VANSICKLE · MICKELSON & KLEIN · Inc.

Consulting Engineers

SUBJECT _____

_____ SHEET NO. ___ OF _____

BY _____ DATE _____ JOB NO _____

CHKD. BY _____ DATE _____

Section 4. Allocation of Costs Prior to Completion

(a) "General Overhead Costs"

Are there any expense incurred to date that will be run through the corporation?

If so please provide a cost breakdown with the following information:

1. Description
2. Addisons portion of the expense
3. Farmers Branch portion of the expense
4. Total expense.

(b) What is the basis for the 45%/55% split. Based on weighted construction cost split is 47%/53%.

(g) See "b" above.

Section 6. Payment and Reimbursement of Operating and Maintenance Cost

(b) What is the basis for the 45%/55% split. Based on weighted construction cost split is 47%/53%.

~~(c) Any expense~~

LAND SUMMARY

FEBRUARY 8, 1991

SUB-BASIN	TOTAL AREA (ACRES)	STREET ROW (ACRES)	DEVELOPABLE AREA (ACRES)
A-1	67.48	7.70	59.78
A-2	80.75	10.90	69.85
A-3	208.46	50.26	158.20
A-4	326.09	53.86	272.23
A-5	267.55	20.93	246.62
A-6	181.19	18.29	162.90
A-7	193.89	34.62	159.27
TOTALS	1,325.41	196.56	1,128.85

Feb. 18, 1991

Consour - Townsend	Wilbur Van Ripper + CTS
Farmers Branch	Tony + Tom Harris
Addison	John Baumgartner

Realistic Schedules
For both the ~~Cost~~ Consultant and contractor

~~X~~ Economics of Size

Full time project representation
Resident Engineer and 1 or 2 assistants

Format as an option A or B 1 or 2 projects

Low Flow monitoring - ?

Identify other agencies you will coordinate with

Fee Curve:
Lump Sum
Hourly - Not to exceed

Start June 1

TOWN OF ADDISON

CITY MANAGER'S OFFICE (214) 450-7027

Post Office Box 144 Addison, Texas 75001 5300 Belt Line Road

M E M O R A N D U M

January 2, 1991

TO: Ron Whitehead, City Manager

FROM: John Baumgartner, Engineer JPB
Don Preece, Director of Utilities DP

SUBJECT: **Sewer capacity in the Farmers Branch Sewer Drainage Basin**

The unallocated capacity of the Farmers Branch sewer drainage basin is approximately 51,749,560 gallons per year. There are 412.8 undeveloped acres within this basin with 126 acres in the Les Lacs area bordered by Marsh Lane, Beltway Drive and Proton Drive.

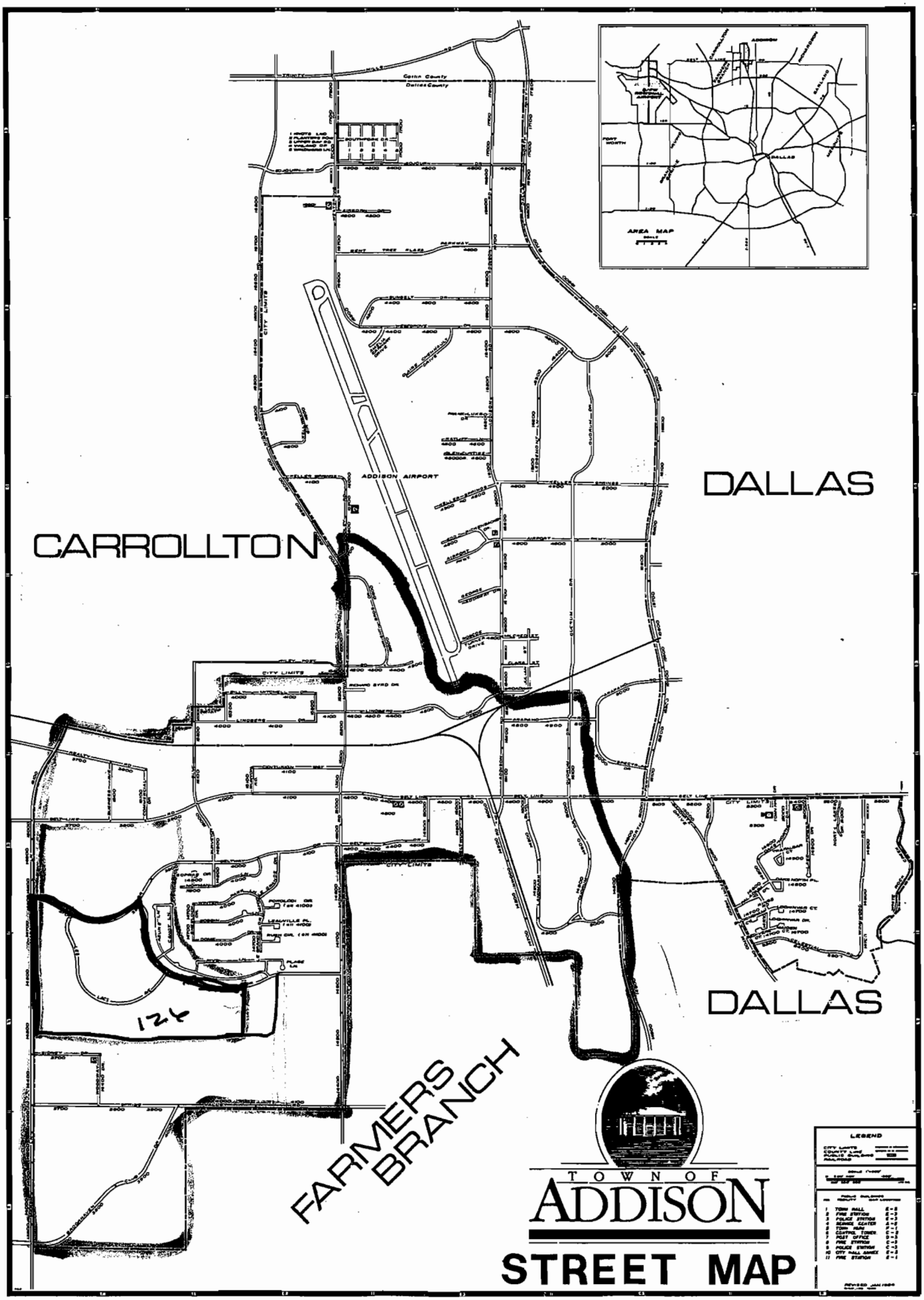
On a per acre basis this capacity is equivalent to 125,362 gallons per year per acre or 343 gallons per day per acre. 343 gallons per day is a rough equivalent to one single-family detached house or two medium to high density (greater than 20 units per acre) apartment units.

If the entire 51,749,560 gallons was allocated to Les Lacs, a total of 810 medium to high density apartment units or (405 single-family detached houses) could be constructed.

If the flow was allocated on an acreage basis, a total of 247 apartment units (or 124 single-family detached houses) could be constructed in the 126 acres of Les Lacs defined by Marsh Lane, Beltway Drive and Proton Drive.

