bryan.

The 2010 population for Region G was 1,957,870 and projected to increase to 3,448,981 by 2060, a compound annual growth rate of 1.27%. Much of this growth is concentrated along the IH-35 corridor from Johnson County to Williamson County. Cities in Region G with populations greater than 50,000 are Abilene, Bryan, Cedar Park, College Station, Killeen, Round Rock, Temple, and Waco.

According to the Region G Water Plan, the total employment in the region (2007) was 554,638 with a payroll of \$18,205,515,000. Almost three-quarters of the total payroll come from the following sectors: service sector (35%), manufacturing (14%), retail (12%), wholesale (10%) and construction (10%).

7.10. Dam Safety

Dam safety is a top priority for decision-making when considering modifications to the structure or operation of a USACE reservoir. When water supply storage is requested by a non-Federal entity, USACE decision-makers at all levels must fully consider the condition of the dam. The condition of the dam includes associated project levees, risk reduction measures under consideration in a dam safety study, any ongoing remediation at a reservoir, impacts to pool levels and inspections, and the operation and maintenance of the project. The Whitney dam was evaluated by a National Risk Cadre in 2008 and found to have a Dam Safety Action Classification (DSAC) of 4 based on risks associated with the dam operations and potential downstream consequences. One of the two appurtenant structures to the federal project, Kopperl Levee, was classified a DSAC 3 due to noted deficiencies in the embankment and associated structures. Therefore the entire project is considered a DSAC 3.

Feasibility studies, including reallocation studies are not allowed on DSAC 1, 2, or 3 dams, levees, dykes, or appurtenant structures, but can be studied by exception when approved by the USACE Dam Safety Officer (DSO). Feasibility and reallocation reports must include a review of the Potential Failure Mode Analysis (PFMA) for the dam and an analysis of the effect of a higher pool elevation, longer storage duration, or any other modification on the probability of failure and consequences associated with the project.

Risks associated with the Whitney Reservoir Project will be evaluated in a Periodic Assessment in 2015. Periodic Assessments are risk assessments that are part of the USACE dam safety operation and maintenance program. Periodic Assessments are conducted on a 10-year basis, and their purpose is to periodically assess risk at USACE reservoirs. Results of the Periodic Assessment at Whitney Lake will be considered carefully before undertaking a future study. If needed, an exception could be requested from Headquarters USACE to continue evaluating alternatives at Whitney Lake in a feasibility study.

8.0 FEDERAL INTEREST

The USACE project delivery team (PDT) found in this initial appraisal that the potential exists for changes in the structure or operation of the Whitney Reservoir for reallocation for water supply or other purposes could be recommended pending further evaluation in a feasibility study. The evaluation would have to take into account the interests of hydropower, flood control, water supply, recreation and fish and wildlife resources. Changes to the structure and operation at the Whitney Reservoir to improve the efficiency of regulation, address the opportunities and meet the overall public interest could require Congressional approval.

The following summarizes the conditions that are considered for USACE participation in a feasibility study (federal interest) at the Whitney Reservoir. Federal interest at this stage in the study process is characterized in terms of what likelihood the feasibility report would result in a major federal action or Congressional authorization. This is accomplished by assessing the potential measures and alternatives identified in this initial appraisal. The results of the assessment are presented in Table 7. Objectives have not been developed at this stage, but would likely center on mission areas of hydropower, flood control, water supply, recreation and fish and wildlife resources. Assuming objectives or constraints are developed per mission area, Table 7 indicates the primary objective or constraint the measure would contribute to or be affected by: hydropower (H), flood control (FC), water supply (WS), recreation (R) and fish and wildlife resources (FW).

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Table 7. Preliminary Assessment of Federal Interest at Whitney Reservoir

Measure/Alternative	Structural Modification	Operational Modification	Reallocation of Storage for Water Supply	Primary Functional Area of Benefits/Impacts	Major Federal Action or Congressional Authorization
Measure #1 – Reallocation of flood storage to conservation storage		X	X	H, FC, and WS	Yes, based on potential adverse impacts to flood control.
Measure #2 – Change to existing conservation storage allocation		X	X	H and WS	Yes, based on potential adverse impacts to hydropower.
Measure #3 – Reallocation within the power head reserve or dead pool		X	X	H and WS	Yes, based on potential adverse impacts to hydropower.
Measure #4 – Develop a drought management plan		X		H, FC, WS, R and FW	Yes, this measure could recommend a major change to current operation.
Measure #5 – Implement ecosystem restoration measures	X	X		FW	Yes, this measure could recommend a major change to current operation or structure at Whitney Lake.

