WEST HARRIS COUNTY SURFACE WATER SUPPLY CORPORATION

IMPLEMENTATION PLAN

APPENDIX III

SUPPLEMENT TO WATER SUPPLY
NORTH SUPPLY SYSTEM

October 1987

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APPENDIX III

SUPPLEMENT TO WATER SUPPLY
NORTH SUPPLY SYSTEM

Prepared by:
DANNENBAUM ENGINEERING CORPORATION
Houston, Texas

The purpose of this study, undertaken by the West Harris County Surface Water Supply Corporation (WHCSWSC), is to produce an implementation program that will provide a reliable, long-term surface water supply to West Harris County.

This appendix is prepared as part of the overall implementation program and is intended to be a supplement to Appendix II, Water Demand and Supply.

Further information on the content of this document or the overall implementation plan may be obtained from:

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Comments regarding this draft must be received by December 1, 1987.

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DATE ISSUED: October 28, 1987

ISSUED TO: Mr. John Miloy - Texas Water Development Board

EXECUTIVE SUMMARY

Purpose and Scope

This phase of the implementation plan deals with evaluation of a north surface water supply system from the Trinity/Brazos/San Jacinto River Basins and is intended to be a supplement to Appendix II. This supply system is described in the western alternative of the Houston Water Master Plan (HWMP).

Water Demands

Existing and Projected Water Demands

Existing and projected water demands used in this Appendix are based on data previously presented in Appendix II, Water Demand and Supply. Maximum daily demands were used to determine required water supply systems.

Surface Water Supply

Northeast and Southwest Supply Systems

The Northeast and Southwest Supply Systems used in this Appendix are discussed in detail in Appendix II, Water Demand and Supply.

North Supply System

This supply system consists of surface water from the Trinity, Brazos and San Jacinto River Basins as outlined in the western alternative of the HWMP. Development of Lake Millican, Bedias Reservoir and possibly Lake Creek would be necessary along with major conveyance systems from these sources. The HWMP western water alternative calls for two proposed treatment plants, a 150 MGD ultimate capacity Northwest Water Purification Plant and a 200 MGD ultimate capacity Waller Water Purification Plant. If Lake Creek were developed the ultimate capacity of the Northwest Water Purification Plant could be increased to 200 MGD.

Alternate Service Areas

Approach and Methods

Alternate service areas were investigated to determine surface water supply versus demand relationships and also availability to meet the conversion dates outlined in the HGCSD plan. In addition to the five alternate service areas presented in Appendix II, the following alternate was investigated:

Alternate No. 6 - Southwest System Service South of Clay Road
Northeast System Service East of Barker-Cypress
North System Service West of Barker-Cypress

Table ES-1 presents a summary of surface water requirements for Alternate 6 from 1985 to 2030. For purposes of computing surface water requirements in 2030, it was assumed that HGCSD regulatory area eight will be given a conversion requirement of 80% in that year. All surface water requirements are in terms of maximum day demands.

TABLE ES-1

SUMMARY OF SURFACE WATER REQUIREMENTS BY ALTERNATE
(MAXIMUM DAILY DEMANDS)

YEAR	CITY OF HOUSTON SOUTHWEST (MGD)	WHCSWSC SOUTHWEST (MGD)	TOTAL SOUTHWEST (MGD)	TOTAL NORTHEAST (MGD)	TOTAL NORTH (MGD)	TOTAL ALL AREAS (MGD)
ALTERNATE 6 - S.W. BOUNDARY AT CLAY ROAD; N.E. BOUNDARY AT BARKER-CYPRESS						
1985	0.00	0.00	0.00	0.00	0.00	0.00
1995	69.35	0.00	69.35	0.00	0.00	69.35
2000	97.02	19.31	116.33	0.34	0.18	116.85
2005	97.02	19.31	116.33	11.03	0.18	127.53
2010	97.02	19.31	116.33	69.10	5.27	190.70
2012	106.33	19.31	125.64	69.10	5.27	200.01
2020	106.33	19.31	125.64	69.10	5.27	200.01
2030**	106.33	44.48	150.81	69.10	34.86	254.77

Alternate No. 6

In Alternate 6, the City of Houston will require 69 MGD from the Southwest System in 1995, while the WHCSWSC has no mandate in 1995. The Southwest System yield of 143 MGD would be adequate until 2030, when 106 MGD would be used by the City of Houston and the WHCSWSC would need 44 MGD. After 2030, the supply deficiency in the Southwest System would have to be made up from another source.

