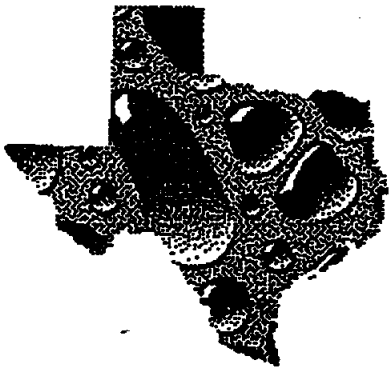


TRANS-TEXAS WATER PROGRAM

SOUTHEAST AREA

Memorandum Report

Operation Studies and Opinions of Cost for Allens Creek Reservoir

Volume I - Text

April 1997

Sabine River Authority of Texas
Lower Neches Valley Authority
San Jacinto River Authority
City of Houston
Brazos River Authority
Texas Water Development Board

This document is a product of the Trans-Texas Water Program: Southeast Area. The program's mission is to propose the best economically and environmentally beneficial methods to meet water needs in Texas for the long term. The program's four planning areas are the Southeast Area, which includes the Houston-Galveston metropolitan area, the South-Central Area (including Corpus Christi), the North-Central Area (including Austin), and the West-Central Area (including San Antonio).

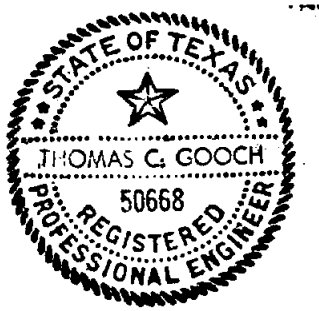
The Southeast Area of the Trans-Texas Water Program draws perspectives from many organizations and citizens. The Policy Management Committee and its Southeast Area subcommittee guide the program; the Southeast Area Technical Advisory Committee serves as program advisor. Local sponsors are the Sabine River Authority of Texas, the Lower Neches Valley Authority, the San Jacinto River Authority, the City of Houston and the Brazos River Authority.

The Texas Water Development Board is the lead Texas agency for the Trans-Texas Water Program. The Board, along with the Texas Natural Resource Conservation Commission, the Texas Parks & Wildlife Department and the Texas General Land Office, set goals and policies for the program pertaining to water resources management and are members of the Policy Management Committee.

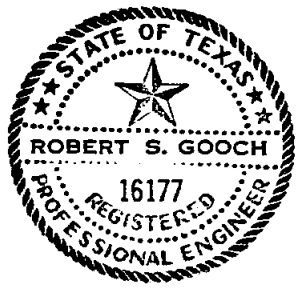
Brown & Root and Freese & Nichols are consulting engineers for the Trans-Texas Water Program: Southeast Area. Blackburn & Carter and Ekistics provide technical support. This document was written by:

Freese and Nichols, Inc.

Thomas C. Gooch, P.E.
Robert S. Gooch, P.E.



Thomas C. Gooch, P.E.
4/7/97



Robert S. Gooch, P.E.
4/4/97

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Tables

1. Introduction

The Allens Creek Reservoir site is located on the west bank of the Brazos River, west of Houston. As shown by the map in Figure 1-1, the dam would be approximately 3,000 feet upstream from the mouth of Allens Creek, in the southern tip of Austin County near Wallis. Originally, this impoundment was planned and permitted as a cooling water source for a proposed nuclear power plant of Houston Lighting and Power Company (1). It would capture runoff from most of the Allens Creek watershed, and a significant amount of additional yield would be provided through supplemental diversions from the Brazos River.

The nuclear power plant was never developed, and in recent years Allens Creek Reservoir has been recognized as a potentially valuable component of the Trans-Texas Water Program. Among other things, it could serve as regulating storage for water being transferred westward to areas of need in the central part of the state.

Phase II of the Trans-Texas Water Program investigations for the Southeast Study Area includes several items of supplemental analysis for the Allens Creek project. Three of those tasks involve hydrologic studies, and one calls for an update of the opinion of probable cost for building the reservoir. This memorandum report describes the work done on those four new items.

In addition to the studies described in this memorandum, environmental investigations of the Allens Creek project are also underway as part of Phase II of the Trans-Texas Water Program for the Southeast Study Area(2). The environmental studies will incorporate the results of on-going studies of the Allens Creek site by the Texas Department of Parks and Wildlife. When the Allens Creek environmental investigations for Phase II of the Trans-Texas Water Program are completed, the hydrologic and cost studies described in this report will be revised and refined.

(1) Numbers in parentheses match references listed in Appendix A.

2. Water Quality Routings

In early reports on the Allens Creek project (1 & 3), URS/Forrest and Cotton developed estimates of monthly reservoir inflows for the years 1947 through 1976. Those runoff values were also used in later studies by Freese and Nichols (4 & 5). For purposes of the studies described herein, the inflow data were extended back to 1940 based on records from the nearby Yegua Creek gage near Somerville and were extended forward to 1989 based on records from the Mill Creek gage near Bellville, thus lengthening the study period to a total of 50 years. Appendix B outlines the methodology used in deriving the additional runoff values.

The Trans-Texas requirements for pass-through releases from Allens Creek Reservoir were developed for each month, based on the observed historical flows at the Yegua Creek gaging station near Somerville. Those computations are described in Appendix C.

Natural inflows were passed through the Allens Creek impoundment in accordance with the proposed Trans-Texas criteria. If the reservoir dropped below 60 percent of its storage capacity (.6 x 142,892 = 85,735 acre-feet), the criteria were eased as outlined in the Trans-Texas environmental guidelines (Appendix D).

Monthly unappropriated flows in the Brazos just below the mouth of Allens Creek during the period from 1947 through 1976 were obtained from a detailed 1987 analysis by the Texas Water Commission, and adjusted to reflect changes that have occurred in water appropriations since 1987 (5). This data file was extended to cover the total 50-year period from 1940 through 1989 by means of statistical relationships developed from the 1947-1976 data. Details of this work are given in Appendix E. The monthly amounts of Brazos River water available to be diverted into Allens Creek Reservoir were determined in a manner similar to the methods used in Reference (5).

During months when no unappropriated water was indicated (i.e., when the prior downstream rights equaled or exceeded the Brazos flow), the supplemental Brazos diversions were set at zero, and all natural inflow was assumed to pass through the Allens Creek Reservoir. Whenever there was unappropriated Brazos River water that was not covered by the Trans-Texas instream flow requirements, it was assumed to be available for diversion into Allens Creek Reservoir if needed. The monthly amounts of Brazos River water that could be diverted into the Allens Creek impoundment with various diversion pump capacities were derived by analysis of daily flows, taking into account the Trans-Texas instream flow requirements and the downstream rights. A more detailed description of that analysis and samples of the spreadsheets involved are contained in Appendix F.

Monthly net evaporation data were taken from Reference (1) and extended to the full 50-year period as outlined in Appendix G.

Appendix H contains detailed printouts of 50 years of quality routing analyses for both chlorides and total dissolved solids, and the results are shown graphically in Figure 2-1. These routings are based on a diversion capacity of 1,600 cfs from the Brazos river and a demand rate of 70,000 acre-feet per year from Allens Creek Reservoir. The monthly chemical concentrations in the supplemental Brazos diversions were taken from the published quality records for the Richmond gaging station. The quality of the Allens Creek runoff was based on relationships derived from the published data for the Mill Creek gage near Bellville. The statistical quality conditions in Allens Creek Reservoir for the 50-year period were indicated to be as shown in Table 2-1 and in Figures 2-2 and 2–3.

