REGION H WATER MANAGEMENT STRATEGY ANALYSIS TECHNICAL MEMORANDUM

STRATEGY TITLE: Allens Creek Reservoir
DATE: February 3, 2005

SUMMARY

STRATEGY DESCRIPTION**:** Construction of an off-channel reservoir in Austin County, to hold peak flows diverted from the Brazos River. Run-of-river diversions to the reservoir are indexed to in-stream flow levels. Water would be available to meet demands in Austin, Brazoria, Fort Bend, Galveston, Harris and Waller Counties.

SUPPLY QUANTITY: 99,650 acre-feet per year

SUPPLY SOURCE: Brazos River

TOTAL STRATEGY COST: $170,040,000

UNIT WATER COST: $131 per acre-foot

Water Management Strategy Analysis Description

Introduction

The Allens Creek Reservoir site is located on Allens Creek, a tributary to the Brazos River in Austin County, 1 mile north of the City of Wallis (see Figure 1). The site was originally permitted by Houston Lighting and Power as a cooling water reservoir for a proposed nuclear power plant. The site was later jointly purchased by the Brazos River Authority and the City of Houston. A water right permit has been issued for this project to the Texas Water Development Board, Brazos River Authority (BRA) and the City of Houston for use of 99,650 acre-feet per year for municipal, industrial and irrigation purposes. The water is permitted for inter-basin transfer to the San Jacinto and San Jacinto-Brazos basins. 70% of the permit (69,750 acre-feet per year) is owned by the City of Houston, and 30% of the permit (29,900 acre-feet per year) is owned by the BRA. The maximum dam height is 53-feet, and the conservation storage is approximately 145,500 acre-feet at an elevation of 121.0 feet msl.

Analysis

This project is configured as a scalping reservoir that would divert peak (storm water) flows from the Brazos River and impound these flows into the reservoir to create storage yield. The permit conditions are based upon the consensus criteria for environmental flow needs. Specifically when monthly flows in the Brazos River before this diversion are above the

naturalized median flow, diversions shall not cause the flow to fall below that naturalized median flow. When monthly flows in the Brazos River before this diversion are below median but above the above the naturalized 25th percentile flow, diversions shall not cause the flow to fall below that naturalized 25th percentile flow. When monthly flows in the Brazos River before this diversion are less than the naturalized 25th percentile flow, diversions shall not cause the flow to fall below 734 cfs. Additionally, the permit requires the following instantaneous flow rates to be met immediately downstream of the diversion point before diversions may be made.

Table 1: Required Minimum Downstream Flow Rates (cfs)

JAN	FEB	MAR	APR	MAY	JUN
795	795	812	882	882	1017
JUL	AUG	SEP	OCT	NOV	DEC
1017	1017	882	812	812	795

The Brazos River Authority has applied to the TCEQ for a Systems Operations Permit, which would increase the yield of their reservoir system. In the BRA model, when Allens Creek Reservoir is added, the BRA can realize an additional 10,000 acre-feet per year of system yield (in addition to the original 99,650 acre-feet per year yield).

The cost data used in this plan was obtained from the permitting studies for Allens Creek Reservoir, adjusted to 2nd Quarter 2002 prices.

Water User Group Application

The water from the Allens Creek Reservoir may be used to serve municipal, industrial and irrigation customers in Austin, Brazoria, Fort Bend, Galveston, Harris and Waller Counties. The projected municipal shortages in Fort Bend and Waller Counties, coupled with the projected manufacturing shortages in Brazoria County, would fully consume the reservoir yield. The water may be diverted directly from the reservoir. Delivery to downstream customers using the bed and banks of the Brazos River would require a subsequent permit.

Environmental Impact

Approximately 7,000 acres of land will be inundated, and the overall site will impact approximately 1,700 acres of cropland, 2,000 acres of bottomland forest, 100 acres of bluff forest, 3,900 acres of grass. The most significant wetland area on the site is Alligator Hole, which contains approximately 600 acres of the largest remaining tract of bottomland forest.[1] The dam face has been configured to minimize wetlands associated impacts, and specifically excludes Alligator Hole from the project area.

A Wildlife Habitat Appraisal was performed for the Texas Parks and Wildlife Department. No threatened or endangered species have been found on the site. The quality of the habitat

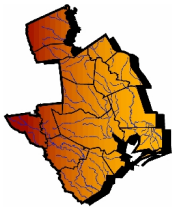
[1] Wildlife Habitat Appraisal for The Proposed Allens Creek Reservoir Site.; University of Houston Clear Lake 1995 for Texas Parks and Wildlife Department (TPWD), Resource Protection Division.

at the reservoir site is mostly degraded by extensive agriculture usage. Environmental impacts were rated as moderate to small.