The Northeast Supply System will require 0.3 MGD at the first conversion date of 2000, increasing to 69 MGD by 2030.

The North Supply System will require 0.2 MGD at the first conversion date of 2000, increasing to 35 MGD in 2030.

Comparison of Alternate No. 6

Considerations of supply adequacy were based on the minimum surface water required to meet the HGCSD conversion plan. The minimum requirements climb in a stair-step fashion rather than linearly, however, the minimum requirements for the City of Houston Southwest and total WHCSWSC supply areas do not vary between alternates.

The total supply available from the Southwest Water Purification Plant (SWWPP) is assumed to be 143 MGD. The Southwest Service area for Alternate 6 shows a small deficit after 2030 which will have to be met by another supply source. The total available ultimate supplies from the Northeast, Northwest and Waller treatment plants as proposed in the HWMP would be adequate to meet the Alternate 6 service area needs.

Some consideration must be given to the timing of the availability of the surface water and whether it would be possible to meet the HGCSD conversion plan. In the Southwest service area, the first conversion requires 69 MGD in 1995. If an estimate of ten years is used to bring the SWWPP on-line, the next requirement of 117 MGD in 2000 would be a reasonable initial design capacity for the plant.

Timing issues are more complex in the North and Northeast service areas. The quantities of surface water for these areas in 2000 or 2005 are small for Alternate 6 and it is likely that they will be supplied from the Southwest Supply System until 2010 when most of the northern area will then convert to surface water. The amount of water required from the Northeast Water Purification Plant (NEWPP) for Alternate 6 would be 70 MGD by 2010. The City has stated that the initial design of the plant will accommodate this additional requirement.

The North Supply System proposes two water plants, the Northwest Water Purification Plant (NWWPP) and the Waller Water Purification Plant (WWPP), both with ultimate capacities adequate to meet the needs of the service area. However, the majority of raw surface water for these plants originates in proposed reservoirs which may not be completed in time to meet the HGCSD conversion dates. These northern areas could not be temporarily supplied from the Southwest System past 2010, since total demand exceeds the available 143 MGD.

Conclusions

By the year 2030, the boundary between the Northeast and North and the Southwest Supply Systems will fall just south of Clay Road, since that is the boundary which produced the closest demand to the 143 MGD supply available from the SWWPP. The ultimate boundary between the Northeast and North Supply Systems is not as apparent since any one of three proposed plants, NEWPP, NWWPP, or WWPP has the capacity to serve the entire WHCSWSC area north of Clay Road. The ultimate boundary need not be the same as the boundary used for interim conditions.

The main objection to any alternate investigated thus far is that water from the North Supply System may not be available in time to meet HGCSD target dates. A cost analysis of the major sources and distribution systems will be necessary before any alternate can be eliminated. This will be described later in Appendix IV.

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1.0 INTRODUCTION

1.0 INTRODUCTION

Purpose and Scope

The project scope of work for this phase of the implementation program deals with evaluation of a North Surface Water Supply System from the Trinity/Brazos/San Jacinto river basins. This supply system is described in the western alternative of the Houston Water Master Plan (HWMP). This appendix is intended to be a supplement to Appendix II which dealt with water supplies and demands.

Evaluation of water supplies for West Harris County involves investigation of three potential sources of surface water. The first two, purchasing water from a future City of Houston Northeast Water Purification Plant (the "Northeast System") and from the Brazos River out of a future Southwest Water Purification Plant (the "Southwest System") were addressed previously in Appendix II, Water Demand and Supply. The third potential source from the Trinity/Brazos/San Jacinto river basins (the "North System") is the topic of this Appendix.

2.0 WATER DEMANDS

2.0 WATER DEMANDS

Existing and Projected Water Demands

The alternate service area water demands formulated in this Appendix are based on the existing and projected water demands as previously defined in Appendix II, Water Demand and Supply. Existing water demands were obtained from groundwater pumpage records for each municipal utility district, city and industry within the defined alternate service area. Projected water demands, as presented in the HWMP, were determined by assigning demand criteria to population and employment projections developed by Rice Center for each census tract and MDA within the alternate service area. Maximum daily demands were used to determine required water supply systems.