Table 2-1: Results of 50-Year Quality Routings for Allens Creek Reservoir
(Chemical Concentrations in Milligrams per Liter)

	Chloride	*Total Dissolved Solids*
Equalled or exceeded 100% of the time	49	283
Equalled or exceeded 99% of the time	50	288
Equalled or exceeded 98% of the time	52	295
Equalled or exceeded 95% of the time	62	323
Equalled or exceeded 90% of the time	70	348
Equalled or exceeded 50% of the time	94	425
Equalled or exceed 10% of the time	130	541
Equalled or exceeded 5% of the time	142	581
Equalled or exceeded 2% of the time	216	732
Equalled or exceeded 1% of the time	264	896
Maximum concentration (reached one time)	334	1,139

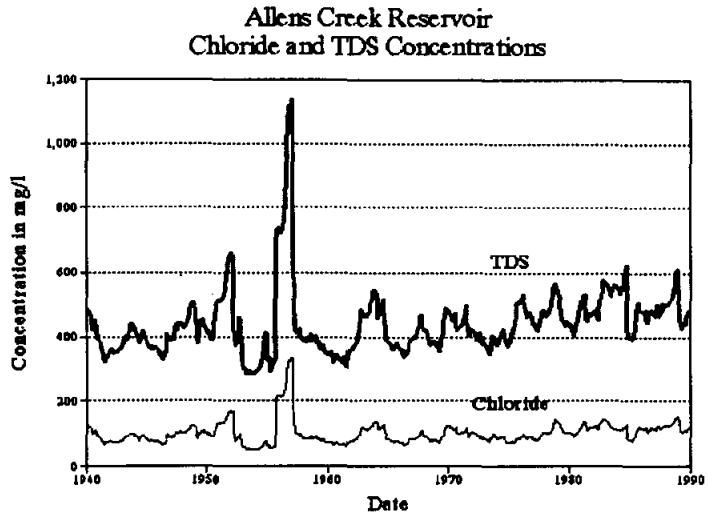

Figure 2-1

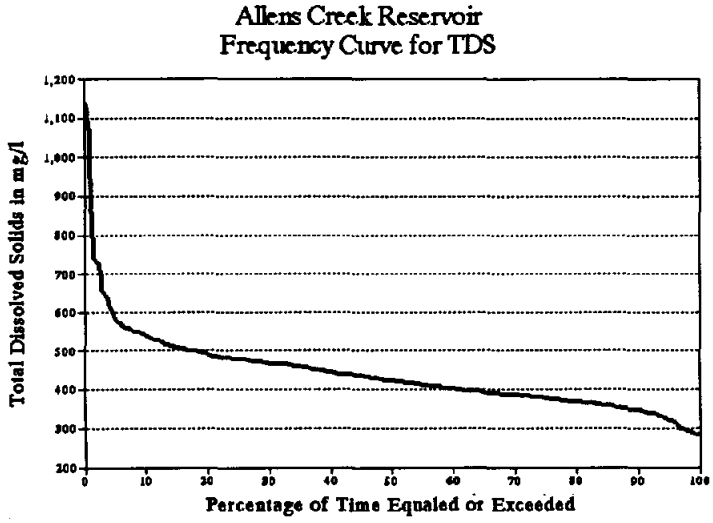

Figure 2-2

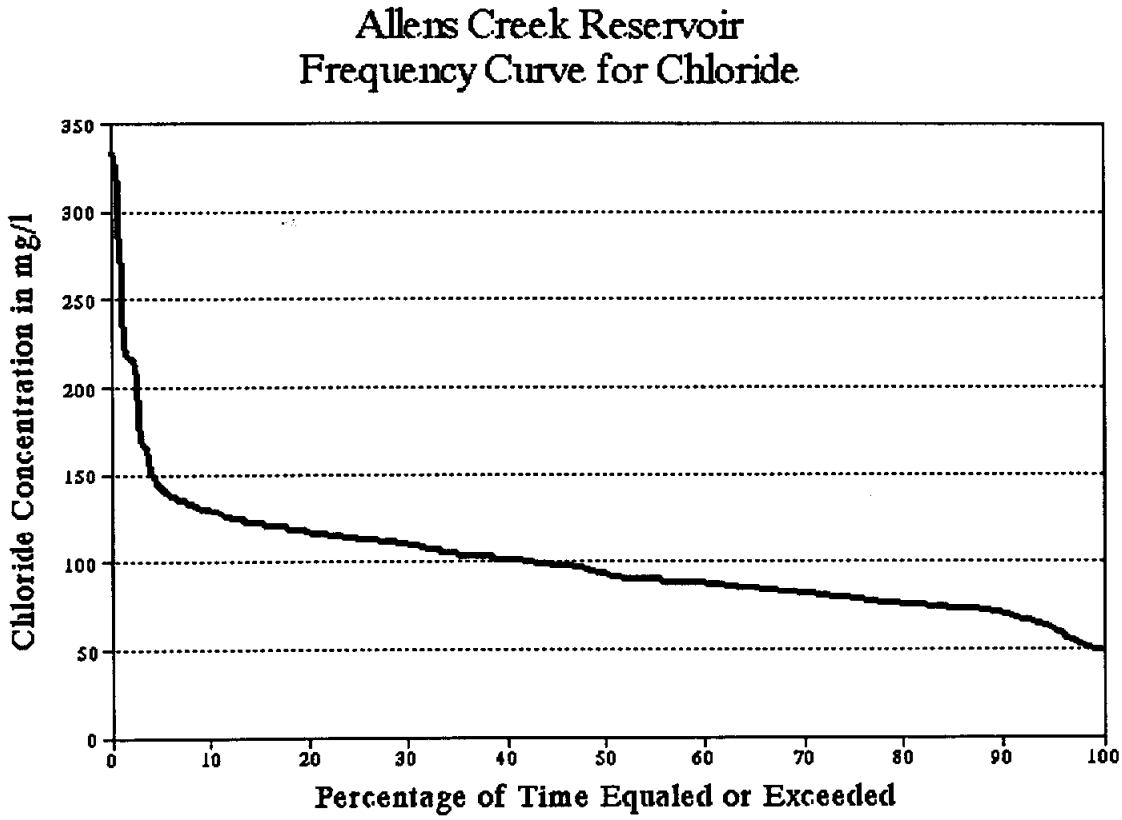
Allens Creek Reservoir
Frequency Curve for Chloride
Chloride Concentration in mg/l
350
300
250
200
150
100
50
0
0
10
20
30
40
50
60
70
80
90
100
Percentage of Time Equaled or Exceeded

Figure 2-3

3. Reservoir Yield Studies

In the quality routings described in Section 2, it was intended that the reservoir not be drawn below a minimum storage content equal to the amount used in the two consecutive months of heaviest requirements, which in this case are June and July. The minimum content in February of 1957 (the low point of the critical drought period) was shown to be 24,589 acre-feet, or slightly more than the amount needed in June and July combined.

Figure 3-1 shows the relationship between project yield and the installed diversion capacity at the Brazos River, both with and without the minimum reserve assumption, as shown by studies which included the proposed Trans-Texas instream flow requirements. With no minimum reserve, the yield could be as much as 106,400 acre-feet per year if the pump station has a peak rate of 3,000 cfs. Further pumping capacity increases beyond 3,000 cfs would not gain any added firm yield.

If the two months' reserve is to be maintained, the maximum yield with the Trans-Texas bypass and pass-through criteria would be some 81,800 acre-feet per year with a diversion capacity of 2,200 cfs, and increases in pump station capacity beyond that amount would not produce more yield.

In the proposed Trans-Texas pass-through criteria for runoff into new reservoirs, there is a provision that causes the requirements to be eased when a reservoir drops below a designated percentage of its conservation storage capacity. Whereas the basic requirements are set in terms of either the median or the mean historical flows for various months, based on the complete period of available records, the specified releases are reduced to the median flow for the historical critical drought period once the reservoir content becomes less than the designated percentage of capacity. In the studies covered by Figure 3-1, the threshold point was 60 percent of the conservation capacity. The yield studies were repeated with this trigger point for relaxation of the pass-through rule set at 40 percent and then at 80 percent of the storage capacity.

It was found that these changes made no difference in the computed yields for the Allens Creek project. Regardless of the setting of the trigger point within the range of 40 percent to 80 percent, the computed yields were the same, i.e.: (a) 106,400 acre-feet per year for no reserve and a diversion pump capacity of 3,000 cfs, (b) 81,800 acre-feet per year for two months' reserve and a pump capacity of 2,200 cfs and (c) 70,900 acre-feet per year for two months' reserve and a pump capacity of 1,600 cfs.

In effect, the Allens Creek project would not be entitled to impound any more of the runoff from its own watershed with the trigger point set at 40 percent than it could with the trigger point set at 80 percent or 60 percent. There have also been recent discussions in the course of the Trans-Texas studies to the effect that there might be valid reasons to have a similar relaxation of the bypass requirements relating

to diversions from the main rivers (in this case the Brazos). There is not now such provision. If that kind of rule were adopted, it probably would increase the yield of Allens Creek Reservoir.