If you need additional information or have any questions, please call.

JB/DP:mc


Collin County
Dallas County
ADDISON AIRPORT
DALLAS
CARROLLTON
DALLAS
FARMERS BRANCH
CITY LIMITS
AREA MAP
LEGEND
TOWN OF
ADDISON
STREET MAP

MAXIMUM RESERVED CAPACITY
April 1, 1991

RESIDENTIAL DEVELOPMENT	*ALLOWABLE DEVELOPMENT UNITS
Single-Family Residence; Modular Home; Mobile Home	141 Units
Duplex	164 Units (82 Duplexes)
Triplex; Four Plex; Condo Unit, P.U.D. Unit (6 to 24 Units/Acre)	201 Units
Apartments (24+ Units/Acre)	282 Units
Hotel or Motel	282 Rooms

COMMERCIAL	
Office	429,000 S.F.
Office Warehouse	567,000 S.F.
Retail, Shopping Center	235,000 S.F.
Restaurant, Cafeteria	28,180 S.F.
Hospital	141 Beds
Rest Home	282 Beds
Church (Worship Services Only)	9,863 Seats
School (Includes Gym & Cafeteria)	1,973 Students
Supermarket	759,000 S.F.
Discount Store	897,000 S.F.

*Based on reservation of 18,000,000 gallons per year of wastewater.

EXHIBIT C

APPORTIONMENT OF AVAILABLE SEWER CAPACITY
BASED ON LAND USE

LAND USE	UNDEVELOPED PROPERTY	SEWER ALLOCATION GALLONS PER YEAR	APPROXIMATE NUMBER OF UNITS
Multi-Family	25.4%	13,321,792	175
Single-Family	21.1%	11,066,528	87
Commercial/Retail	53.5%	28,059,680	**
Total	100.0%	52,448,000	

**Sewer requirements for Commercial/Retail varies greatly depending on use.

EXHIBIT D

TOWN OF ADDISON

CITY ENGINEER'S OFFICE (214) 450-2886

Post Office Box 144 Addison, Texas 75001 16801 Westgrove

M E M O R A N D U M

February 11, 1991

To: Ron Whitehead, City Manager

From: John Baumgartner, City Engineer JRB 2-12-91

Subject: Sewer For The Farmers Branch Drainage Basin

Development in the Farmers Branch drainage basin (see Exhibit A) is controlled by available sewer capacity. In 1987 the Town of Addison and Farmers Branch agreed that the Town's sewage flow would not exceed 105 percent of the 1986 base flow, which entitles the Town to 615,408,255 gallons per year. When the land in this basin is completely developed and fully utilized, it is estimated that 2,278,330,000 gallons of sewer capacity (Addison Drainage Basin Analysis - Ginn, Inc. Consulting Engineers, June 1990) will be required to serve this basin.

From the year 1984 to 1990 the Town's sewer flow in this basin has averaged 562,960,410 gallons per year. This leaves approximately 52,448,000 gallons per year of sewage flow (see Exhibit B) available for existing unoccupied development and new development.

Sewer requirements vary based on the use and density of development. Exhibit C provides an analysis of typical sewer requirements based on living units or square footage. It is estimated that 50 to 65 acres of undeveloped/unoccupied property can be developed and/or utilized until the sewer capacity is expanded.

The next steps in obtaining control of the sewer capacity situation are as follows:

1. Staff needs to determine an equitable way to apportion the available sewer capacity. It is anticipated that this can be accomplished in 30 to 60 days.

2. The Town and Farmers Branch need to reach agreement on the terms and conditions of the sewer tunnel prior to beginning design. Staff is currently working on draft agreements and hope to have them complete for council action within 30 days.

3. The funding, design, land acquisition, and construction of the sewer tunnel is anticipated to take from 3 to 6 years to complete, if nothing develops to hinder progress with regard to design, funding and land acquisition.

If you have any questions or need additional information, please call me.

/rp

Attachments

cc: Don Preece, Director of Utilities
Carmen Moran, City Secretary

LAND SUMMARY

FEBRUARY 8, 1991

SUB-BASIN	TOTAL AREA (ACRES)	STREET ROW (ACRES)	DEVELOPABLE AREA (ACRES)
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A-5	267.55	20.93	246.62
A-6	181.19	18.29	162.90
A-7	193.89	34.62	159.27
TOTALS	1,325.41	196.56	1,128.85

Undeveloped Multi-Family	95.12 Acres	(25.4%)
Undeveloped Single Family Residential	78.96 Acres	(21.1%)
Undeveloped Commercial/Retail	199.88 Acres	(53.5%)
Total Undeveloped	373.96 Acres	(100%)
Total Developed	754.89 Acres	
Total Land Less R.O.W.	1128.85 Acres	

EXHIBIT A

WASTEWATER FLOW SUMMARY
FOR
FARMERS BRANCH DRAINAGE BASIN

YEAR	WASTEWATER FLOW (GAL)
1984-85	576,502,070
1985-86	582,788,100
1986-87	574,323,100
1987-88	510,538,800
1988-89	549,991,000
1989-90	583,619,390
1990-91*	188,355,806
6-Year Average Annual Flow	562,960,410
1986 Calendar Year	586,103,100 gallons
Allowable Sewer Flow	615,408,255 gallons

Available 52,447,845 gallons/year
(143,693 gpd)

*4 Month Summary

EXHIBIT B

MACCORONI GRILL

JAN 2 3 92

01/22 15:09
MANAGER

55 CCSUB 1.10 * Update Service Information *

ccount	Street No Prefix	Street Name	Suffix	Apt	Zip Code
01655	4535	BELT LINE	RD		75244-2416

tart Dt Fr	Book	SqNo	Alt Rt 1	Alt Rt 2	Dwell	Seq	Cl	Rd Stand	Water
9/25/90 M	20	12			1	A			

Mode: #Lines:1

	Water Consumption		Water Information	Reader Alert Information
lon	Odd Year	Even year	Lat :	001 04 DOMESTIC
Jan	232700	264700	Pump:	
Feb	242800		Main:	
Mar	221800		Area:	
Apr	267000		Pipe:	
May	296600		Refuse Information	Assessor's Parcels
Jun	281500		Area: 19	001 01900000010000
Jul	311500		Sewer Information	
Aug	306800		Area: D1	
Sep	296900		Main:	
Oct	249800	69300	Miscellaneous Information	
Nov	278300	216600	MiscA:	
Dec	258800	200800	MiscB:	

3,004,200 Year

250,350 Month

@ 7100 SQ FT

Regas Grill

JAN 2 3 92

CITY MANAGER

35 CCSUB 1.10 * Update Service Information * 01/22 14:56

Account	Street No	Prefix	Street Name	Suffix	Apt	Zip Code
00385	4525		BELT LINE	RD		75244-2416

Start Dt	Fr	Book	SqNo	Alt Rt 1	Alt Rt 2	Dwell	Seq	Cl	Rd Stand	Water
4/15/90	M	20	16			1		A		0