3.0 SURFACE WATER SUPPLY

3.0 SURFACE WATER SUPPLY

Northeast and Southwest Supply Systems

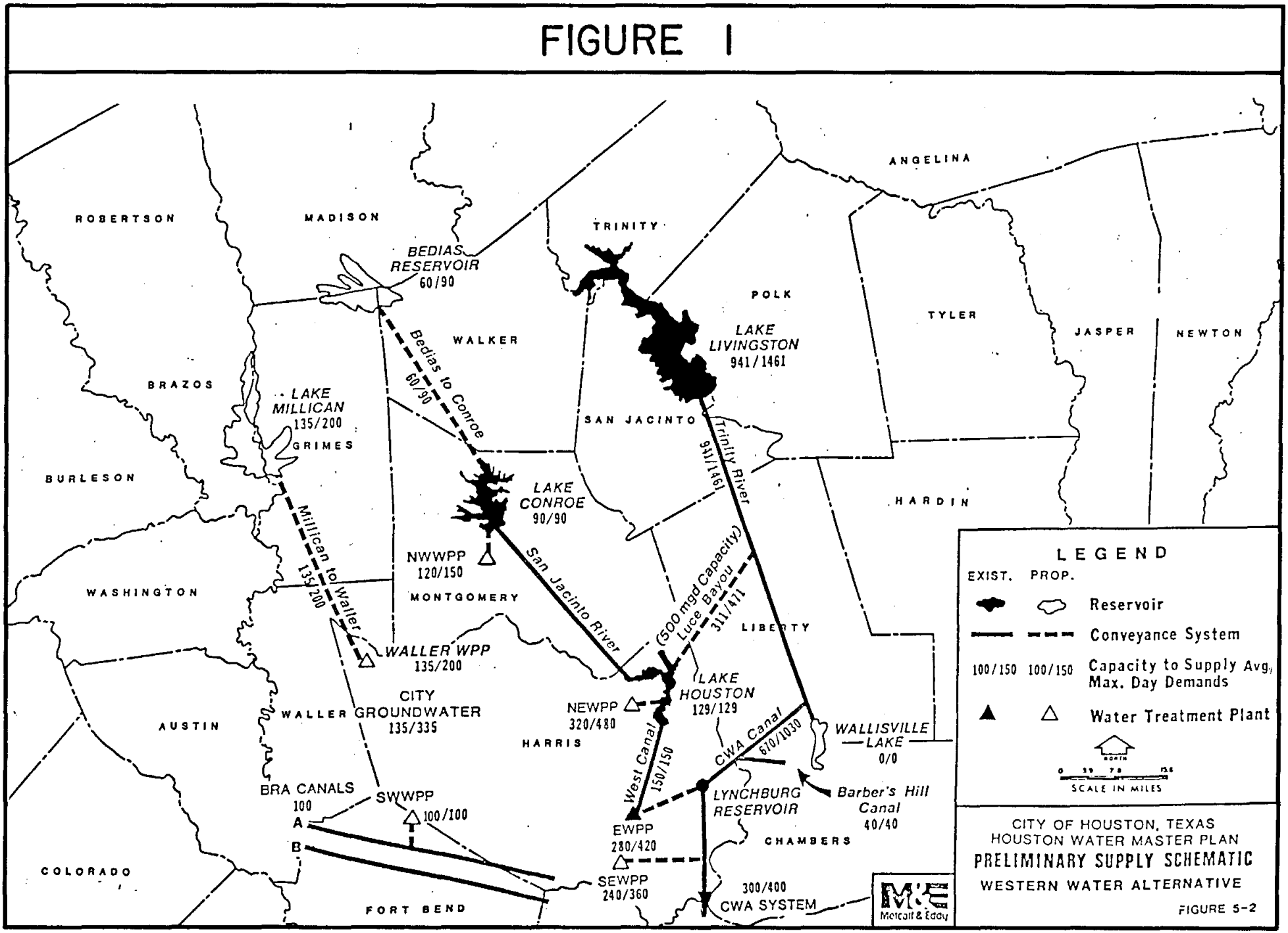
The Northeast and Southwest suface water supplies used in formulating alternate service areas in this Appendix are discussed in Appendix II, Water Demand and Supply.

North Supply System

Trinity/Brazos/San Jacinto River Supply Excluding Lake Creek

This supply system consists of surface water from the Trinity, Brazos and San Jacinto River Basins as outlined in the western water alternative of the HWMP. The development of two water supply sources, Lake Millican and Bedias Reservoir, would be a vital part of this supply system along with conveyance systems from these sources. Figure 1, reproduced directly from Appendix M of the HWMP, presents the most recent preliminary supply schematic for the western water alternative of the HWMP. This latest refinement of the HWMP western water alternative calls for a reduction in capacity of the Northwest Water Purification Plant south of Lake Conroe from 350 MGD to 150 MGD and the addition of a 200 MGD water purification plant near Waller. A raw water conveyance system from proposed Lake Millican would be routed to this plant at Waller rather than to Lake Conroe as previously mentioned in Appendix II.