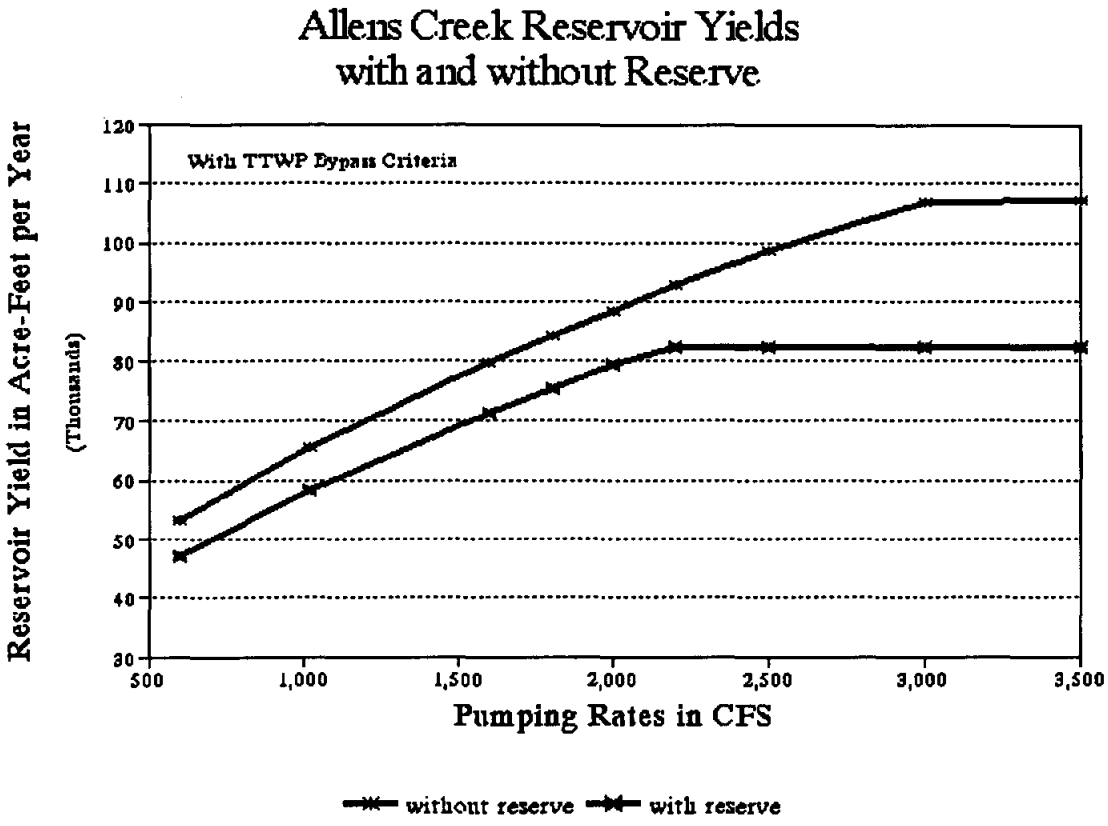

Figure 3-1

4. Instream Flows

The impact of Allens Creek Reservoir on instream flows during the 50-year study period from 1940 through 1989 was calculated as outlined in Appendix I. The Allens Creek project, with a demand of 70,000 acre-feet per year and a Brazos River diversion capacity of 1,600 cfs,. would reduce the average flow at the Richmond gaging station by 1.64 percent according to the 50-year computations. Figure 4-1 is a graph showing reductions in the flow at Richmond during the drought years 1954 through early 1957. The average decrease in flow during that period would be 3.99 percent. All of this analysis is based on operating under the proposed Trans-Texas bypass and instream flow criteria.

The impact on the volume of water entering the Brazos estuary would be slightly less significant than the impact on instream flows at Richmond, because any inflows below Richmond would act to decrease the percentage impact of the upstream removals and because part of the water impounded at Allens Creek would have been lost in transit between Richmond and the Gulf if not held back.

For the 50-year period, the average downstream increase in concentrations of chlorides attributable to Allens Creek Reservoir would be 0.22 percent. The comparable increase for total dissolved solids is estimated to be 0.17 percent. Figure 4-2 is a graph showing the impact on chlorides during the critical drought period. For all practical purposes, the downstream quality impact is indicated to be negligible. The quality analysis is also covered in Appendix I.

Brazos River Instream Flows
During 1/1954 to 2/1957 Drought

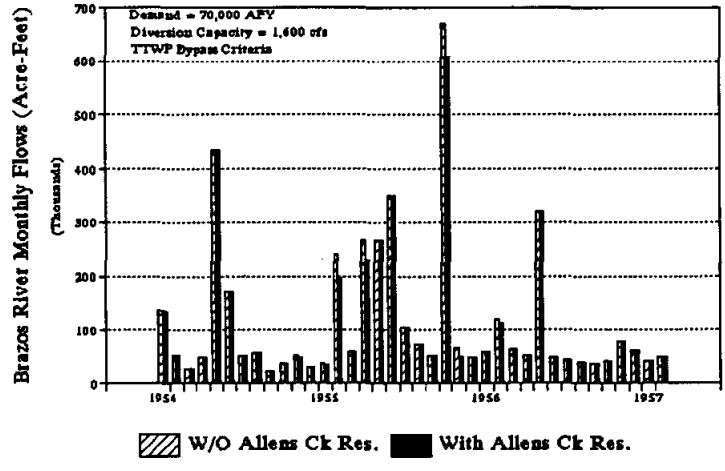

Figure 4-1

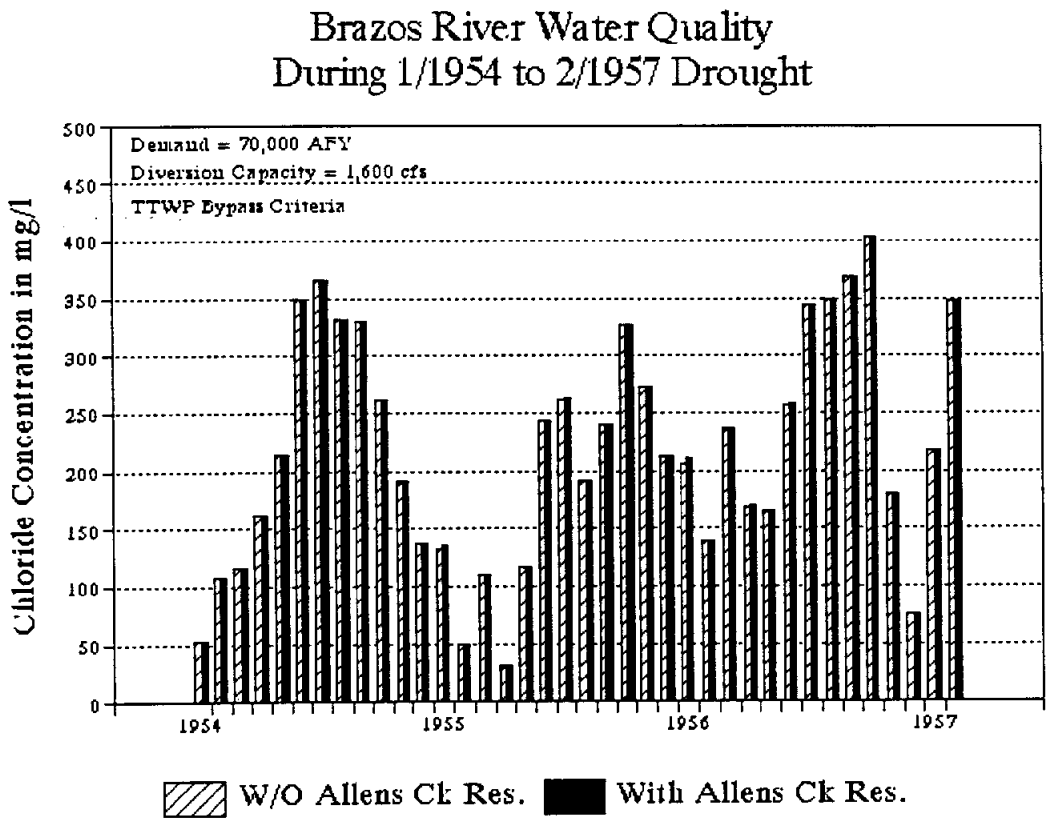
Brazos River Water Quality
During 1/1954 to 2/1957 Drought
Demand = 70,000 AFY
Diversion Capacity = 1,600 cfs
TTWP Bypass Criteria
Chloride Concentration in mg/l
500
450
400
350
300
250
200
150
100
50
0
1954
1955
1956
1957
W/O Allens Ck Res.
With Allens Ck Res.

Figure 4-2

5. Updated Opinion of Cost

Table 5-1 is a summary of the updated opinion of cost for permitting and constructing the proposed Allens Creek project. Further details of the cost amounts are contained in Attachment J. The former cost information that was developed initially for Reference (4) and revised in Reference (5) was brought up to date by means of recognized cost indices and current construction prices. The costs of permitting were increased based on current trends toward more lengthy and detailed review by administrative agencies.

Table 5-2 is an updated estimate of the costs of maintenance and operation for the Allens Creek project, based on the similar estimate in Reference (4), adjusted in proportion to the change in the consumer price index between 1988 and 1995.

Table 5-3 is a 30-year unit cost evaluation for the project, based on the following assumptions:

a. Construction was assumed to begin in 2002 and to be completed by the beginning of 2005.

b. Capital costs were assumed to be financed over 30 years at an interest rate of 8.5 percent per year.

c. The discount rate was set at 4.5 percent per year.

d. The inflation rate was set at 4.5 percent per year.

e. The unit cost of electric energy was assumed to be 6 cents per kilowatt-hour as of 1995.