Mode: #Lines:1

Mon	Water Consumption 1991 Odd Year	Even year 1990
Jan	162400	152800
Feb	152900	
Mar	146200	
Apr	165600	253600
May	166000	348000
Jun	172100	210400
Jul	165700	195700
Aug	152700	181000
Sep	155100	178800
Oct	134400	172500
Nov	147800	216500
Dec	147100	138600

Water Information
Lat :
Pump:
Main:
Area:
Pipe:

Refuse Information
Area:

Sewer Information
Area: F
Main:

Reader Alert Information
001 04 DOMESTIC

Assessor's Parcels
001 01900000004000

Miscellaneous Information
MiscA:
MiscB:

1,868,000 Year

155,666 month

7,400 SQ FT

APPORTIONMENT OF AVAILABLE SEWER CAPACITY BASED ON LAND USE

LAND USE	UNDEVELOPED PROPERTY	SEWER ALLOCATION GALLONS PER YEAR	APPROXIMATE NUMBER OF UNITS
Multi-Family	25.4%	13,321,792	175
Single-Family	21.1%	11,066,528	87
Commercial/Retail	53.5%	28,059,680	**
Total	100.0%	52,448,000	

**Sew[illegible]cements for Commercial/Retail varies greatly depending on use.

[illegible]IT D

TOTAL FUNDING FOR WASTEWATER TO TRA

Cost presented in this table were compiled from Freese & Nichols, Espey/Huston and Consoer Townsend reports.

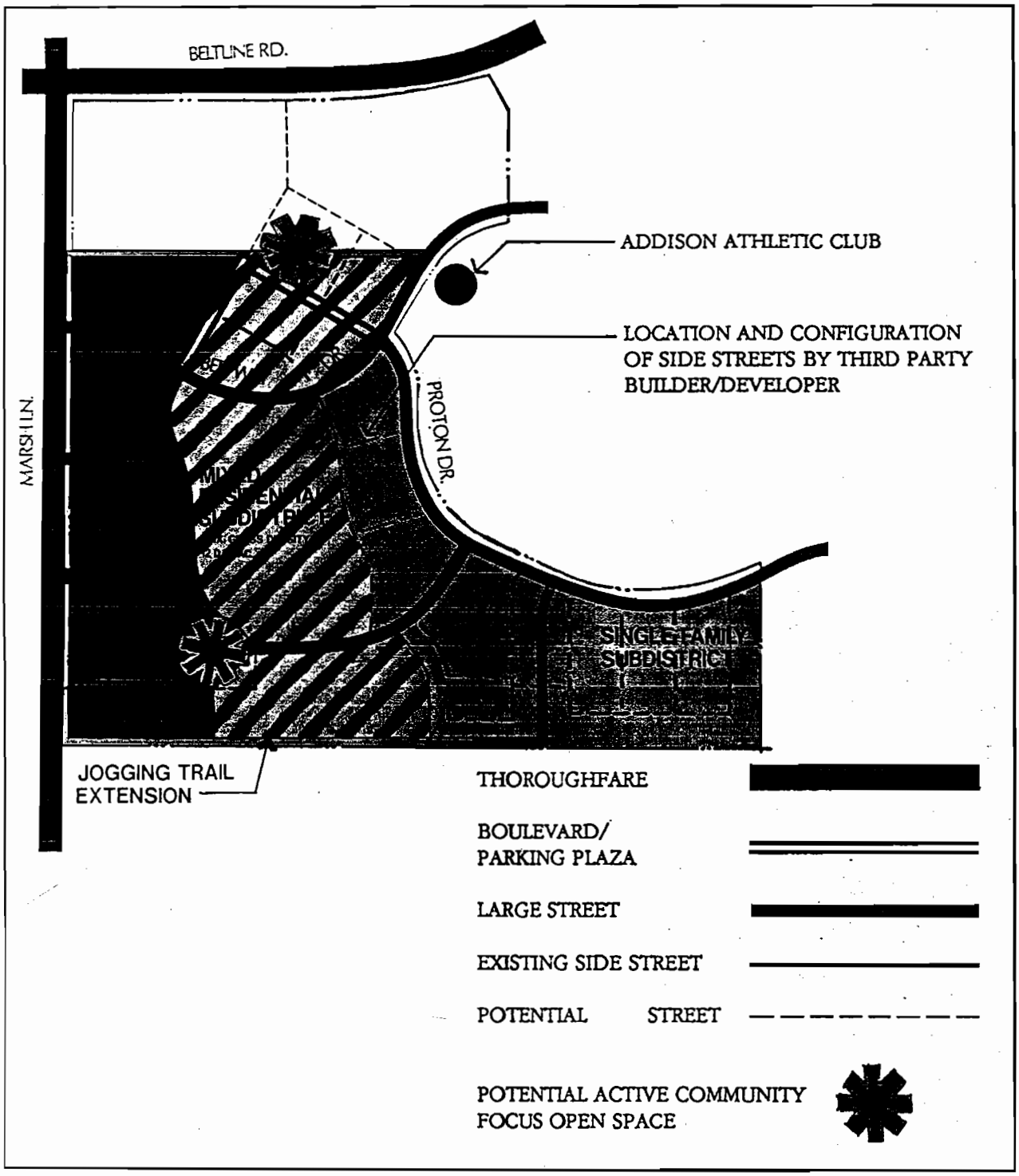
	LINE DES.	LINE SIZE	LINE LENGTH (FEET)	ADDISON'S PORTION, %	UNIT COST	COST TO ADDISON	COST TO F8	TOTAL COST
	M	18" FM	1400.00	100	$75.00	$105,000.00	$0.00	
		LIFT STA	1.00	100	$214,700.00	$214,700.00	$0.00	
	L	24"	5300.00	100	$170.00	$901,000.00	$0.00	
	K	24"	1830.00	100	$170.00	$311,100.00	$0.00	
	J	15"	1560.00	100	$140.00	$218,400.00	$0.00	
	I	15"	3036.00	51.2	$140.00	$217,620.48	$207,419.52	
	H	18"	711.00	42.78	$150.00	$45,624.87	$61,025.13	
	G	21"	409.00	31	$160.00	$20,286.40	$45,153.60	
	F	27"	1327.00	26.4	$170.00	$59,555.76	$166,034.24	
	E	27"	3377.00	21.85	$185.00	$136,506.78	$488,238.22	
	D	30"	1634.00	34.89	$215.00	$122,572.06	$228,737.94	
	C	15"	3330.00	0	$140.00	$0.00	$466,200.00	
	B	24"	4725.00	0	$170.00	$0.00	$803,250.00	
	A	30"	2900.00	28.72	$215.00	$179,069.20	$444,430.80	
	APPURTENANCE COST			47	$759,500.00	$356,965.00	$402,535.00	
	NON-TUNNEL CONSTRUCTION COST		SUB TOTAL			$2,888,400.55	$3,313,024.45	$6,201,425
	LAND AND RIGHT-OF-WAY			47	$100,000.00	$47,000.00	$53,000.00	
	SURVEYING & EASEMENT PREP.			47	$100,000.00	$47,000.00	$53,000.00	
	ADMINISTRATION COST			47	$125,000.00	$58,750.00	$66,250.00	
	ENGINEERING FEE			47	$421,700.00	$198,199.00	$223,501.00	
	GEOTECH/GEOLOGICAL STUDIES			47	$150,000.00	$70,500.00	$79,500.00	
	CONTINGENCIES & FIELD INSPEC.			47	$1,116,300.00	$524,661.00	$591,639.00	
	NON-CONSTRUCTION COSTS - SUB TOTAL					$946,110.00	$1,066,890.00	$2,013,000
1	FUNDING FOR NON-TUNNEL WORK (FROM F&N REPORT)					$3,834,510.55	$4,379,914.45	$8,214,425
2	COST TO DIVERT FLOW FROM CARROLLTON (FROM ESPEY/HUSTON REPORT) ($1,658,400 + 26.1% for non-construction costs)					$2,091,242.40	0	$2,091,242
	TOTAL NON-TUNNEL COST					$5,925,752.95	$4,379,914.45	$10,305,667
3	CT&A ESTIMATED TUNNEL COST			56.79	$17,984,730.00	$10,213,528.17	$7,771,201.83	$17,984,730
4	TOTAL FUNDING					$16,139,281.12	$12,151,116.28	$28,290,397
						57.05	42.95	