Whitney Reservoir, Brazos River Basin, Texas

Measure/Alternative	Structural Modification	Operational Modification	Reallocation of Storage for Water Supply	Primary Functional Area of Benefits/Impacts	Major Federal Action or Congressional Authorization
Measure #6 – Seasonal use of flood control storage during dry seasons		X	X	H, FC and WS	Yes, this measure could recommend a major change to current operation.
Measure #7 – Modification of reservoir water control plan		X		H, FC, WS, R and FW	Yes, this measure could recommend a major change to current operation.
Measure #8 – Raise the dam	X	X	X	H, FC, and WS	Yes, this measure would be a major change to the structure of Lake Whitney
Measure #9 – Change in system regulation		X		H, FC, WS, R and FW	Yes, this measure could recommend major change to current operation at Lake Whitney or the Brazos Reservoir System.

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9.0 POTENTIAL SPONSOR

The Brazos River Authority has submitted the Fort Worth District USACE a letter indicating their interest in developing a Project Management Plan (PMP) and entering into a feasibility cost share agreement (FCSA) with USACE for a feasibility study at the Whitney Reservoir (Enclosure 1).

10.0 FEASIBILITY STUDY & NEXT STEPS

In Section 1002 of the Water Resources Reform and Development Act, the USACE reconnaissance phase was repealed. It creates an accelerated process which allows for non-Federal project sponsors and USACE to proceed directly to the feasibility phase. At any point during a feasibility study, the Secretary of the Army may terminate the study when it is clear that a project in the public interest is not possible for technical, legal or financial reasons. Implementation Guidance is under development for Section 1002.

This initial appraisal report supports the decision to develop a PMP and FCSA for a feasibility study to investigate potential changes to structure or operation of the Whitney Reservoir for reallocation for water supply or other purposes. The feasibility study will be implemented under “SMART” Planning. A significant element of SMART Planning is compliance with the 3x3x3 rule which means the study will be completed in a targeted goal of 18 months, but no more than three years; cost no greater than \$3,000,000; and be implemented at three levels of vertical coordination (District, Division, and Headquarters USACE). This effort would support the USACE Planning Modernization goal of completing high quality feasibility studies with shorter timeframes and lower costs.

Once a decision is made to move forward with a feasibility study with the vertical team, a PDT will be established to develop the PMP and FCSA. The development of the PMP will focus on the data collection and analysis required to make a planning decision and recommendation for federal action using SMART Planning principles. Cost sharing with a non-Federal sponsor is required to fund the feasibility study. Provisions for cost share will be identified in the FCSA. Once a FCSA is signed by representatives of the local sponsor and the USACE, the feasibility study can proceed to completion. The feasibility study will be conducted in accordance Engineering Regulation 1105-2-100.

The future feasibility study could be conducted using the 1958 River and Harbor Act (P.L. 85-500), Section 301, as amended. The law is commonly known as the “Water Supply Act of 1958.” The use of the authority contained in Section 216 of the 1970 Flood Control Act (P.L. 91-611) is also an option. The most suitable study authority to use for the Whitney Reservoir Project will be confirmed during development of the PMP and FCSA.

11.0 VIEWS OF THE PUBLIC AND RESOURCE AGENCIES

At this time, USACE has not formally engaged the public or coordinated with federal and state resource agencies on potential modifications to the existing Whitney Reservoir Project. In previous studies at the Whitney Reservoir Project, the resource agencies were primarily concerned with impacts to habitat and species protected by the Endangered Species Act and Migratory Bird Treaty Act, as well as the State of Texas Parks and Wildlife Code. It is known that public entities and recreation users have concerns with lake fluctuations at USACE reservoirs in Fort Worth District.

12.0 CONCLUSION

The project purposes for which the Whitney Reservoir Project was designed and constructed are currently being met. Meeting those original project purposes through the operation of the reservoir raises issues and concerns regarding changed conditions in the basin for water supply, hydropower generation, environmental and recreation demands. Implementation of structural, operational changes or reallocation of storage to address the related issues is warranted based on further examination in a feasibility study as described in Section 8.0 and 10.0 of this report.

13.0 RECOMMENDATION

The District recommends initiating a feasibility study subsequent to development of a PMP and FCFA with a cost sharing partner. The BRA has indicated their interest in proceeding to a FCFA for a feasibility study at the Whitney Reservoir Project. Without the feasibility study, there will be no changes to the existing management of the Whitney Reservoir Project and problems related to water supply, hydropower generation, environmental and recreation will prevail, and opportunities would go unrealized. The feasibility study will identify the most effective use of the Whitney Reservoir Project, including the potential recommendation to change operation and uses of the reservoir storage. The purpose of the Whitney Lake feasibility study is to make a recommendation to higher USACE decision makers, and if necessary to the U.S. Congress for authorization on the advisability of modification to the existing federal project.