Table 5-1: Opinion of Probable Cost to Develop the Proposed Allens Creek Reservoir
(1995 Dollars)

Permitting	$ 2,875,000
Dam and related facilities	
Embankment	$ 28,119,000
Spillway	9,886,000
Outlet works	210,000
Site work	514,000
Subtotal	$ 38,729,000
Engineering and contingencies @ 25%	$ 9,682,000
Construction monitoring	$ 2,139,000
Total for dam	$ 50,550,000

Table 5-1 continued

Pump station and related facilities	
Intake and forebay	$ 2,281,000
Structure and equipment	28,673,000
Discharge facilities	3,600,000
Subtotal	$ 34,554,000
Engineering and contingencies @ 25%	$ 8,639,000
Electrical facilities	$ 2,796,000
Construction monitoring	$ 1,021,000
Total for pump station	$ 47,010,000
Land costs	
Reservoir land	$ 18,848,000
Flood easement land	600,000
Terrestrial mitigation land	14,231,000
Subordination of mineral rights	500,000
Total for land	$ 34,179,000
Other costs	
Archeological mitigation	$ 3,000,000
Conflict resolution	11,415,000
Public use area	625,000
Lake office	250,000
Total for other costs	$ 15,290,000
Subtotal	$149,904,000
Interest during construction	$ 19,113,000
Total	$169,017,000

Table 5-2: Allens Creek Reservoir Estimated Annual Operation and Maintenance Costs
(1995 Dollars)

Staff	$ 375,000
Pump station, excluding electric energy	191,000
Electric energy	210,000
Dam maintenance	63,000
General and administrative	168,000
Total	$1,007,000

Table 5-3: Allens Creek Reservoir
Life Cycle Cost for a Project Yielding 70,000 Acre-Feet per Year

Year	*Yield (ac-ft/year)*	*Bond Payments ($1,000)*	*O&M ($1,000)*	*Total Costs ($1,000)*	*Unit Cost $ per (1,000 gal)*	*Present Worth Unit Cost (1995 $/tg)*
2005	70,000	$21,402	$2,236	$23,638	$1.04	$0.67
2006	70,000	$21,402	$1,634	$23,036	$1.01	$0.62
2007	70,000	$21,402	$1,708	$23,110	$1.01	$0.48
2008	70,000	$21,402	$1,785	$23,187	$1.02	$0.45
2009	70,000	$21,402	$1,865	$23,267	$1.02	$0.43
2010	70,000	$21,402	$1,949	$23,351	$1.02	$0.40
2011	70,000	$21,402	$2,037	$23,439	$1.03	$0.38
2012	70,000	$21,402	$2,128	$23,530	$1.03	$0.36
2013	70,000	$21,402	$2,224	$23,626	$1.04	$0.34
2014	70,000	$21,402	$2,324	$23,726	$1.04	$0.32
2015	70,000	$21,402	$2,429	$23,831	$1.04	$0.31
2016	70,000	$21,402	$2,538	$23,940	$1.05	$0.29
2017	70,000	$21,402	$2,652	$24,054	$1.05	$0.28
2018	70,000	$21,402	$2,771	$24,173	$1.06	$0.26
2019	70,000	$21,402	$2,896	$24,298	$1.07	$0.25
2020	70,000	$21,402	$3,026	$24,428	$1.07	$0.24
2021	70,000	$21,402	$3,163	$24,565	$1.08	$0.22
2022	70,000	$21,402	$3,305	$24,707	$1.08	$0.21
2023	70,000	$21,402	$3,454	$24,856	$1.09	$0.20
2024	70,000	$21,402	$3,609	$25,011	$1.10	$0.19
2025	70,000	$21,402	$3,772	$25,174	$1.10	$0.18
2026	70,000	$21,402	$3,941	$25,343	$1.11	$0.17
2027	70,000	$21,402	$4,119	$25,521	$1.12	$0.16
2028	70,000	$21,402	$4,304	$25,706	$1.13	$0.16
2029	70,000	$21,402	$4,498	$25,900	$1.14	$0.15
2030	70,000	$21,402	$4,700	$26,102	$1.14	$0.14
2031	70,000	$21,402	$4,912	$26,314	$1.15	$0.13
2032	70,000	$21,402	$5,133	$26,535	$1.16	$0.13
2033	70,000	$21,402	$5,364	$26,766	$1.17	$0.12
2034	70,000	$21,402	$5,605	$27,007	$1.18	$0.12
TOTAL	2,100,000	$642,060	$96,077	$738,137	$1.08	$0.28

f. Because pumping from the Brazos would allow controlled and rapid filling, the reservoir was assumed to be partly full by the end of construction and to fill entirely in the early part of 2005, so that the full yield of 70,000 acre-feet could be furnished in that year.

g. Electric energy for reservoir filling was added to the operating cost for the year 2005. Including financing over one year at 8.5 percent interest, filling costs (in 1995 dollars) would be approximately $433,000.

Assuming full use of the 70,000 acre-feet per year yield from 2005 on, the present worth unit cost of water from the Allens Creek Reservoir (1995 dollars) would be $0.67 per thousand gallons in the first year of operation (2005), and the present worth unit cost over the 30 years from 2005 through 2034 would average $0.28 per thousand gallons.

The cost amounts indicated for environmental and archeological mitigation are essentially preliminary and may be changed as a result of more detailed environmental studies. Also, the amount ($500,000) indicated for the cost of subordinating mineral interests associated with the reservoir land is preliminary only. Further detailed investigation of this cost item will be necessary when more definitive opinions of cost are prepared.

6. Alternative Dam Alignment

The most important single environmental impact of the proposed Allens Creek project appears to be the inundation of wetlands and bottomland hardwood acreage in or near Alligator Hole, a marshy area of roughly 1.1 square miles near the northeast corner of the reservoir (2). Figure 6-1 shows an alternative embankment alignment that would leave Alligator Hole outside the impoundment. It would be possible to offset the loss of storage capacity due to this change by raising the top of conservation storage three feet, to elevation 121.0. The capacity of the alternative lake with the top of normal storage at 121.0 would be slightly more than the impoundment volume of the original configuration at elevation 118.0. The net effect of the change would be to provide essentially the same storage but to gain a moderate decrease in the surface area of the lake when full. Thus, the yield performance would be improved to a slight extent.

The embankment volume and the average pumping lift would be increased due to these changes, and the construction cost and the annual project costs would therefore be slightly higher. However, savings in costs of environmental mitigation would more than offset those small increases. Preliminary estimates confirmed that the life cycle unit cost of the new supply would be approximately the same or a bit less with the environmentally preferable option.

Table 6.1 shows a comparison of key cost and hydrologic parameters for (a) the original embankment alignment and (b) the version that would avoid Alligator Hole. On all counts, the comparison favors the alternative that leaves Alligator Hole undisturbed. The conclusion seems clear that, in future work on the Allens Creek project, the new embankment alignment and the 3-foot raise in the top of conservation storage should be adopted.

Table 6-1: Comparison of Costs and Hydrologic Parameters for Alternative Versions of the Allens Creek Reservoir Project

	Original	*Revised*
Alligator Hole inundated?	Yes	No
Elevation of top of conservation storage	118.0	121.0
Acre-feet of conservation storage	142,892	143,571
Lake area in acres at top of conservation pool	8,250	7,060
Minimum content in acre-feet from operation study with demand set at 70,000 ac-ft/yr and Brazos diversion capability of 1,600 cfs	25,532	36,942
Estimated capital cost of project in millions of 1995 dollars	$169.0	$161.9
Average present worth unit cost per thousand gallons of water (1995 dollars), assuming that the entire 70,000 ac-ft/yr yield is used from 2005 through 2034	$0.28	$0.27

7. Summary of Findings

The key findings of the studies described herein are as follows:

a. Based on computer simulation of project performance during a 50-year sequence of hydrologic conditions comparable to the actual recorded experience from 1940 through 1989, with a use rate of 70,000 acre-feet per year and a pumping capacity of 1,600 cfs at the Brazos River, the median chloride and total dissolved solid concentrations in the Allens Creek Reservoir would be approximately 94 milligrams per liter and 425 milligrams per liter, respectively. These results are from studies in which the bypass flows on the Brazos and pass-through releases of reservoir runoff from Allens Creek were in accordance with the environmental criteria adopted for studies of the Trans-Texas Water Program.

b. The chloride concentration was found to range from a minimum of 49 milligrams per liter to a maximum of 334 milligrams per liter. For total dissolved solids, the range was from a minimum concentration of 283 milligrams per liter to a maximum of 1,139 milligrams per liter.

c. It was found that a reservoir of the proposed size (142,982 acre-feet of conservation capacity), receiving supplemental inflows from a Brazos River pump station with 1,600 cfs of diversion capacity, would yield 70,000 acre-feet per year on a dependable basis and would be drawn down at the end of the critical drought to a storage content of slightly more than the amount used in the two consecutive months of greatest demand.