7-3-90

Sue.

CONCEPT PLAN: LES LACS

MXR ZONING DISTRICT



RESOLUTION NO. R91-111

A RESOLUTION BY THE CITY COUNCIL OF THE TOWN OF ADDISON, TEXAS, AUTHORIZING THE CITY MANAGER TO EXECUTE AN AGREEMENT FOR ENGINEERING SERVICES FOR AN AMOUNT NOT TO EXCEED $9,000.00 WITH ADS ENVIRONMENTAL SERVICES FOR METERING OF THREE LOCATIONS IN THE EXISTING FARMERS BRANCH SEWER SYSTEM.

WHEREAS, the town is rapidly running out of sewer capacity in the Farmers Branch Drainage Basin; and

WHEREAS, discussions with Farmers Branch resulted in their request for Addison to monitor the actual flows at three locations in their existing system to provide an indication of the present capacity; and

WHEREAS, ADS Environmental Services, Inc. has submitted a proposal to provide the flow monitoring services for a fee not to exceed $9,000 based on a 30-day period; and

WHEREAS, if a significant rainfall does not occur additional monitoring will be required; now, therefore,

BE IT RESOLVED BY THE CITY COUNCIL OF THE TOWN OF ADDISON, TEXAS:

THAT, the City Council does hereby approve an agreement with ADS Environmental Services, Inc. in the amount of $9,000 for metering of three locations in the existing Farmers Branch sewer system.

DULY PASSED BY THE CITY COUNCIL OF THE TOWN OF ADDISON, TEXAS, this the 10th day of September, 1991.

MAYOR

ATTEST:

CITY SECRETARY

TRANSACTION REPORT

FEB- 7-91 THU 13:20

RECEIVE

#	DATE	S. T.	NAME	TIME	PGS	NOTE	DP
01	FEB- 7	13:18	2149607684	1'28"	2	OK	

M E M O R A N D U M

Via Fax Transmission

TO: Carmen Moran, City Secretary
Larry McCallum, City Attorney
City of Addison

FROM: Terry Morgan

DATE: February 6, 1991

RE: Moratorium Resolution

Attached hereto is a proposed resolution extending the moratorium on building permits, site plan and development plan approval for the Les Lacs area. The resolution also establishes a moratorium on plat applications. The term of the moratorium is three (3) months.

The moratorium on building permits may terminate sooner, if the City adopts an allocation scheme. The moratorium on applications for zoning and subdivision approvals terminate sooner than three (3) months upon adoption of the comprehensive plan and implementing regulations.

Please note that the recitals now indicate the necessity to allocate building permits based on limited sewage capacity, and that such allocation scheme may extend to the entire drainage basin, rather than just the Les Lacs area. In order to facilitate your review of this document, I have assumed that a study will be undertaken within the drainage basin to determine how much capacity remains. You should immediately review this matter with the City Engineer. On February 12th, the engineer should be prepared to tell the Council at least the following:

(1) Present unallocated capacity of the Farmer's Branch sewer drainage basin and the number of undeveloped acres which would be subject to any allocation scheme;

(2) The status of contract negotiations with Farmer's Branch to increase allocation pending additional improvement;

(3) An expected date for additional capacity to be available to Addison; and

(4) Identification of approved subdivision lots or other development approvals which could apply and receive an allocation of capacity within the drainage basin in the absence of an allocation scheme.

Please review this resolution and advise me of any changes needed.

TOWN OF ADDISON, TEXAS

FAX NO: (214) 960-7684

TO:	**FROM:** JOHN BAUMGARTNER
COMPANY: TOWN OF ADDISON	**DEPT:** TOWN OF ADDISON
FAX NUMBER: ( ) 931-6643	**PHONE:** (214) 450-7018

DATE: 2-7-91	**NUMBER OF SHEETS (including cover sheet):** 2

COMMENTS:

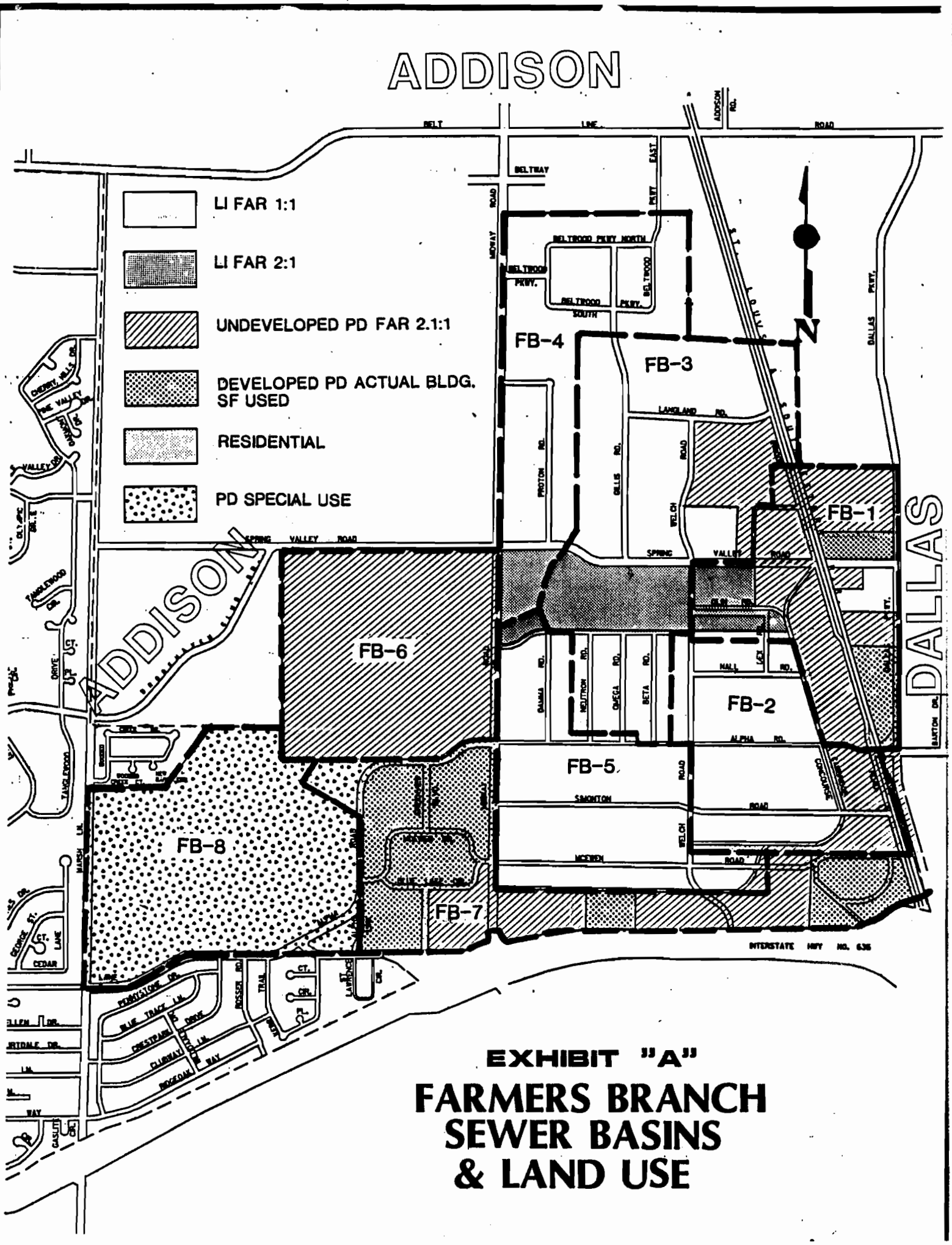
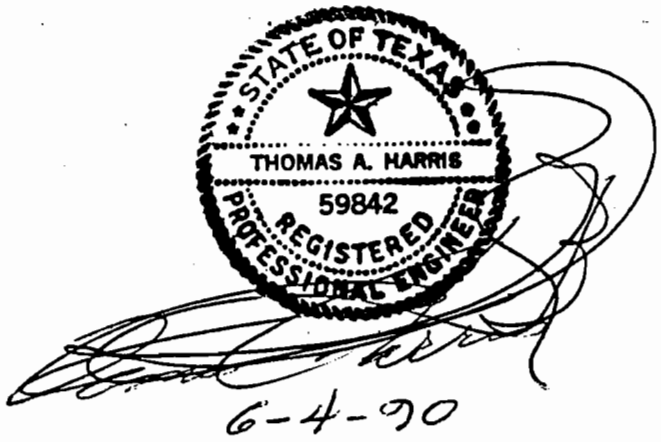


EXHIBIT "A"

FARMERS BRANCH SEWER BASINS & LAND USE

FARMERS BRANCH DRAINAGE BASIN ANALYSIS

PREPARED BY:
FARMERS BRANCH
ENGINEERING DEPARTMENT



FARMERS BRANCH DRAINAGE BASIN
ANALYSIS

EXECUTIVE SUMMARY

The Farmers Branch East Side Sewer basin was re-analyzed to reflect the standards used in the study completed by the Town of Addison. The revised projected wastewater flows from Farmers Branch to the tunnel interceptor are projected to be 6.323 MGD average day and 12.248 MGD peak day. The following criteria were used in determining the revised flows:

1. The Sub-basins were re-aligned to conform to City boundaries and coincide with existing sewer mains.

2. The residential area shown on the F & N study as Basin F-6 was removed.

3. The Farmers Branch comprehensive plan densities were used to calculate maximum building square footage in the basins with Light Industrial zoning.

4. Actual building square footage was used for all buildings over 4 stories in height, all buildings, regardless of height, built in accordance with an approved Planned Development and all buildings shown on approved site plans for a Planned Development.

5. Population projections were based on 100% of actual net acreage minus Right-of-Ways instead of 95% of gross acreage. This method corresponds to the Addison study.

If the Town of Addison study and this revised study are accepted by both cities, the projected wastewater totals collected by the tunnel system are as follows:

Addison	16.099 MGD	56.79%
Farmers Branch	12.248 MGD	43.21%
TOTAL	28.347 MGD	100.00%

FARMERS BRANCH DRAINAGE BASIN ANALYSIS

PROJECT HISTORY

In March 1987, Freeze and Nichols, Inc. submitted a report to the Town of Addison and the City of Farmers Branch. The report, **FARMERS BRANCH/ADDISON WASTEWATER INTERCEPTOR STUDY**, presented alternatives for transporting projected wastewater flows from the Town of Addison and the Farmers Branch East Side Industrial Area to the Trinity River Authority wastewater trunk lines located in the West side of Farmers Branch. In addition, the report analyzed existing population, land use and future population growth to determine ultimate wastewater flows from the study area. The projected peak flows from Farmers Branch and Addison were 15.40 MGD and 16.95 MGD respectively. The total flow from both cities to the TRA trunk lines was 32.34 MGD or 47.6% contributed by Farmers Branch and 52.4% contributed by the Town of Addison.

The firm of Consoer, Townsend & Associates was retained by both cities to study the F&N alternatives and prepare a preliminary engineering report outlining the most efficient and cost effective alternative. The report, **PRELIMINARY ENGINEERING REPORT FOR SANITARY INTERCEPTOR SEWER**, submitted in July 1989, dealt with the preliminary design of a 4.2 mile wastewater interceptor tunnel from the Marsh Lane/Spring Valley area to the TRA trunk lines.

The Consulting Engineering firm Ginn, Inc., conducted a study and submitted a preliminary report in April, 1990 to modify the wastewater flows outlined in the initial report provided by F&N. The basis for the modifications was to address the removal of sub-basins from the overall drainage basin and equitably reapportion the wastewater flows. In the course of their study, several other discrepancies requiring adjustment were discovered that necessitated further change.

OBJECTIVE

The objective of this report is to remove the residential area (F&N basin F-6) from the drainage basin, readjust the sub-basins in the F&N report to more accurately conform to the Farmers Branch city boundary and existing sewer collection lines (Exhibit A), and project ultimate wastewater flows based on the criteria established in the Ginn study. The limits of each sub-basin were outlined on 1"=200' scale maps generated by the city's geoprocessing system. The ultimate building densities established by the city's comprehensive report were overlaid and acreage totals for each land

use were calculated for the eight sub-basins (Exhibit A).

METHODOLOGY

In order to conform to the criteria established in the Ginn report, Right-of-ways were calculated as a separate land use in this study. The F&N study reduced the land area by 5% in the commercial and industrial areas and by 15% in the residential areas to account for Right-of-ways. It was found that throughout the drainage basins Right-of-ways account for from 5% to 26% of the total land area. The exception was sub-basin FB-6, the Mobil Oil Planned Development. The city approved site plan building footages and population densities were used; therefore, the total site acreage included the Right-of-ways. For Inflow and Infiltration (I&I) rates the Right-of-ways were included in the gross land area and calculated at 14.02 persons per acre. Total I&I was based on a rate of 84 GPCD over the total drainage basin area.