Additional Proposal Information

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**013-06-13, USACE, Colonel Klinge, Lake Whitney Reallocation,
SSS 3143.pdf**



Brazos River Authority



June 13, 2013

Colonel Charles H. Klinge, Jr.
Commander, Fort Worth District
U.S. Army Corps of Engineers
819 Taylor Street
Fort Worth, TX 76102

RE: Potential Study of Reallocation at Lake Whitney

Dear Colonel Klinge:

I enjoyed the opportunity to visit with you a couple of weeks ago regarding water supply issues and the potential for exploring reallocation of storage at Lake Whitney. Please accept this letter as the Brazos River Authority's (BRA) request to initiate actions that are necessary to pursue this matter further.

The BRA and the US Army Corps of Engineers (USACE) have a long history of successfully working together to manage the federal reservoirs within the Brazos basin for flood control, water supply, and in the case of Lake Whitney, hydropower generation. As you know, projections for growth in the State of Texas clearly indicate that development of new water supply sources and conservation will be required in order to meet the water needs for the future. To this end, BRA is pursuing a number of water supply initiatives within the basin as recommended in the current State and Regional Water Plans.

Lake Whitney is the largest reservoir in the Brazos basin by volume and is unique among the others due to its use for hydropower generation and the fact that no State water right permit exists for most of its storage. Due to its large size and location on the main stem of the Brazos River, it has the potential to provide greater water supply benefits than currently authorized. BRA is interested in exploring new water supply and hydropower generation options for its use in the future. We realize it will be a complex process involving multiple parties including the USACE, Southwest Power Administration (SWPA), the Texas Commission on Environmental Quality (TCEQ) and others, but we believe it deserves to be explored. My staff and I are available to discuss this further with the USACE and SWPA at the appropriate time.

Sincerely,

Phil Ford
General Manager/CEO

Additional Proposal Information

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**2015-06-09 FW USCOE Colonel Craig Lake Whitney Reallocation
Study SS .pdf**



Brazos River Authority



June 9, 2015

Colonel Neil Craig, III P.E.
Commander, Fort Worth District
U.S. Army Corps of Engineers
819 Taylor Street
Fort Worth, TX 76102

RE: Lake Whitney Reallocation Study

Dear Colonel Craig:

The Brazos River Authority (BRA) is willing and able to participate as the Sponsor for a reallocation study at Lake Whitney, in partnership with the U.S. Army Corps of Engineers (USACE), to cooperatively investigate the use of Lake Whitney to provide additional water supply benefits in order to meet existing and future water needs around and downstream of the lake.

The BRA understands that a study cannot be initiated unless it is selected as a new start study with associated allocation of Federal funds provided through the annual Congressional appropriations process. If selected as a new start study by the federal government and subsequently authorized by the BRA Board of Directors, the BRA intends to sign a Feasibility Cost Sharing Agreement (FCSA) to initiate the study with USACE. It is our understanding the FCSA targets completion of the feasibility study within 3 years at a total cost of no more than \$3 million. After signing the FCSA, a Project Management Plan will be developed and agreed upon by the BRA and USACE. It is our understanding that the study will be managed by USACE, but the study work may be conducted by outside consultant(s), USACE, and/or BRA. These details will be defined in the Project Management Plan. The cost-sharing for the study is based on a 50% contribution by the Federal government, with our agency's 50% contribution provided in cash, or by a portion or all of the contribution provided through in-kind non-monetary services.

The BRA is aware that this letter constitutes an expression of intent to initiate a study partnership to address the specified water resources problems and is not a contractual obligation. We understand that work on the study cannot commence until it is included in the Administration's budget request, funds are appropriated by the Congress, the study is authorized by the BRA Board of Directors, and an FCSA is signed. It is understood that we or USACE may opt to discontinue the study at any time after the FCSA is signed but will commit to work together as partners from the scoping phase, and subsequent decision points throughout the feasibility study, on providing the necessary

Colonel Neil Craig, III P.E.
June 9, 2015

Page 2

support to risk-informed decision making. If it is determined that additional time or funding is necessary to support decisions to be made in order to complete the study, our agency will work with USACE to determine the appropriate course of action.