FIGURE 1


ROBERTSON
MADISON
TRINITY
ANGELINA
BEDIAS RESERVOIR
60/90
POLK
TYLER
JASPER
NEWTON
WALKER
LAKE LIVINGSTON
941/1461
Bedias to Conroe
60/90
BRAZOS
LAKE MILLICAN
135/200
SAN JACINTO
Trinity River
941/1461
GRIMES
BURLESON
LAKE CONROE
90/90
HARDIN
NWWPP
120/150
San Jacinto River
Millican to Waller
135/200
WASHINGTON
MONTGOMERY
(500 mgd Capacity)
Luce Bayou
311/411
LIBERTY
WALLER WPP
135/200
LAKE HOUSTON
129/129
CITY GROUNDWATER
135/335
NEWPP
320/480
AUSTIN
WALLER
HARRIS
West Canal
150/150
CWA Canal
610/1030
WALLISVILLE LAKE
0/0
BRA CANALS
100
SWWPP
100/100
A
B
LYNCHBURG RESERVOIR
Barber's Hill Canal
40/40
EWPP
280/420
CHAMBERS
COLORADO
SEWPP
240/360
300/400
CWA SYSTEM
FORT BEND
LEGEND
EXIST. PROP.
Reservoir
Conveyance System
100/150 100/150 Capacity to Supply Avg./Max. Day Demands
Water Treatment Plant
SCALE IN MILES
CITY OF HOUSTON, TEXAS
HOUSTON WATER MASTER PLAN
PRELIMINARY SUPPLY SCHEMATIC
WESTERN WATER ALTERNATIVE
FIGURE 5-2
Metcalf & Eddy

Trinity/Brazos/San Jacinto River Supply Including Lake Creek

This supply system is identical to the system described above except for requiring the development of three rather than two water supply sources , namely Lake Millican, Bedias Reservoir and Lake Creek Reservoir. A recently released planning report and draft environmental statement, prepared by the Bureau of Reclamation and sponsored by the SJRA presents alternative plans to develop additional surface water supplies within the San Jacinto River Basin. The recommended alternative selected was the Lower Lake Creek site located on Lake Creek in Montgomery County about 5 miles south of Lake Conroe. The development of Lake Creek Reservoir would make available an additional 56 MGD which could be treated by the proposed Northwest Water Purification Plant.

Northwest Water Purification Plant

Upon selection of a western alternative and the development of Bedias Reservoir and a conveyance system to Lake Conroe, the City of Houston proposes construction of a Northwest Water Purification Plant. The proposed location of this plant would be just south of Lake Conroe from which it will get its raw water supply. Preliminary sizing of this plant as presented in the HWMP is 150 MGD at ultimate capacity (year 2030). If Lake Creek Reservoir were also developed, the Northwest Water Purification Plant could possibly be increased in size to 200 MGD ultimate capacity (year 2030).

Waller Water Purification Plant

Upon selection of a western alternative and the development of Lake Millican, the City of Houston proposes to construct a Waller Water Purification Plant in northwest Harris County near the Waller County line. A conveyance system from Lake Millican to the Waller treatment plant is also proposed. Preliminary sizing of this plant as presented in the HWMP is 200 MGD at ultimate capacity (year 2030).

4.0 ALTERNATE SERVICE AREAS

4.0 ALTERNATE SERVICE AREAS

Approach and Methods

This section is a supplement to Section 4.0 of Appendix II and examines supplying the WHCSWSC study area with surface water from sources from the North, Northeast and Southwest. Each alternate service area is evaluated in terms of water demand versus supply and the possibility of meeting the conversion schedule as outlined in the HGCSD Plan. The alternates presented in this Appendix as well as Appendix II will be further tested for economic feasibility in Appendix IV of this study.

All water supply scenarios considered by the HWMP include the Northeast Water Purification Plant (NEWPP) at Lake Houston and the Southwest Water Purification Plant (SWWPP) near the Brazos River. The North System (HWMP western alternative), proposes a water treatment facility at Lake Conroe, the Northwest Water Purification Plant (NWWPP) and a water treatment facility in northwest Harris County, the Waller Water Purification Plant (WWPP). The North Supply System can only be used if the City of Houston elects to bring water from the west.