d. The Trans-Texas flow-through criteria for new reservoirs are less stringent when a reservoir is drawn down below 60 percent of conservation storage. Additional studies were carried out to determine how much difference would result from setting the threshold point for change in criteria to 40 percent or 80 percent, rather than 60 percent. It was found that those changes did not affect the yield results for Allens Creek Reservoir.

e. It was determined that the impact of the Allens Creek project on instream flows and water quality in the Brazos River would not be significant.

f. An updated opinion of cost showed a total capital cost of $169 million for the Allens Creek project.

g. Assuming that the Allens Creek project would be completed and go on line at the beginning of 2005 and that the yield of 70,000 ac-ft per year could be used completely during the 30 years from 2005 through 2034, the average unit cost per thousand gallons was found to be $0.28, expressed in 1995 dollars.

h. The single greatest undesirable environmental impact of the Allens Creek project appears to be the loss of about 700 acres of wetlands and bottomland hardwoods in the area known as Alligator Hole. It was determined that realignment of the northern end of the embankment so as to keep Alligator Hole out of the reservoir would be both feasible and desirable. The savings in environmental mitigation costs, due to avoiding Alligator Hole, would more than offset the cost of raising the lake storage level three feet to replace the

capacity lost by the change in embankment alignment. It was found that the alternative project configuration which would leave Alligator Hole intact would be preferable both environmentally and economically and would not cause any loss of water supply performance.

APPENDIX A

LIST OF REFERENCES

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LIST OF REFERENCES

(1) URS/Forrest and Cotton: *Allens Creek Dam and Reservoir on Allens Creek, Brazos River Basin, Austin County, Texas*, prepared for Houston Lighting and Power Company, January 1974.

(2) Freese and Nichols, Inc.: *Status of Environmental Issues for Allens Creek Reservoir*, prepared for the Trans-Texas Water Program, July 1995.

(3) URS/Forrest and Cotton: *Allens Creek Dam and Reservoir on Allens Creek, Brazos River Basin, Austin County, Texas*, prepared for Houston Lighting and Power Company, July 1977.

(4) Freese and Nichols, Inc.: *Yield Analysis and Cost Estimate for Allens Creek Reservoir*, prepared for the Brazos River Authority, February 1989.

(5) Freese and Nichols, Inc.: *Supplemental Study of Allens Creek Reservoir*, prepared for the Sabine River Authority of Texas, May 1994.

APPENDIX K

COMMENTS

The Light company
Houston Lighting & Power

P.O. Box 1700 Houston, Texas 77251-1700 713-207-1111

January 8, 1997

Mr. Thomas Gooch, P.E.
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4055 International Plaza, Suite 200
Fort Worth, Texas 76109-4895

Re: **Trans-Texas Water Program - Southeast Area**
Comments on Draft Memorandum Reports for Allens Creek Reservoir

Dear Mr. Gooch:

Members of Houston Lighting & Power Company's (HL&P) staff have reviewed the two draft memorandum reports prepared for the Trans-Texas Water Program concerning the proposed Allens Creek Reservoir: *Operation Studies and Opinions of Cost for Allens Creek Reservoir* (Operation Study) dated November 1996 and *Status of Environmental Issues for Allens Creek Reservoir* (Environmental Study) dated November 1996. The following comments are submitted for your consideration.

Comments on the Environmental Study

1. Copies of additional studies which contained information about wildlife and habitat at the proposed Allens Creek Reservoir site were sent to you last month. We feel that where appropriate this information should be incorporated into the final Trans-Texas report.

   - *Wildlife Habitat Appraisal for The Proposed Allens Creek Reservoir Site.* August 1995. Dr. James Lester of the University of Houston Clear Lake commissioned by Texas Parks and Wildlife Department.

   - *Biological Monitoring Program of the Allens Creek Nuclear Generating Station.* 1975. Dames & Moore Environmental commissioned by Houston Lighting & Power Company.

2. The title of Section 2 of the Environmental Study, "Affected Environment", should be changed to something less prejudicial. We suggest a more neutral title such as "Site Description" since the purpose of Section 2 is to detail the existing baseline conditions found at the site; whereas, Section 3 assesses how constructing a reservoir will impact the site.

3. The Operation Study proposes an alternative dam alignment to reduce wetlands mitigation costs, but this second design and the reduced impacts are only briefly mentioned in the Environmental Study. We believe that the Environmental Study should fully discuss this alternative.

4. During the recent meeting of the Technical Advisory Committee for the Southeast Area of the Trans-Texas Water Project, there were questions as to why the estimated acreage needed to mitigate the reservoir site differed so much between the Environmental Study and the Wildlife Habitat Appraisal prepared by Dr. Lester. Both reports contain similar area estimates for potential wetlands, but it appears that Dr. Lester based his mitigation estimates on mitigating all land inundated by a 8,250 acre reservoir, whereas, the Environmental Study assumes that only the jurisdictional waters of the U.S. impacted by a 8,250 acre and a 7,060 acre reservoir would be mitigated. We understand that under current law the reservoir developer must mitigate impacts to jurisdictional waters of the U.S. and that any additional mitigation would be solely at the discretion of the developer. If this is the case, it is inappropriate to include estimates for discretionary mitigation in cost estimates that will be used to compare this water management strategy with other strategies.

   Additionally, we question whether the statement in Section 4 (third paragraph) that the remaining area in the proposed reservoir area would require some mitigation is correct.

5. Both the Environmental Study and Dr. Lester's Wildlife Habitat Appraisal assume that all the environmental and ecological impacts will be negative. This assumption has proven false at the reservoir constructed adjacent to the South Texas Project in Matagorda County. HL&P constructed the 7,000 acre reservoir in the early 1980's and filled the reservoir with fresh water from the Colorado River. Annual waterfowl population counts conducted each fall from 1980 to 1986 showed a increase in the number and diversity of migratory waterfowl and native shorebird species. Annual Mad Island Marsh Christmas Bird Counts which are conducted at the STP Reservoir and neighboring land have continued to identify a wide range of species that have been attracted by the reservoir. Reports detailing these ecological studies are attached. In general, the ecological advantages of managed deep water habitat over farmlands include increased number and diversity of migratory waterfowl (i.e., ducks, loons, grebes), increased number and

diversity of native shorebird species, and a refuge for migratory waterfowl during drought cycles.

In addition, aquatic life habitat has not been addressed. Construction of a reservoir enables a well managed fishery to be established that will enhance the ecological value of the site, the recreational fishing activity, and general aquatic recreation activities.

HL&P believes that the positive environment and ecological impacts should be fully discussed in the Environmental Study and the value of these positive impacts be used to offset needed mitigation.

6. Will the reservoir dam design include relief well or some other mechanism for relieving the hydrostatic pressure of the reservoir on the dam? If so, could this water be used to enhance the wetland areas which lay between the reservoir and the Brazos River?

Comments on the Operation Study

1. The Operation Study is somewhat confusing. The main body of the study addresses the operation and costs associated with a 8,250 acre reservoir. Almost as an afterthought, an additional section was added which proposes an alternate dam alignment that would minimize the inundation of wetland areas. Since the outcome of evaluating this water management strategy would undoubtedly be significantly different depending on which of the two design options is considered, it is important that only one design be proposed for final review by the Trans-Texas Section Team so that all team members are evaluating the same project. Based on the material in these studies, HL&P supports the concept of realigning the dam to minimize disturbing established wetland areas. We suggest that the realigned dam design be the single design evaluated by the Trans-Texas Selection Team for the Allens Creek Reservoir; consequently, all the supporting operational studies, cost estimates, environmental impacts, and other materials should support this design. It seems more appropriate to discuss the two alternate designs and the advantages of the realignment in the report's Introduction, then focus exclusively on the one design in the body of the report.

2. The Operation Study does not address several of the criteria which will be used to evaluate the various Water Management Strategies. In particular, the study does not discuss a very important issue: the economic impacts of the reservoir to the surrounding communities. HL&P commissioned an economic analysis of the recreational value of the proposed Allens Creek Reservoir and State Park when we were planning an electric generating facility adjacent to the reservoir. The study, which is attached, concluded that

there would be an annual net benefit of at least $24 million (in 1985 dollars) from the direct use of reservoir and park facilities. In addition, the development of a dependable water supply will also impact the economic development of not only the surrounding communities, but also of the downstream communities in Fort Bend and Brazoria Counties. HL&P suggests that the economic impact of the reservoir be fully discussed in the final Study.

3. The Operation Report does not address operating the Allens Creek Reservoir and the other Brazos River Authority reservoirs as a system. Is it possible to optimize the yield from the Brazos River and the Allens Creek Reservoir by operating these reservoirs in a coordinated fashion?

We appreciate the opportunity to comment on these Studies. Should you have any questions about our comments, please contact Ms. Cynthia M. Schmidt at (713) 945-8214.