If you require additional information, please contact: Mr. Brad Brunett at 254-761-3171 or bradb@brazos.org.

Sincerely,

A handwritten signature in blue ink that reads "Phil Ford". The signature is written in a cursive, flowing style.

Phil Ford
General Manager/CEO

Additional Proposal Information

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BRA Letter of Intent April 2016.pdf



Brazos River Authority



April 18, 2016

Colonel Calvin C. Hudson, II
Commander, Fort Worth District
U.S. Army Corps of Engineers
819 Taylor Street
Fort Worth, TX 76102

RE: Lake Whitney Reallocation Study

Dear Colonel Hudson:

The Brazos River Authority (BRA) is willing and able to participate as the Sponsor for a reallocation study at Lake Whitney, in partnership with the U.S. Army Corps of Engineers (USACE), to cooperatively investigate the use of Lake Whitney to provide additional water supply benefits in order to meet existing and future water needs around and downstream of the Lake.

The BRA understands that a study cannot be initiated unless it is selected as a new start study with associated allocation of Federal funds provided through the annual Congressional appropriations process. If selected as a new start study by the federal government and subsequently authorized by the BRA Board of Directors, the BRA intends to sign a Feasibility Cost Sharing Agreement (FCSA) to initiate the study with USACE. It is our understanding the FCSA targets completion of the feasibility study within 3 years at a total cost of no more than \$3 million. After signing the FCSA, a Project Management Plan will be developed and agreed upon by the BRA and USACE. It is our understanding that the study will be managed by USACE, but the study work may be conducted by outside consultant(s), USACE, and/or BRA. These details will be defined in the Project Management Plan. The cost-sharing for the study is based on a 50% contribution by the Federal government, with our agency's 50% contribution provided in cash, or by a portion or all of the contribution provided through in-kind non-monetary services.

The BRA is aware that this letter constitutes an expression of intent to initiate a study partnership to address the specified water resources problems and is not a contractual obligation. We understand that work on the study cannot commence until it is included in the Administration's budget request, funds are appropriated by the Congress, the study is authorized by the BRA Board of Directors, and an FCSA is signed. It is understood that we or USACE may opt to discontinue the study at any time after the FCSA is signed but will commit to work together as partners from the scoping phase, and subsequent decision points throughout the feasibility study, on providing the necessary support to risk-informed decision making. If it is determined that additional time or funding

Colonel Calvin C. Hudson, II
April 18, 2016

Page 2

is necessary to support decisions to be made in order to complete the study, our agency will work with USACE to determine the appropriate course of action.

If you require additional information, please contact: Mr. Brad Brunett at 254-761-3171 or bradb@brazos.org.

Sincerely,



Phil Ford
General Manager/CEO

Additional Proposal Information

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Reallocation Letter of Intent May 2017.docx.pdf



Brazos River Authority



May 26, 2017

Colonel Calvin C. Hudson, II
Commander, Fort Worth District
U.S. Army Corps of Engineers
819 Taylor Street
Fort Worth, TX 76102

RE: Lake Whitney Reallocation Study

Dear Colonel Hudson:

The Brazos River Authority (BRA) is willing and able to participate as the Sponsor for a reallocation study at Lake Whitney, in partnership with the U.S. Army Corps of Engineers (USACE), to cooperatively investigate the use of Lake Whitney to provide additional water supply benefits in order to meet existing and future water needs around and downstream of Lake Whitney.

The BRA understands that the standard process for initiation of a study is for it to be selected as a new start study with associated allocation of Federal funds provided through the annual Congressional appropriations process. If selected as a new start study by the Federal government and subsequently authorized by the BRA Board of Directors, the BRA intends to sign a Feasibility Cost Sharing Agreement (FCSA) to initiate the study with USACE. It is our understanding that the FCSA targets completion of the feasibility study within 3 years at a total cost of no more than \$3 million. After signing the FCSA, a Project Management Plan will be developed and agreed upon by the BRA and USACE. It is our understanding that the study will be managed by USACE, but the study work may be conducted by outside consultant(s), USACE, and/or BRA. These details will be defined in the Project Management Plan. The standard cost-sharing for such a study is a 50% contribution by the Federal government and a 50% contribution from the Sponsor with the Sponsor's contribution provided in cash, or by a combination of cash and in-kind, non-monetary services.