Evaluation of the adequacy of surface water supplies is based on the minimum surface water required to meet the HGCSD conversion goals, not the full maximum daily requirements.

The following alternate consists of three sources of supply: The Southwest System combined with a Northeast and North System. The Southwest System will supply surface water to portions of the City of Houston as well as the WHCSWSC service area as far north as Clay Road. The City of Houston's portion of the Southwest System is bounded by Fondren and Blalock Roads on the east, Clay Road on the north, the Houston City Limits on the west and the Harris County boundary on the south.

For the following alternate, the boundaries of the service area and the projected water demands were defined as mentioned in Appendix II, Section 4.0.

Alternate No. 6

Two criteria are applied to Alternate No. 6 described below. First, the supply is compared to the HGCSD surface water requirements at each conversion date and second, consideration is given to whether the water sources will be available in time to meet the HGCSD conversion dates. Table 1 gives total maximum daily usage for each system in Alternate 6. Table 2 details the calculation of surface water requirements per HGCSD requirements, and Table 3 is a summary of this information.

In Alternate 6, the portion of the WHCSWSC planning area south of Clay Road would be served by the Southwest Supply System, while the remainder of the planning area would be supplied from a combination of the Northeast Supply System and the North Supply System. The boundary line between the

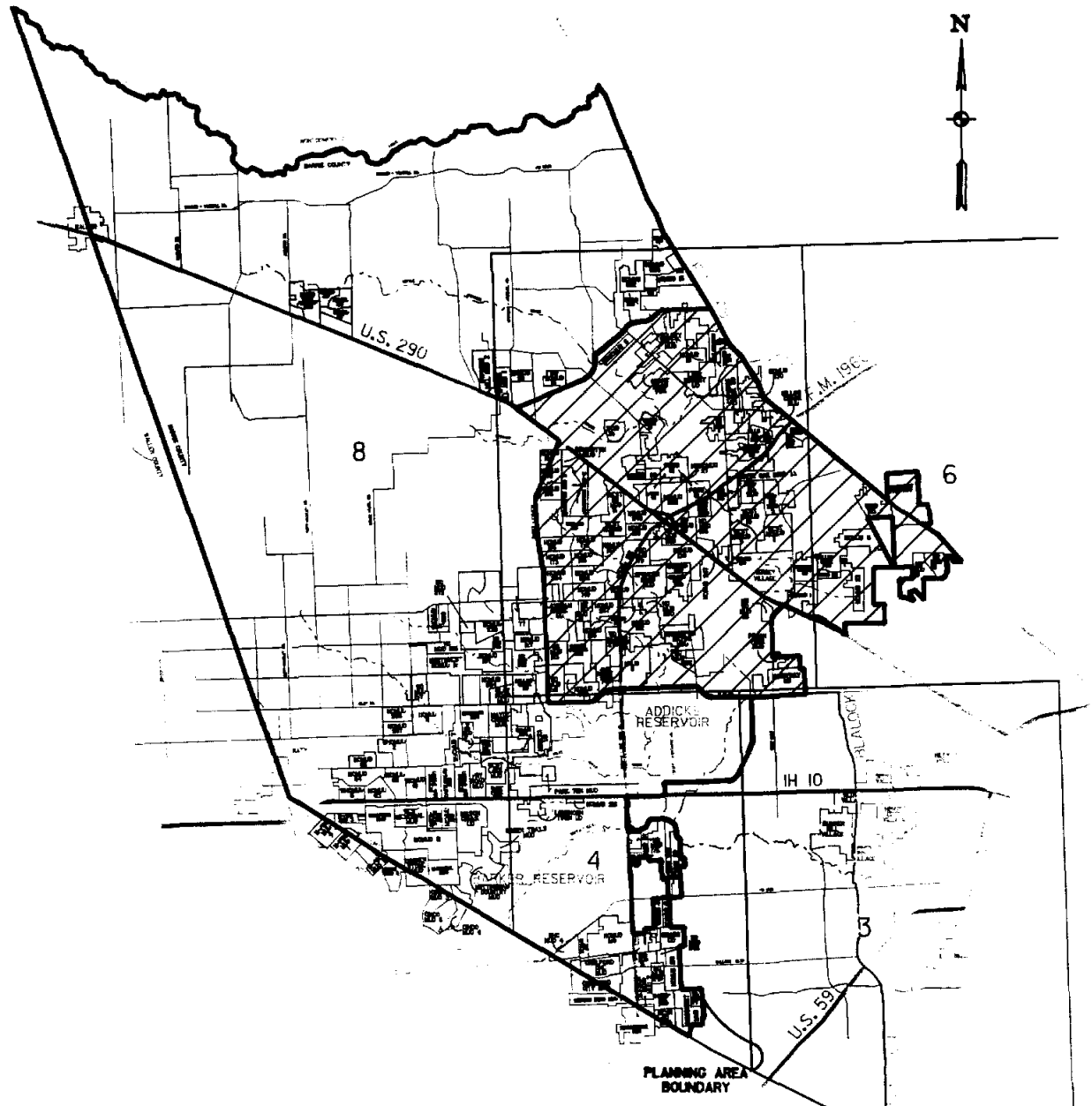
Northeast and North Supply Systems runs north along Barker-Cypress Road from Clay Road to U.S. 290 then northwest along U.S. 290 to Spring-Cypress Road then northeast along Spring-Cypress Road to F.M. 149. Figure 2 shows the service area boundaries for this alternate.