Sincerely,

Edward A. Feith, P.E.
Manager, Environmental Department

CMS/cms J:\ENV\WATERSUP\ALENS-CK\COMMENT1.WP6

Attachments

cc: Jeff Taylor

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Division of Ecological Services
17629 El Camino Real, Suite 211
Houston, Texas 77058

JLT
AG
Copy To Tom Gooch + Jeff Taylor

February 11, 1997

Albert Gray
Development Manager
Sabine River Authority
P. O. Box 579
Orange, Texas 77630

Dear Mr. Gray:

The U.S. Fish and Wildlife Service (myself and Bryan Pridgeon) has been participating on the SETAC to insure that TTWP planning will be consistent with any Federal environmental requirements and that fish and wildlife resource planning is included with other features of project development.

We have recently reviewed and completed a preliminary field evaluation of the Allens Creek Reservoir site near Wallis, Texas. The information contained in the environmental issues volume is quite comprehensive but we believe Figures 2.1 and 2.2 should be combined into one (or an overlay) cover type habitat map.

The action agency for this project should inspect the area for bald eagle nests and for the presence of Attwater greater prairie chicken at the time the detailed planning for construction begins. There are eagle nests across the Brazos in Fort Bend County and suitable habitat for prairie chickens was identified within the reservoir area.

Alligator Hole is a rather unique and interesting habitat. Mitigation for losses here would be extremely costly so the project should be designed around the alternative that avoids this area. A mitigation scheme for subsequent losses could be put in place in and around the Alligator Hole landscape to return value that has been lost from past agriculture. This could be done by an easement on the lands involved to conserve them as natural areas against deterioration and drainage for the future.

The operation of the reservoir for storing trans-basin water was not discussed in the document if this is the case. Would the reservoir be on the direct route of trans-Texas conveyance or re-allocation take place by withdrawal and discharge into the Brazos during pick up periods elsewhere? This requirements could affect design of the reservoir and consequential environmental impacts in the reservoir and river.

Thank you for the opportunity to comment. If you need any additional information please do not hesitate to contact me at 713/286-8282.

Sincerely,

Frederick T. Werner
Chief, Regulatory Activities

cc:
Glenda Callaway, TTWP Environmental Focus Group

December 8, 1996

Albert Gray
Sabine River Authority of Texas
Box 579
Orange, Texas 77630

Dear Mr. Gray,

Enclosed is a copy of my personal comments regarding the TPWD's Legislative Summary for the State Water Plan.

My comments on the Allens Creek Project can be found here as well as other comments that address the Trans - Texas Plan. Please do send me a copy of Volume II of the Allens Creek Plan.

Thank you for your assistance.

Sincerely, Brandt Mannchen

Brandt Mannchen
1705 Michigan #3
Houston, Texas 77006
H713-521-9534, W713-640-4313

December 8, 1996

Craig Pedersen
Executive Administrator
Texas Water Development Board
P. O. Box 13231
1700 N. Congress Ave.
Austin, Texas 78711-3231

Dear Mr. Pedersen,

Enclosed are my personal comments regarding the "Draft Water for Texas Today and Tomorrow - A Draft Legislative Summary of the 1996 Consensus - based Update of the State Water Plan".

1) I am concerned that the TWDB is talking to state legislators about what bills should be passed by the Texas Legislature and what should be in the bills. This one action virtually nullifies any possible impact the public, including myself, can have on this proposal. This is not true public participation since the outcome is already preordained. In essence this is sham public input. I object!

2) In reality the entire process is backwards. The Texas Water Plan update should come out first, the public should give their comments, and then the water plan finalized. By the time the water plan does come out the TWDB will have gotten much of what it wanted, without public input and scrutiny of the water plan because the Texas Legislature will have passed changes that TWDB pushed to have made. All this is being done again without the benefit of public input which can correct errors as well as bring additional information to the fore and prevent hasty actions that are not in the public's best interest. I object again!!

3) Since we have no inflow studies completed, as one example, how can we push for changes to water policy that will effect inflows when we cannot tell how the inflow issue will effect the water plan? The same can be said for the drought criteria. Without seeing what TWDB proposes and how the public feels about this how can legislation be passed that will change drought policy regarding overriding inflow protection? You in essence seek changes to obtain more power before you give the public the ability to see what you propose and judge it.

4) I certainly agree with Bill Moore of the San Jacinto River Authority that we need to have people take responsibility for their actions or inactions. This means that we need to start living within our means. In the Houston Area we have exceeded our carrying capacity. We exceed air quality standards so we are exceeding our airshed capacity, we exceed water quality standards so we are exceeding our water quality capacity, we exceed our watershed capacity to only use water in the basin where we live, we exceed our floodshed capacity since we have severe floods every year which cause millions of dollars of damage, we have exceeded our wildlife capacity since we have endangered species, depleted wildlife populations, and deteriorated habitat (very litte native prairie and bottomland hardwoods left, to name just two habitats that have severely deteriorated), we have exceeded our vegetation capacity by destroying so much of our native vegetation that erosion is having a maior impact on our human created systems, like dredging for navigation.

We need to start living within our means. Just because there have been interbasin transfers in the past does not mean we should have more of them. The magnitude of interbasin transfers being proposed are huge compared to what we have seen in the past. I do not believe that once water has been transfered that it can be cut off from the basin it has been transfered to. I believe those who say this are not being accurate or honest. I do not really believe that once Houston gets Trans - Texas in it will give the water back to East Texas.

We need to redirect our population growth to areas where we are not exceeding our water carrying capacity. We also need to reduce population growth and discourage additional people from moving here. We need to reduce our material usage. We do not need a doubled population. Trend is not destiny. We can plan for these things. If we do not talk about them and start the process then we will never come to grips with the growing forever cancer talk. This is not biologically possible or socially desirable or responsible.

4) I also am concerned that we are piecemealing the old Texas Water Plan. You do not show in the document the existing water transfer projects that are in place. If you overlay these with the ones proposed that are in your document you can very easily see that a canal or pipeline down to Brownsville and one to the Panhandle are not that farfetched from happening. The political momentum will be hard to resist once all of these projects are in place to go ahead and make some final connections. This would be disasterous for the environment and for people's livelihoods.

5) The economic emphasis of this plan scares me. Economic potential is not necessarily good for people. For instance, massive layoffs in Texas and elsewhere, are good for economic potential for bondholders and stockholders as are movements to other countries of jobs. But they are devestating to our people who need the jobs here and now. In addition on page 2 this plan does not focus on economic viability because it does not take the attitude that overstripping our natural resource base is bad and that those jobs shipped out of Texas to other countries is not good. In addition on page 1 when you talk about reasonable cost for economic developement what does this mean? Is it reasonable to have socialistic intents to support wealthy persons or interests by subsidizing these with lots of water projects? Is this best for the public in the long run?

6) I continue to be worried that by TPWD signing on to this process and plan it has placed itself in an impossible position. I do not believe TPWD will have the leverage to stop unacceptable parts of this plan when it is so emeshed in the matrix of the plan. I do not beleive that TPWD will have the independent voice to stop foolishness within the process. The TPWD has an opportunity to do this outside the process where it can talk directly to the public and not be compromised by its entanglements within the process. This is a great concern that I have. Already the PR part of the process makes you wonder about its fairness and validity. This is not a concensus - based process when you do not allow the public to respond before you work with legislators about what changes are needed and when most meetings of the Trans - Texas project are held at times when the public cannot attend.

7) I am opposed to many of the water projects that are listed on page 6, Figure 5, In particular the Wallisville Dam will unacceptably impact the Trinity River Delta and is not necessary economically. The Allens Creek Dam really scares me since on page 1 - 1 of the Draft Memorandum Status of Environmental Issues for Allens Creek Reservoir, Trans - Texas Water Program Southeast Area, November 1996, when it says that "The proposed reservoir could provide additional yield and or serve as regulating storage for water being transferred westward to areas of need in the central part of the state.". I can easily see Toledo Bend water going to Austin and San Antonio as well as Houston. This is not living within our means and is disrupting entire multiple watersheds in a third of the State of Texas. This is not a comforting thought for a plan that is supposed to care about the environment. This same phrase is also given on page 1 - 1 of the companion report. "Operation Studies and Opinions of Cost for Allens Creek Reservoir, Volume I - Text.

8) I am very concerned about the water transfer proposal on page 6 that will take Trinity River (Luce Bayou Project) across Sam Houston National Forest in San Jacinto County. We must stop thinking of the NF as a place to put projects across and destroy the environment. I am also concerend about the canal that is shown as connecting Lake Conroe to the Conroe Area. It appears as if the San Jacinto River may be impacted by this. The river makes an excellent flood control, recreation, and wildlife corridor to Lake Houston and should be protected and not degraded.

9) Many of the other dams on page 6 look unneeded including the Paluxy Dam, Rio Grande Wier, and others.