The BRA is aware that this letter constitutes an expression of intent to initiate a study partnership to address the specified water resources problems and is not a contractual obligation. We understand that work on the study is not expected to commence until it is included in the Administration's budget request, funds are appropriated by the Congress and/or the Sponsor, the study is authorized by the BRA Board of Directors, and a FCSA is signed. It is understood that BRA or USACE may opt to discontinue the study at any time after a FCSA is signed but will commit to work together as partners from the scoping phase, and subsequent decision points throughout the feasibility study, on

Colonel Calvin C. Hudson, II

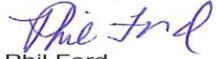
May 26, 2017

Page 2

providing the necessary support to risk-informed decision making. If it is determined that additional time or funding is necessary to support decisions to be made in order to complete the study, our agency will work with USACE to determine the appropriate course of action.

If you require additional information, please contact: Mr. Brad Brunett at 254-761-3171 or bradb@brazos.org.

Sincerely,



Phil Ford
General Manager/CEO

Additional Proposal Information

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Whitney Lake Reallocation Study - Sponsor Letter Aug 2018.pdf



Brazos River Authority



August 20, 2018

Colonel Kenneth N. Reed
Commander, Fort Worth District
U.S. Army Corps of Engineers
819 Taylor Street
Fort Worth, TX 76102

Re: Use of Contributed Funds to Conduct a Reallocation Study at Lake Whitney

Dear Colonel Reed:

The Brazos River Authority (BRA) has long been supportive of a reallocation study at Lake Whitney and has been submitting letters of support for study authorization and federal funding since 2013. There are both existing and future water needs around and downstream of Lake Whitney that could be met by expanding its water supply capability, and we strongly believe this should be evaluated.

While no federal funding has been authorized for a reallocation study at Lake Whitney, it is our understanding that such a study can be performed using contributed funds provided by a local sponsor. Therefore, please accept this letter as a formal request to initiate a reallocation study at Lake Whitney using contributed funds that would be provided by BRA, subject to a successful negotiation of contract, scope of work, and project management plan documents. Based on current U.S. Army Corps of Engineers policy, the study would be completed within three years and at a cost of \$3,000,000 or less.

The BRA understands and accepts that the contributed funds are provided voluntarily, and there is no repayment or credit authorized. Also, the BRA understands that acceptance of such funds will not constitute or imply any commitment to budget or appropriate funds for the project in the future.

We look forward to approval by the Secretary of the Army for Civil Works for this study to move forward. To that end, please let us know if any additional information is needed from the BRA.

Sincerely,

DAVID COLLINSWORTH
General Manager/CEO

DC:kld

Primary Sponsor Letter of Support

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GHP Public Comment_Sec. 7001_Lake Whitney.pdf



August 27, 2019

U.S. Army Corps of Engineers
Fort Worth District
Attn: District Commander Colonel Kenneth Reed
P.O. Box 17300
Fort Worth, TX 76102

Dear Colonel Reed:

I write to you today on behalf of the Greater Houston Partnership which represents the business community that spans the 11-county greater Houston region, including the Brazos River basin counties of Brazoria, Fort Bend, Waller and Austin. While Lake Whitney itself is not located within our geographic footprint, or within the United States Army Corps of Engineers Galveston District, the people and industry located downstream from Lake Whitney that depend on the Brazos River for much of its water needs could substantially benefit from the Brazos River Authority's proposed *Reallocation Study of Whitney Lake*.

As I am sure you are aware, water supplied from the Brazos River and its upstream reservoirs, like Lake Whitney, are critical to accommodate the rapid population growth and booming industrial sector of the downstream coastal counties.

Understanding storage allocations of upstream reservoirs is not only important for water supply purposes, but also for flood risk management. As an area that has felt the effects of both devastating droughts and floods over the past decade, we recognize the need to have a proper understanding of the optimal use of storage of key water supply reservoirs like Lake Whitney.

It is our understanding that Lake Whitney storage allocations have not been evaluated since the early 1970's. Meanwhile, the regions that depend on the Brazos River Basin have vastly expanded over that nearly 50-year span.

That is why the Greater Houston Partnership supports the Brazos River Authority's *Reallocation Study of Whitney Lake* proposal as a means to evaluate potential modifications to Lake Whitney to meet present and future water needs along the Brazos River Basin.

To ensure continued economic development, population and industrial growth, and a high quality of life for the western counties of the greater Houston region, it will be critical to study and understand the possibility of improved water supply resiliency during periods of drought and a possible increase in available mainstem water supply for the region.

Regards,

A handwritten signature in black ink, appearing to read 'Taylor Landin', is written over a light blue horizontal line.

Taylor Landin
Senior Vice President, Public Policy

Cc: R.D. James, Assistant Secretary of the Army for Civil Works