Development densities within the Farmers Branch study area were calculated based on current zoning and FAR's established by the city's comprehensive plan. Population for High Rise structures, as well as all structures built under an approved Planned Development, were calculated based on actual square footage. In addition, actual square footage was used to project population densities for Planned Developments with approved site plans that tabulated proposed building square footage. The population projection for all other PD's was based on an FAR of 2.1:1. Results derived from this figure correlate with currently developed PD's regardless of FAR; furthermore, an FAR of 2.1:1 factors out uninhabitable square footage such as parking garages. One exception should be noted. The area for Brookhaven College, sub-basin FB-8, is a special use PD and can only be used for the college. According to the college's public information staff, the current population for Brookhaven College is 5000, 4000 full time equivalent students (FTE), and 1000 (300 full time and 700 part time) employees. The projected growth, based on the college's expansion program, is a total population of 6300 (5000 FTE students and 1300 employees). In summary the following FAR's were utilized in this study:

1.00:1	Light Industrial
2.00:1	Commercial/Retail
2.10:1	High Rise Office, High Density PD
3.00:1	Single Family (Residents/Unit)

DRAINAGE BASIN ANALYSIS

Basin FB-1

Basin FB-1 (130.9 ac) is currently populated with a mixture of Light Industrial (8.12 ac), Commercial/Retail (17.9 ac) and High Rise Office structures (10.7 ac). The ROW totals (34.5 ac) and the remaining 59.6 acres is undeveloped High Density PD. The basin includes a portion of land not included in the F&N study between Dallas North Pkwy and Inwood Road between the Farmers Branch City limits and Spring Valley Road. The balance of land was part of F&N basin F-5.

Basin FB-2

Basin FB-2 is made up of a portion of basin F2 and F5 from the F&N study. Light industrial is 82.6 ac of the 134.0 total acres for the land area. Undeveloped High Density PD (24.2 ac) and ROW (27.3 ac) are the balance of land area.

Basin FB-3

Basin FB-3 is the balance of land of basin F2 from the F&N study. The northern limits of this basin were adjusted to correspond to the Farmers Branch City limits. A small land area East of Inwood, not included in the F&N study, was added. This basin has 250.3 acres of land area divided between Commercial/Retail (35.3 ac), Industrial (142.0 ac), Undeveloped High Density PD (31.6 ac) and 41.5 acres of ROW.

Basin FB-4

This basin conforms to F&N basin F1. The northeastern boundary was moved to include a portion of basin F2 and the segment extending into the Mobil Oil PD was removed. The basin totals 151.6 acres. The greatest portion is Light industrial (113.5 ac). Existing High Rise Office (8.9 ac), Commercial/Retail (8.61 ac) and ROW (20.6 ac) make up the remaining land area.

Basin FB-5

Basin FB-5 conforms to F&N basin F4. The basin has a total of 165.8 acres. Light industrial accounts for 122.8 acres, Commercial/Retail (6.2 ac), undeveloped High Density PD (4.1 ac) and the remaining 32.7 acres is ROW.

Basin FB-6

Basin FB-6 is a High Density PD to be developed by Mobil Oil. The approved site plan permits 6,500,000 square feet to be used for Office/Retail and 2,000,000 square feet of residential development. The total land area for this PD is 153 acres. The F&N report included a portion of this land in the Addison drainage basin.

Basin FB-7

Basin F3 of the F&N study corresponds to this basin; however, the major portion of F3 lying in the Brookhaven College PD, basin FB-8, was removed. Basin FB-7 has a total of 194.1 acres. Existing High Rise offices acres and undeveloped High Density PD utilize 105.9 acres and 62.4 acres respectively. ROW totals 15.3 acres and the remaining acreage (10.4) is in the Brookhaven Special Use PD.

Basin FB-8

Basin FB-8 encompasses most of basin F3 in the F&N study. A residential area in the Northwest corner, formerly included in the Addison drainage basin, was deleted because it will feed into a different collection system. The portion lying in the Mobil PD was removed. Brookhaven College occupies 184.3 acres of the drainage basin. The remaining acreage is divided among floodway and Municipal use (Farmers Branch Police Station and elevated water storage facility). The total basin is 205.6 acres.

The drainage basins were analyzed based on the information above. The results are tabulated and presented in Appendix A.

APPENDIX A

CITY OF FARMERS BRANCH
June 4, 1990

PROJECTED LAND USE

Drainage Area	Gross Acres	Gross Sq. Ft.	F.A.R. or # of Units	SF/Emp Per/Unit	Equiv. Pop.
Basin FB-1					
Comm./Retail	17.88	778,700	2.00	350	4,450
Ex. Office	10.76	468,522	883,528	350	2,524
Undeveloped PD	59.68	2,599,858	2.10	350	15,599
Industrial	8.13	354,300	1.00	750	472
R.O.W.	34.60	1,507,239	0	0	0
I/I	131.05	5,708,619			1,837
SUBTOTAL					24,883
Basin FB-2					
Industrial	82.71	3,603,055	1.00	750	4,804
Undeveloped PD	19.18	835,643	2.10	350	5,014
Undeveloped PD*	5.01	218,096	2.60	350	1,620
R.O.W.	27.28	1,188,434	0	0	0
I/I	134.19	5,845,228			1,881
SUBTOTAL					13,319
Basin FB-3					
Comm./Retail	35.33	1,539,000	2.00	350	8,794
Industrial	142.17	6,193,135	1.00	750	8,258
Undeveloped PD	7.67	334,000	2.10	350	2,004
Undeveloped PD*	23.98	1,044,740	2.07	350	6,179
R.O.W.	41.52	1,808,672	0	0	0
I/I	250.68	10,919,547			3,515
SUBTOTAL					28,749
Basin FB-4					
Ex. Office	8.92	388,400	397,261	350	1,135
Comm./Retail	8.62	375,395	2.00	350	2,145
Industrial	113.63	4,949,856	1.00	750	6,600
R.O.W.	20.66	899,798	0	0	0
I/I	151.82	6,613,449			2,129
SUBTOTAL					12,009