10) I have a concern that this plan does not do enough about stressing the need to learn to live with droughts and not fight against them. Droughts are not disasters. People living where there is not enough water is the disaster. It is natural and cyclical to have dry and wet times. We need to adapt to these real natural rhythms and not try to engineer our way around them.

11) The State must stop granting water rights permits to already overallocated waters. This makes no sense at all. In addition the state must not do anything to weaken the Texas Open Records or Meetings Acts. There are very few real emergencies that require such draconian authority that cannot be seen coming and planned for ahead of time. Do not wait for droughts or floods but plan ahead. I am totally against any emergency suspension of inflows into bays, estuaries, and rivers. You do not even define what emergency is here or give the criteria for determining if it exists.

12) I am not for using streams as conveyance mechanisms for someone's water that will be used later. Once the water hits the stream it is the public's and should be used for public purposes. Also on page 11, TNRCC "must" and not simply "consider" mitigate impacts of interbasin transfers. Why would you allow short-changing of other's environment when you take their water?

13) Once again water conservation is given short shrift here. A minimum water conservation plan must reduce use by 30%. Otherwise you are just paying lipservice to what we can do to save water.

14) On page 13. I am against streamlining water rights permitting. This usually means the public has fewer opportunities to get their concerns on record. Also on page 15. I do not want the state to buy dam sites. Buying dam sites ensure that boondoggle projects will be provided subsidies and momentum for completion.

15) On page 16. I do not see a crisis of bond funding. It looks like alot of money is left to use. It is obvious the State wants to mix all the monies so it can use them to build boondoggle water projects without the public's oversight. I object. In addition environmental mitigation must be a state requirement and not just a federal one.

16) On page 19 flooded areas should be bought and turned into natural flood control areas and be used for parks, recreation, and wildlife corridors.

17) On page 23. I have real concerns about regional environmental mitigation banks. These banks, if not operated properly, may make development of wetlands sites, which under Section 404(b)(1) guidelines by the U. S. EPA are deemed to be sites of special significance and should not be developed, easier to develop. Two areas where mitigation banks would be useful would be the Katy Prairie, so that we could create at least a 50,000 acre Katy Prairie National Wildlife Refuge, and Sam Houston National Forest where we could buy inholdings, acquire buffer lands, and corridors to connect all of the federal forest lands.

18) I see nothing in here that addresses saving wild, scenic, and recreational rivers in our state. This is a large oversight and must be corrected.

19) In West Harris County and in Waller and Fort Bend Counties I want to see some groundwater use saved for the Katy Prairie and the farms that exist there so the hundreds of thousands of waterfowl and shorebirds can safely live in this area.

20) I am against golf course irrigation projects having a greater priority than instream flows for wildlife and for natural purposes.

21) I am very concerned that the present studies on inflows into Galveston Bay suggest that about half of the water (4.9 million acre feet) be protected for bays and estuaries and the other 50% be allowed to be sucked up by development. This hardly seems fair to the environment and its natural range of flows.

Because of these concerns I request that this document be withdrawn and not be developed until the new Texas Water Plan is finalized. Thank you.

Sincerely,

Brandt Mannchen

Brandt Mannchen
1705 Michigan #3
Houston, Texas 77006
H713-521-9534, W713-640-4313

AG

Don W. Hooper, Ph.D.
Office of the Superintendent

Copy To Tom Gooch
+ Jeff TAylor

January 28, 1997

Mr. Albert Gray
Coordinator, Trans-Texas Water Program Southeast Area
Sabine River Authority
P.O. Box 579
Orange, Texas 77630

Re: Proposed Allens Creek Reservoir

Dear Mr. Gray:

I understand that the Trans-Texas Water Program (Southeast Study Area) is considering the proposed Allens Creek Reservoir as a water supply option for meeting projected water demand in the State of Texas. As a local official I am in favor of the Allens Creek Reservoir because

- the Fort Bend Independent School District will ultimately need a dependable surface water supply
- future economic development in FBISD depends on the future availability of a dependable water supply
- the reservoir can store otherwise destructive flood water for constructive use during droughts
- the reservoir will have a positive economic impact on the school district due to increased recreation facilities and tourism
- the reserve will have a positive economic impact on the school district due to the potential for development and increased property value of the land surrounding the reservoir
- the reservoir will enhance the environment by replacing flood prone agricultural and grazing land with a reservoir that can support a large fish and bird population.

I urge you to give full consideration to the positive economic impact that the Allens Creek Reservoir will have on the local and regional economy and recommend it as a water supply project to the State.

Sincerely,

Don W. Hooper, Ph.D.
Superintendent

cc: County Judge
Brazos River Authority
The Greater Fort Bend Economic Development Council

Copy FP: Taylor TG

City of Meadows
One Troyan Drive
Stafford, Texas 77477
Tel (281) 983-2950
Fax (281) 983-2940

January 28, 1997

Mr. Albert Gray
Coordinator, Trans-Texas Water Program Southeast Area
Sabine River Authority
P.O. Box 579
Orange, Texas 77630

Re: Proposed Allens Creek Reservoir

Dear Mr. Gray:

I understand that the Trans-Texas Water Program (Southeast Study Area) is considering the proposed Allens Creek Reservoir as a water supply option for meeting projected water demand in the State of Texas. As a Local official, I am in favor of the Allens Creek Reservoir because:

The City of Meadows will ultimately need a dependable surface water supply.

Future economic development in the City of Meadows depends on the future availability of a dependable water supply.

The reserve will have a positive economic impact on the City of Meadows due to the potential for development and increased property value of the land surrounding the reservoir.

The reservoir will enhance the environment by replacing flood prone agricultural and grazing land with a reservoir that can support a large fish and bird population.

I urge you to give full consideration to the positive economic impact that the Allens Creek Reservoir will have on the local and regional economy and recommend it as a water supply project to the State.

Sincerely,

Jim McDonald
Mayor

JM:eh

cc: County Judge Mike Rosell
Brazos River Authority
The Greater Fort Bend Economic Development

COUNTY JUDGE

Fort Bend County, Texas

Michael D. Rozell
County Judge

(713) 341-8608
Fax (713) 341-8609

January 16, 1997

Mr. Albert Gray
Coordinator, Trans-Texas Water Program Southeast Area
Sabine River Authority
P. O. Box 579
Orange, Texas 77630

Dear Mr. Gray:

I understand that the Trans-Texas Water Program (Southeast Study Area) is considering the proposed Allens Creek Reservoir as a water supply option for meeting projected water demand in the State of Texas. As a local official, I am in favor of the Allens Creek Reservoir because:

- Fort Bend County will ultimately need a dependable surface water supply

- future economic development in Fort Bend County depends on the future availability of a dependable water supply

- the reservoir can store otherwise destructive flood water for constructive use during droughts

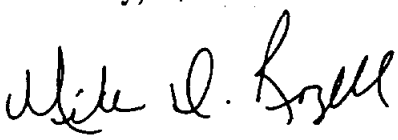
- the reservoir will have a positive economic impact on Fort Bend County due to increased recreational facilities and tourism

- the reserve will have a positive impact on Fort Bend County due to the potential for development and increased property value of the land surrounding the reservoir

- the reservoir will enhance the environment by replacing flood prone agricultural and grazing land with a reservoir that can support a large fish and bird population.

I urge you to give full consideration to the positive economic impact that the Allens Creek Reservoir will have on the local and regional economy and recommend it as a water supply project to the State.

Sincerely,



Michael D. Rozell
County Judge

MDR/lz

MISSOURI CITY 1522 TEXAS PARKWAY • P.O. BOX 666 • MISSOURI CITY, TEXAS 77459 • 281-261-4260

MAYOR
Allen Owen

January 21, 1997

Mr. Albert Gray
Coordinator, Trans-Texas Water Program Southeast Area
Sabine River Authority
P. O. Box 579
Orange, Texas 77630

Re: Proposed Allens Creek Reservoir

Dear Mr. Gray:

I understand that the Trans-Texas Water Program (Southeast Study Area) is considering the proposed Allens Creek Reservoir as a water supply option for meeting projected water demand in the State of Texas. As a local official, I am in favor of the Allens Creek Reservoir because:

- The City of Missouri City will ultimately need a dependable surface water supply.
- Future economic development in the City of Missouri City depends on the future availability of a dependable water supply.
- The reservoir can store otherwise destructive flood water for constructive use during droughts.
- The reservoir will have a positive economic impact on the City of Missouri City due to increased recreation facilities and tourism.
- The reservoir will have a positive economic impact on the City of Missouri City due to the potential for development and increased property value of the land surrounding the reservoir.
- The reservoir will enhance the environment by replacing flood prone agricultural and grazing land with a reservoir that can support a large fish and bird population.

I urge you to give full consideration to the positive economic impact that the Allens Creek Reservoir will have on the local and regional economy and recommend it as a water supply project to the State.