The HGCSD surface water requirements on Table 3 reveal that the City of Houston will require 69 MGD from the Southwest System in 1995. The WHCSWSC has no mandate in 1995. In the year 2000, the Southwest System will require a total of 116 MGD, or 97 MGD for the City of Houston and 19 MGD for the WHCSWSC. The Southwest System yield of 143 MGD would be adequate until 2030, when 151 MGD of surface water would be required. Of this total, 106 MGD would be used by the City of Houston, while the WHCSWSC would need 44 MGD. After 2030, the supply deficiency in the Southwest System would have to be made up from another source.

The Northeast Supply System has three conversion dates for this alternate: 2000, 2005, and 2010. The earliest conversion date is 2000, when 0.3 MGD would be needed for a portion of HGCSD regulatory area four. At the next conversion date of 2005, 11 MGD will be required. Beginning in 2010, 69 MGD will be needed, remaining constant until 2030.

The North Supply System also has three conversion dates for Alternate 6: 2000, 2010 and 2030. At the first conversion date of 2000, 0.2 MGD will be required. At the next conversion date of 2010, 5 MGD will be needed. In 2030 it is assumed that HGCSD regulatory area eight will require conversion to surface water, increasing the North Supply System requirements to 35 MGD.

FIGURE 2



WEST HARRIS COUNTY SURFACE WATER SUPPLY CORPORATION

ALTERNATE 6 SERVICE AREAS

TABLE 1

MAXIMUM DAILY WATER DEMANDS BY ALTERNATE

YEAR	CITY OF HOUSTON SOUTHWEST (MGD)	WHCSWSC SOUTHWEST (MGD)	TOTAL SOUTHWEST (MGD)	TOTAL NORTHEAST (MGD)	TOTAL NORTH (MGD)	TOTAL ALL AREAS (MGD)
ALTERNATE 6 - S.W. BOUNDARY AT CLAY ROAD; N.E. BOUNDARY AT BARKER-CYPRESS						
1985	99.59	17.95	117.54	36.45	6.66	160.64
1990	108.36	22.37	130.73	43.68	8.97	183.39
1995	117.37	29.64	147.01	55.48	12.94	215.43
2000	126.38	36.90	163.28	67.27	16.91	247.47
2005	131.37	44.12	175.49	77.55	21.93	274.97
2010	136.36	51.34	187.70	87.82	26.94	302.46
2012	137.48	53.43	190.91	90.76	28.93	310.60
2020	141.97	61.78	203.75	102.54	36.87	343.15
2030	146.38	69.44	215.82	113.25	47.63	376.71

TABLE 2

SURFACE WATER REQUIREMENTS PER HGCSD PLAN
TOTAL WHCSWSC
(MAXIMUM DAILY DEMANDS)

Regulatory Area	ALTERNATE 6 Surface Water (MGD) 1985	2000	2005	2010	2030
SOUTHWEST SYSTEM					
4	0.00	19.31	19.31	19.31	19.31
8	0.00	0.00	0.00	0.00	25.17
SOUTHWEST TOTAL	0.00	19.31	19.31	19.31	44.48
NORTHEAST SYSTEM					
4	0.00	0.34	0.34	0.34	0.34
6	0.00	0.00	10.68	10.68	10.68
7	0.00	0.00	0.00	58.07	58.07
NORTHEAST TOTAL	0.00	0.34	11.03	69.10	69.10
NORTH SYSTEM					
4	0.00	0.18	0.18	0.18	0.18
7	0.00	0.00	0.00	5.10	5.10
8	0.00	0.00	0.00	0.00	29.58
NORTH TOTAL	0.00	0.18	0.18	5.27	34.86
ALT. No. 6 TOTAL	0.00	19.83	30.52	93.68	148.44