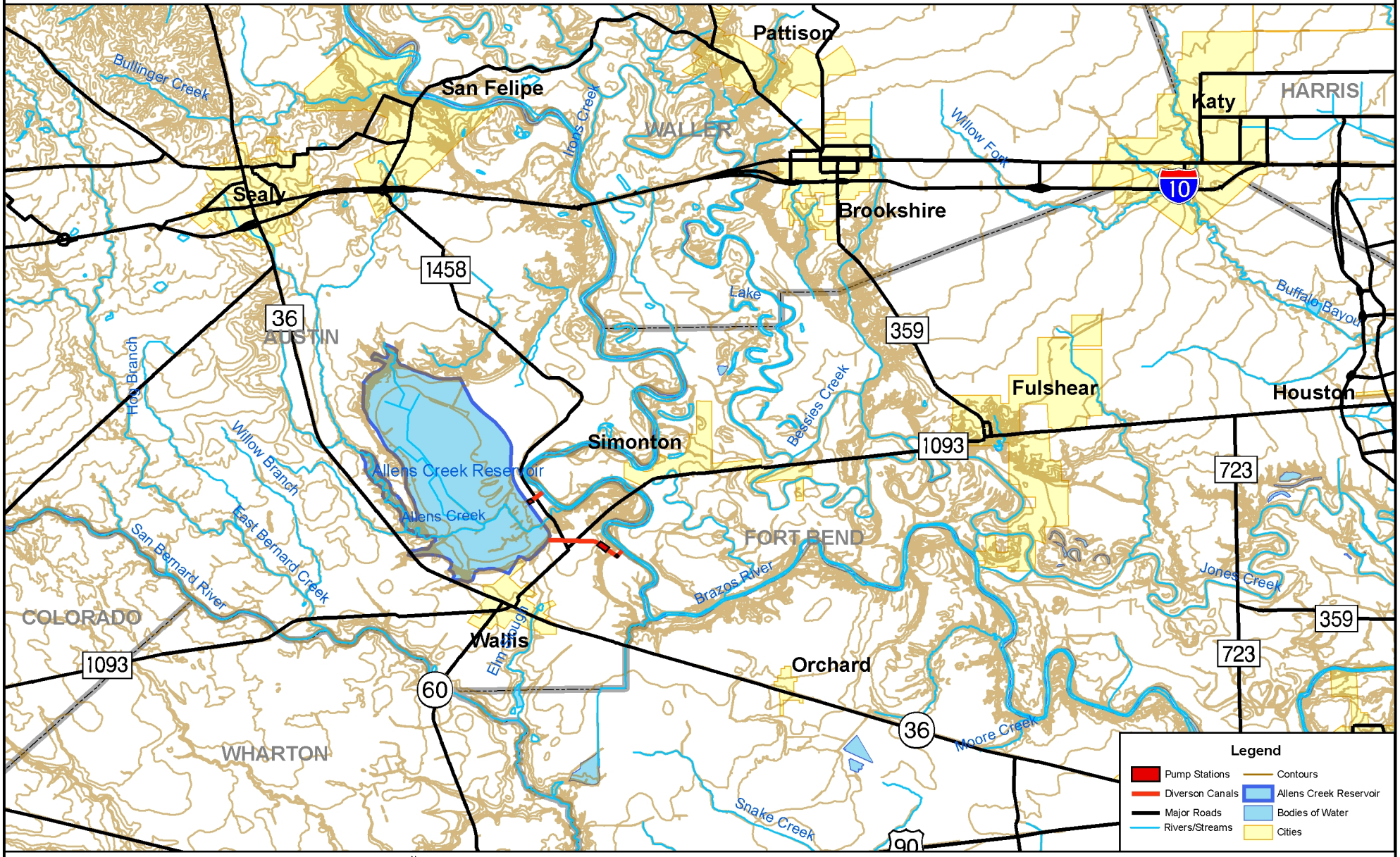
Issues and Considerations

This location has been designated as a unique reservoir site by the Texas Legislature. The project sponsors have obtained a water right permit.

There are two designated diversion points on for the Allens Creek Reservoir. The nearer, upstream point is located on an oxbow of the Brazos River, which is at risk of becoming isolated from the main stem of the river at some point in the future. The lower diversion point is farther away, requiring approximately one mile of intake canal between the pump station and the reservoir. The canal will require a two road crossings (inverted siphons).



Region H
Water Planning Group
Allens Creek Reservoir



Source: TWDB, TCEQ

Kellogg Brown & Root, Inc. | Turner Collie & Braden Inc.

JOINT VENTURE

N W E S

0 6 Miles