CITY OF FARMERS BRANCH
June 4, 1990

PROJECTED LAND USE

Drainage Area	Gross Acres	Gross Sq. Ft.	F.A.R. or # of Units	SF/Emp Per/Unit	Equiv. Pop.
Basin FB-5					
Comm./Retail	6.16	268,467	2.00	350	1,534
Industrial	123.01	5,358,338	1.00	750	7,144
Undeveloped PD	4.08	177,550	2.10	350	1,065
R.O.W.	32.75	1,426,467	0	0	0
I/I	166.00	7,230,822			2,327
SUBTOTAL					12,071
Basin FB-6					
Mobil Site					
Undeveloped PD					
Comm./Retail	107.25	4,671,679	1.39	350	18,553
Residential		2,000,000	1,430	3	4,290
R.O.W.(Included	in land area)		0	0	0
I/I	153.16	6,671,679			2,147
SUBTOTAL					24,991
Basin FB-7					
Ex. Office	106.08	4,620,726	3,166,836	350	9,048
Undeveloped PD	52.32	2,279,080	2.10	350	13,674
Undeveloped PD*	10.18	443,340	3.50	350	4,433
Brookhaven Coll.	10.41	453,425	0	350	0
R.O.W.	15.36	669,257	0	0	0
I/I	194.35	8,465,828			2,725
SUBTOTAL					29,881
Basin FB-8					
Brookhaven Coll.	184.50	8,036,968	0	350	6,300
Municipal	2.05	89,500	0	350	40
Floodway	8.40	366,000	0	750	0
R.O.W.	10.91	475,096	0	0	0
I/I	205.87	8,967,564			2,886
SUBTOTAL					9,226
TOTALS	1,387.12	60,422,736			155,129

CITY OF FARMERS BRANCH
June 4, 1990

PROJECTED WASTEWATER FLOWS

Drainage Area	Equiv. Pop.	GPCD	Avg. Flow MGD	Peak Factor	Peak Flow MGD
Basin FB-1					
Comm./Retail	4,450	34	0.151	2.40	0.363
Ex. Office	2,524	34	0.086	2.40	0.206
Undeveloped PD	15,599	34	0.530	2.40	1.273
Industrial	472	23	0.011	1.00	0.011
R.O.W.	0	0	0.000	1.00	0.000
I/I	1,837	84	0.154	1.00	0.154
SUBTOTAL	24,883		0.933		2.007
Basin FB-2					
Industrial	4,804	23	0.110	1.00	0.110
Undeveloped PD	5,014	34	0.170	2.40	0.409
Undeveloped PD*	1,620	34	0.055	2.40	0.132
R.O.W.	0	0		1.00	0.000
I/I	1,881	84.00	0.158	1.00	0.158
SUBTOTAL	13,319		0.494		0.810
Basin FB-3					
Comm./Retail	8,794	34	0.299	2.40	0.718
Industrial	8,258	23	0.190	1.00	0.190
Undeveloped PD	2,004	34	0.068	2.40	0.164
Undeveloped PD*	6,179	34	0.210	2.40	0.504
R.O.W.	0	0		1.00	0.000
I/I	3,515	84	0.295	1.00	0.295
SUBTOTAL	28,749		1.062		1.870
Basin FB-4					
Ex. Office	1,135	34	0.039	2.40	0.093
Comm./Retail	2,145	34	0.073	2.40	0.175
Industrial	6,600	23	0.152	1.00	0.152
R.O.W.	0	0		1.00	0.000
I/I	2,129	84	0.179	1.00	0.179
SUBTOTAL	12,009		0.442		0.598

CITY OF FARMERS BRANCH
June 4, 1990

PROJECTED WASTEWATER FLOWS

Drainage Area	Equiv. Pop.	GPCD	Avg. Flow MGD	Peak Factor	Peak Flow MGD
Basin FB-5					
Comm./Retail	1,534	34	0.052	2.40	0.125
Industrial	7,144	23	0.164	1.00	0.164
Undeveloped PD	1,065	34	0.036	2.40	0.087
R.O.W.	0	0	0.000	1.00	0.000
I/I	2,327	84	0.195	1.00	0.195
SUBTOTAL	12,071		0.448		0.572
Basin FB-6					
Mobil Site Undeveloped PD					
Comm./Retail	18,553	34	0.631	2.40	1.514
Residential	4,290	138	0.592	2.80	1.658
R.O.W.(Included	0	0		1.00	0.000
I/I	2,147	84.00	0.180	1.00	0.180
SUBTOTAL	24,991		1.403		3.352
Basin FB-7					
Ex. Office	9,048	34	0.308	2.40	0.738
Undeveloped PD	13,674	34	0.465	2.40	1.116
Undeveloped PD*	4,433	34	0.151	2.40	0.362
Brookhaven Coll.	0	0	0.000	2.40	0.000
R.O.W.	0	0		1.00	0.000
I/I	2,725	84	0.229	1.00	0.229
SUBTOTAL	29,881		1.152		2.445
Basin FB-8					
Brookhaven Coll.	6,300	23	0.145	2.40	0.348
Municipal	40	34	0.001	2.40	0.003
Floodway	0	0	0.000	1.00	0.000
R.O.W.	0	0		1.00	0.000
I/I	2,886	84	0.242	1.00	0.242
SUBTOTAL	9,226		0.389		0.593
TOTAL PEAK FLOW					12.248

EXHIBIT 'B'

DRAFT

30-Nov-90

Addison/Farmers Branch Interceptor
Cost Summary

Line	Total Cost	ADDISON Flow	Percent	Cost	FARMERS BRANCH Flow	Percent	Cost
Tunnel	$17,984,730.00	16.099	56.79%	$10,213,996.83	12.248	43.21%	$7,770,733.17
A	$1,103,692.50	4.935	28.72%	$316,983.21	12.248	71.28%	$786,709.29
D	$762,874.88	4.935	34.89%	$266,156.77	9.210	65.11%	$496,718.11
E	$507,303.00	2.106	21.85%	$110,827.81	7.534	78.15%	$396,475.19
F	$343,929.38	2.106	26.44%	$90,948.68	5.858	73.56%	$252,980.70
G	$121,432.50	2.106	31.00%	$37,647.11	4.687	69.00%	$83,785.39
H	$238,389.75	2.106	42.78%	$101,980.26	2.817	57.22%	$136,409.49
I	$773,766.00	2.106	51.20%	$396,195.28	2.007	48.80%	$377,570.72
J	$280,138.50	2.829	100.00%	$280,138.50			$0.00
TOTALS	$22,116,256.50			$11,814,874.46			$10,301,382.04

- **The costs associated with administration, financing and engineering management of the water supply corporation is estimated at $100,000 annually.**
- **The costs shown on this chart are "*Engineer's Opinion of Probable Costs*" based on available information.**
- **The flows shown for each line segment are calculated ultimate flows for the interceptor system, based on studies and reports completed by Farmers Branch and Addison in June of 1990, ~~and are the maximum allowed from the respective cities.~~**

ESTIMATED DRY WEATHER WASTEWATER FLOW

February 11, 1991

RESIDENTIAL	ESTIMATED DRY WEATHER WASTEWATER FLOW
One (1) Single Family Residence; Modular Home; Mobile Home	350 gpd
One (1) Duplex	300 gpd/Unit
One (1) Triplex; Fourplex; Condo Unit; P.U.D. Unit (6+ Units/ Acre to 24 Units/Acre)	245 gpd/Unit
One (1) Apartment Unit (24+ Units/ Acre)	175 gpd/Unit
One (1) Hotel or Motel Room	175 gpd/Room