Sincerely,

Allen Owen
Mayor

cc: Mike D. Rozell
Fort Bend County Judge

Herb Appel
Greater Fort Bend Economic Development

Brazos River Authority

Raymond R. Betz Interests, Inc.
Raymond R. Betz Brokerage, Inc.

The BETZ Companies
Established in 1976

Betz Realty Investors, L.C.
Betz Realty Management, L.C.

January 17, 1997

Mr. Albert Gray
Coordinator, Trans-Texas Water Program Southeast Area
SABINE RIVER AUTHORITY
P.O. Box 579
Orange, Texas 77630

RE: Proposed Allens Creek Reservoir

Dear Mr. Gray:

I understand that the Trans-Texas Water Program (Southeast Study Area) is considering the proposed Allens Creek Reservoir as a water supply option for meeting projected water demand in the State of Texas. As a local real estate professional, I am in favor of the Allens Creek Reservoir because:

- Fort Bend County will ultimately need a dependable surface water supply.
- future economic development in Fort Bend County depends on the future availability of a dependable water supply.
- the reservoir can store otherwise destructive flood water for constructive use during droughts.
- the reservoir will have a positive impact on Fort Bend County due to:
    - increased recreation facilities and tourism.
    - the potential for development and increased property value of the land surrounding the reservoir.
- the reservoir will enhance the environment by replacing flood prone agricultural and grazing land with a reservoir that can support a large fish and bird population.

I urge you to give full consideration to the positive economic impact that the Allens Creek Reservoir will have on the local and regional economy and recommend it as a water supply project to the State.

Sincerely,

RAYMOND R. BETZ BROKERAGE, INC.

Tom Condon, Jr.
Vice President

cc: The Greater Fort Bend Economic Development Council

Raymond R. Betz Interests, Inc.
Raymond R. Betz Brokerage, Inc.

The BETZ Companies
Established in 1976

Betz Realty Investors, L.C.
Betz Realty Management, L.C.

January 27, 1997

Mr. Albert Gray
Coordinator, Trans-Texas Water Program Southeast Area
SABINE RIVER AUTHORITY
P.O. Box 579
Orange, Texas 77630

RE: Proposed Allens Creek Reservoir

Dear Mr. Gray:

I understand that the Trans-Texas Water Program (Southeast Study Area) is considering the proposed Allens Creek Reservoir as a water supply option for meeting projected water demand in the State of Texas. As a local real estate professional, I am in favor of the Allens Creek Reservoir because:

- Fort Bend County will ultimately need a dependable surface water supply.
- future economic development in Fort Bend County depends on the future availability of a dependable water supply.
- the reservoir can store otherwise destructive flood water for constructive use during droughts.
- the reservoir will have a positive impact on Fort Bend County due to:
    - increased recreation facilities and tourism.
    - the potential for development and increased property value of the land surrounding the reservoir.
- the reservoir will enhance the environment by replacing flood prone agricultural and grazing land with a reservoir that can support a large fish and bird population.

I urge you to give full consideration to the positive economic impact that the Allens Creek Reservoir will have on the local and regional economy and recommend it as a water supply project to the State.

Sincerely,

Raymond R. Betz

cc: The Greater Fort Bend Economic Development Council

RESPONSE TO COMMENTS

Response to Comments by Edward Feith, Houston Lighting and Power Company:

1. Treatment of the Potential Alignment Change

   This report covers several specific work tasks related to simulation of reservoir performance and a revised estimate of probable project cost, all of which are based on the project concept that has been proposed since at least 1974. The possibility that the environmental impact of the project could be significantly improved by realignment of the embankment and raising the storage level three feet without loss of performance or increase in total cost was recognized and explored after those other tasks were completed. Preliminary evaluations confirmed that the change would be basically beneficial, as shown in Table 6-1 of the report. We think the sequence in which these findings are covered is valid and that it is more realistic to present the alignment change as an option than to take it for granted at this time. It is not a fundamental change, but rather a refinement at the detail level. We believe the report deals with it in a proper manner.

2. Impact on the Local Economy

   This is more an environmental factor than something to be covered in the operation study report. We are adding discussion of this consideration in Section 4 of the environmental report.

3. Operation as Part of the Brazos River Authority System

   The scope of work for the Trans-Texas studies refers to the Allens Creek project in the context of "a balancing reservoir in the Trans-Texas system." Its function as a component of the Trans-Texas program might or might not contribute directly to the Authority's system performance. Obviously, the Trans-Texas system as a whole would need to operate in a way that would be compatible with the BRA system, but it remains to be seen whether it would be closely coordinated with that system. As you know, this is a complex issue, and it was not included among the tasks budgeted for the present report.

Response to Comments by Frederick Werner, U.S. Fish & Wildlife Service:

First four paragraphs: Noted.

Fifth paragraph: The Trans-Texas Scope called for a review of the benefits and environmental impacts of operating Allens Creek Reservoir as a balancing reservoir in the Trans-Texas system. The environmental impacts of using Allens Creek as a balancing reservoir are very similar to those of using it as a water supply project. Those effects are covered in the report. The use of Allens Creek operationally as a balancing reservoir would cause day to day variations but would not impact the yield. However, if considerable storage is dedicated to smoothing out *seasonal* demand, this would affect the yield. The specifics of the balancing reservoir operation would depend on the specifics of the program to export water to the west. The trade-off between yield and the balancing need should be analyzed at the time a specific program of transfer is established.

Response to Comments by Brandt Mannchen:
Item #7 referencing Allens Creek Reservoir: Noted

Response to Comments by Don Hooper, Fort Bend ISD: Noted

Response to Comments by Jim McDonald, City of Meadows: Noted

Response to Comments by Michael Rozell, Fort Bend County Judge: Noted

Response to Comments by Allen Owen, Mayor of Missouri City, Texas: Noted

Response to Comments by Tom Condon, The Betz Companies: Noted

Response to Comments by Raymond Betz, The Betz Companies: Noted

TOPOGRAPHY FROM U.S. GEOLOGICAL SURVEY 7.5 MINUTE WALLIS QUADRANGLE - CONTOUR INTERVAL = 5'

SHELL OIL CO.
6" PETROLEUM PRODUCTS PIPELINE
8" CRUDE OIL PIPELINE

TEXAS UTILITIES FUEL COMPANY
24" HIGH PRESSURE GAS PIPELINE
(APPROXIMATE LOCATION)

DAM EMBANKMENT
ELEVATION 136.5

ALLENS CREEK RESERVOIR

DIVERSION PUMP STATION

MAXIMUM WATER SURFACE ELEVATION 129.2

TOP OF CONSERVATION POOL ELEVATION 118.0

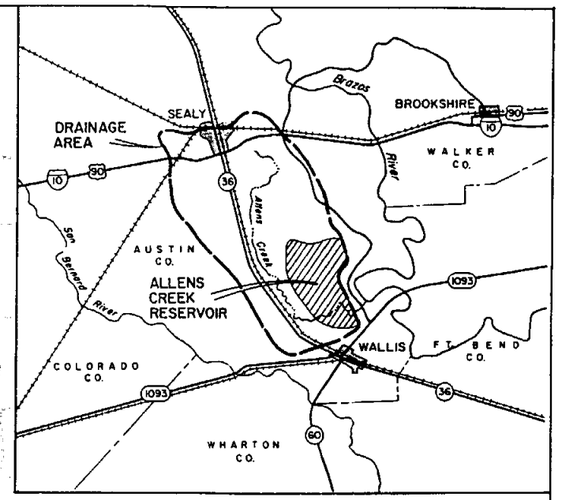
SPILLWAY CREST ELEVATION 118.0

F.M. 1486 BRIDGE OVER SPILLWAY

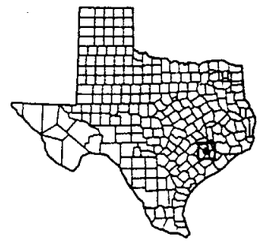
PUBLIC USE AREA

RAISED SECTION OF HIGHWAY AND RAILROAD EMBANKMENT PROTECTION

DIKES
CREST ELEVATION 130.0



ALLENS CREEK RESERVOIR LOCATION



N

0 2000 4000 8000
SCALE IN FEET

ALLENS CREEK RESERVOIR

RESERVOIR LAYOUT

FREESE-NICHOLS

FIGURE 1-1

ORIGINAL EMBANKMENT ALIGNMENT

ALLENS CREEK RESERVOIR

ALTERNATIVE EMBANKMENT ALIGNMENT ELEV 139.5

ORIGINAL CONSERVATION POOL - ELEV 118.0
ALTERNATIVE CONSERVATION POOL - ELEV 121.0

N

0 2000 4000

1" = 2000'

ALLENS CREEK RESERVOIR

ALTERNATIVE EMBANKMENT ALIGNMENT

FREESE-NICHOLS

FIGURE 6-1