TABLE 3

SUMMARY OF SURFACE WATER REQUIREMENTS BY ALTERNATE
(MAXIMUM DAILY DEMANDS)

YEAR	CITY OF HOUSTON SOUTHWEST (MGD)	WHCSWSC SOUTHWEST (MGD)	TOTAL SOUTHWEST (MGD)	TOTAL NORTHEAST (MGD)	TOTAL NORTH (MGD)	TOTAL ALL AREAS (MGD)
ALTERNATE 6 - S.W. BOUNDARY AT CLAY ROAD; N.E. BOUNDARY AT BARKER-CYPRESS						
1985	0.00	0.00	0.00	0.00	0.00	0.00
1995	69.35	0.00	69.35	0.00	0.00	69.35
2000	97.02	19.31	116.33	0.34	0.18	116.85
2005	97.02	19.31	116.33	11.03	0.18	127.53
2010	97.02	19.31	116.33	69.10	5.27	190.70
2012	106.33	19.31	125.64	69.10	5.27	200.01
2020	106.33	19.31	125.64	69.10	5.27	200.01
2030**	106.33	44.48	150.81	69.10	34.86	254.77

**Harris-Galveston Coastal Subsidence District plan for surface water use ends at 2020. Required surface water for 2030 was estimated assuming that Area 8 will be required to convert to 80% surface water in that year.

Comparison of Alternate No. 6

In this section, Alternate 6 will be compared on the basis of supply versus required surface water and timing of water availability in a similar manner to the five alternates previously presented in Appendix II. No alternates will be eliminated at this time, however, some general conclusions can be made.

Total Maximum Daily Demands

Three factors remain constant for each alternate previously presented in Appendix II along with Alternate 6 presented herein. First, the City of Houston Southwest service area total demand increases from about 100 MGD in 1985 to 146 MGD in 2030. Second, the total WHCSWSC demand grows from 61 MGD to 230 MGD during the study period. Third, for all areas combined, the total demand is 161 MGD in 1985 and 377 MGD in 2030. The variable figures are the WHCSWSC portion of the Southwest System and the Northeast and North maximum daily water demands, which depend on the placement of the service area boundaries. Examination of Table 1 shows that for Alternate 6, the total Southwest System maximum daily water demand increases from 118 MGD in 1985 to 216 MGD in 2030, while during the same period the total Northeast System maximum daily water demand increases from 36 MGD to 113 MGD and the North System increases from 7 MGD to 48 MGD.

Total Available Surface Water Supply

All considerations of supply adequacy were based on the minimum surface water required to meet the HGCSD conversion plan, previously shown on Table 2 and Table 3. As opposed to the total maximum daily demands, the HGCSD conversion requirements climb in a stair-step fashion rather than linearly.

The total supply available from the SWWPP is assumed to be 143 MGD. The Southwest Service area for Alternate 6 shows a small deficit after 2030. In this case where a supply deficit is noted, the service area for the Northeast and North Supply System will have to be extended to make up the difference after the deficit occurs.

Note that the northern service areas minimum surface water requirements plus the deficit for the southern service area make up the actual amount to be supplied by the Northeast or North Systems, as shown on Table 4. The HWMP projects treatment capacities for the proposed Northeast, Northwest and Waller Water Purification plants which would be adequate to meet these demands.

Feasibility of Meeting HGCSD Plan

Some consideration must be given to the timing of the availability of surface water and whether it would be possible to meet the HGCSD

TABLE 4

SYSTEM SURFACE WATER REQUIREMENTS
PER HGCSD PLAN
(MAXIMUM DAILY DEMAND)

YEAR	TOTAL SOUTHWEST (MGD)	WHCSWSC NORTHEAST (MGD)	WHCSWSC NORTH (MGD)	TOTAL ALL AREAS (MGD)
ALTERNATE 6 - S.W. BOUNDARY AT CLAY ROAD; N.E. BOUNDARY AT BARKER-CYPRESS				
1985	0.00	0.00	0.00	0.00
1995	69.35	0.00	0.00	69.35
2000	116.33	0.34	0.18	116.85
2005	116.33	11.03	0.18	127.53
2010	116.33	69.10	5.27	190.70
2012	125.64	69.10	5.27	200.01
2020	125.64	69.10	5.27	200.01
2030**	143.00	73.00	38.77	254.77

**Harris-Galveston Coastal Subsidence District plan for surface water use ends at 2020. Required surface water for 2030 was estimated assuming that Area 8 will be required to convert to 80% surface water in that year.

conversion plan. In the Southwest service area, the first conversion requires 69 MGD in 1995. This is the same for the alternates previously presented in Appendix II along with Alternate 6 presented herein, since the area which is required to convert to surface water is in HGCSD regulatory area three in the City of Houston. If an estimate of ten years is used to bring the SWWPP on-line, the next requirement of 117 MGD in 2000 would be a reasonable design capacity for the plant.

Timing issues are more complex in the North and Northeast service areas. The first conversion date is 2000 for Alternate 6 when the Northeast service area would require .3 MGD and the North service area would require .2 MGD. The next conversion date would be 2005 when 11 MGD is required by the Northeast service area and .2 MGD is required by the North service area. The quantities of surface water needed in 2000 or 2005 for Alternate 6 are small. The regulatory area using surface water at these dates is area four, which is in the most southern part of the service area. This regulatory area most likely would be supplied from the Southwest Supply System until 2005 or 2010, when most of the northern area will then convert to surface water.

The WHCSWSC has been asked to provide the City with an amount of surface water needed from the NEWPP so that it can be designed for the additional capacity. It appears from Table 4 that the amount of surface water required from the proposed Northeast Plant for Alternate No. 6 would be approximately 70 MGD by 2010.

As mentioned in the description of the North Supply System a NWWPP is proposed near Lake Conroe with an ultimate capacity of 150 MGD. The WWPP is proposed near Waller with an ultimate capacity of 200 MGD. Although the ultimate capacities of these plants are adequate to easily meet the needs of the area, the majority of the raw surface water supply originates in three proposed reservoirs, Lake Millican, Lake Creek and Bedias Reservoir. Construction of these sources could take up to 30 years, yielding completion dates past the required HGCSD conversion dates. The areas could not be temporarily supplied from the Southwest System, since the total demand exceeds 143 MGD beginning in 2010.

5.0 CONCLUSIONS

5.0 CONCLUSIONS

Several conclusions may be drawn from the previous comparisons. From the facts presented it is apparent that by the year 2030, the boundary between the Northeast and North and the Southwest Supply Systems will fall just south of Clay Road, since that is the boundary which produced the closest demand to the 143 MGD supply available from the SWWPP. The ultimate boundary between the Northeast and North Supply Systems is not as apparent because of the fact that any one of the proposed NEWPP, NWWPP or WWPP has the capacity to serve the entire WHCSWSC area north of Clay Road. Commitments outside of the WHCSWSC boundary will most likely have an effect on the ultimate boundary location. However, the ultimate boundary need not be the same as the boundary used for interim conditions. The main objection to any alternate investigated thus far is that water from the North Supply System may not be available in time to meet HGCSD target dates. However, a cost analysis of the major sources and distribution systems will be necessary before any alternate can be eliminated. This will be described later in Appendix IV.

ATTACHMENTS

ATTACHMENT 1

ACKNOWLEDGEMENTS:

Prior reports and studies dealing with water demands and supplies in the City of Houston and surrounding areas were utilized as needed in preparing this study. Materials reviewed during the course of this project are as follows:

1. Houston Water Master Plan, Appendices A through M, August 1985 to March 1987, by Metcalf and Eddy, Inc.

2. District Plan, Adopted November 1985, by Harris-Galveston Coastal Subsidence District.

3. Subsidence '87, February 1987 by Harris-Galveston Coastal Subsidence District.

4. Proposal to City of Houston on sale of Brazos River water, August 1987, by the Brazos River Authority.

5. Utility District Listing, Creation and Bond Issue Reports, Texas Water Commission Records, January 1987.

6. Yearly Groundwater Pumpage Records, Harris Galveston Coastal Subsidence District.

7. Planning Report/Draft Environmental Statement, September 1987, by United States Department of the Interior Bureau of Reclamation.

8. West Harris County Surface Water Supply Corporation Implementation Plan, Appendix II - Water Demand and Supply, October 1987, by Dannenbaum Engineering Corporation.

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