COMMERCIAL	ESTIMATED DRY WEATHER WASTEWATER FLOW
Office	115 gpd/1000 Sq.Ft. of Floor
Office Warehouse	87 gpd/1000 Sq.Ft. of Floor
Retail; Shopping Center	210 gpd/1000 Sq.Ft. of Floor
Restaurant; Cafeteria	175 gpd/100 Sq.Ft. of Floor
Hospital	350 gpd/Bed
Rest Home	175 gpd/Bed
Church (Worship Services Only)	5 gpd/Seat
School (Includes Gym and Cafeteria)	25 gpd/Student
Supermarket	65 gpd/1000 Sq.Ft. of Floor
Discount Store	55 gpd/1000 Sq.Ft. of Floor

*Gallons per day (gpd)

EXHIBIT C

Table D-3

FLOW ESTIMATES PER DRAINAGE AREA

DRAINAGE AREA	POPULATION	FLOW RATE (GPCD)	FLOW RATE (MGD)	PEAKING FACTOR	TOTAL FLOW (GPCD)	TOTAL FLOW (MGD)	TOTAL FLOW (GPM)	LAND AREA (SQ FT)
A1								
COMMERCIAL	0	34	0.000	2.40	82	0.00	0	0
INDUSTRIAL	5,997	23	0.138	2.40	55	0.33	230	4,734,300
RESIDENTIAL	0	138	0.000	2.77	382	0.00	0	
INFIL/INFLOW	25% 1,525	84	0.128	1.00	84	0.13	89	
SUBTOTAL	7,522		0.266 ✓		603	0.46	319	4,734,300
A2								
COMMERCIAL	9,728	34	0.331	2.40	82	0.79	552	2,047,964
INDUSTRIAL	13,371	23	0.308	2.40	55	0.74	513	10,555,914
RESIDENTIAL	0	138	0.000	2.77	382	0.00	0	
INFIL/INFLOW	18% 4,059	84	0.341	1.00	84	0.34	237	
SUBTOTAL	27,158		0.979 ✓		603	1.87	1,302	12,603,878
A3								
COMMERCIAL	21,300	34	0.724	2.40	82	1.74	1,208	4,484,207
INDUSTRIAL	7,214	23	0.166	2.40	55	0.40	277	5,695,157
RESIDENTIAL	0	138	0.000	2.77	382	0.00	0	
INFIL/INFLOW	11% 3,278	84	0.275	1.00	84	0.28	191	
SUBTOTAL	31,792		1.165 ✓		603	2.41	1,676	10,179,364
A4								
COMMERCIAL	26,387	34	0.897	2.40	82	2.15	1,496	5,555,207
INDUSTRIAL	0	23	0.000	2.40	55	0.00	0	
RESIDENTIAL	5,786	138	0.798	2.77	382	2.21	1,537	9,145,858
INFIL/INFLOW	15% 4,734	84	0.398	1.00	84	0.40	276	
SUBTOTAL	36,907		2.093 ✓		603	4.76	3,310	14,701,065
A5								
COMMERCIAL	17,032	34	0.579	2.40	82	1.39	966	3,423,480
INDUSTRIAL	5,700	23	0.131	2.40	55	0.31	219	4,500,065
RESIDENTIAL	13% 1,317	138	0.182	2.77	382	0.50	350	1,706,656
INFIL/INFLOW	3,101	84	0.261	1.00	84	0.26	181	
SUBTOTAL	27,150		1.152 ✓		603	2.47	1,716	9,630,201
A6								
COMMERCIAL	0	34	0.000	2.40	82	0.00	0	0
INDUSTRIAL	1,425	23	0.033	2.40	55	0.08	55	1,125,178
RESIDENTIAL	5,406	138	0.746	2.77	382	2.07	1,436	6,558,854
INFIL/INFLOW	36% 2,475	84	0.208	1.00	84	0.21	144	
SUBTOTAL	9,306		0.987 ✓		603	2.35	1,635	7,684,032
A7								
COMMERCIAL	26,699	34	0.908	2.40	82	2.18	1,514	5,807,519
INDUSTRIAL	3,702	23	0.085	2.40	55	0.20	142	2,922,855
RESIDENTIAL	0	138	0.000	2.77	382	0.00	0	
INFIL/INFLOW	9% 2,811	84	0.236	1.00	84	0.24	164	
SUBTOTAL	33,212		1.229 ✓		603	2.62	1,820	8,730,374
TOTAL ADDISON	173,047		7.872		4,221	16.95	11,778	68,263,214

1.86 ✓

MARSH

PEAK ADDISON

SPRING VALLEY

BROOKHAVEN

INWOOD

12.9% VS 15%

HOMES IN MIDWAY MEADOWS

ADDRESS		AVERAGE CONSUMPTION	MONTHS
4100	POKOLODI	14,847	9
3908	MORMAN	10,413	9
14701	LEGRANDE	10,857	12
4100	LEADVILLE	13,938	12
4100	RUSH	10,794	12
		AVE MONTH 12,170	
		AVE DAY 400	
		AVE YEAR 146,040	

DUPLEXES IN MIDWAY MEADOWS

ADDRESS		COMSUMPTION	MONTHS
14813	SURVEYOR	12,444	9
14815	SURVEYOR	23,844	9
14813	SOPRAS	7,898	12
14815	SOPRAS	4,765	12
14812	SURVEYOR	3,978	9
14814	SURVEYOR	4,852	9
4040	MORMAN	7,173	9
4042	MORMAN	6,601	9
4014	MORMAN	8,863	9
4012	MORMAN	10,869	9
		AVE MONTH 9,129	
		AVE DAY 300	
		AVE YEAR 109,548	

August 21, 1989

TOWN OF ADDISON SINGLE FAMILY HOMES

ADDITION	TAX YEAR	# OF LOTS	ESTIMATED LAND VALUE	AVERAGE VALUE PER LOT	# OF HOMES	ESTIMATED HOME VALUE	AVERAGE VALUE PER HOUSE	HOMESTEAD EXEMPTION	SENIOR EXEMPTION	DISABLED EXEMPTION	TOTAL VALUE AVERAGE
ADDISON PLACE	1987	182	8,267,500	45,426	139	12,976,350	93,355	54	1	1	138,781
	1988	178	3,873,320	21,760	159	10,808,150	67,976	76	2	1	89,736
BELLBROOK ESTATES	1987	16	1,919,920	11,737	2	532,850	266,425	0	0	0	300,162
	1988	17	1,919,920	10,849	3	941,090	313,697	0	0	0	354,546
BROOKTOWN	1987	39	401,600	10,297	39	2,476,400	63,497	28	2	0	73,795
TOWNHOMES	1988	39	409,080	10,489	39	1,636,100	41,951	27	2	0	52,441
LAKE FOREST	1987	12	1,681,590	140,133	8	1,054,250	131,781	7	1	0	271,914
	1988	12	1,680,430	140,036	9	1,092,330	120,259	7	1	0	260,295
LES LACS	1987	220	9,954,000	45,245	67	5,582,470	83,320	32	4	0	128,566
	1988	217	7,402,500	34,113	67	5,562,300	83,019	34	4	0	117,132
LES LACS MIRADA	1987	44	523,970	11,900	44	4,581,610	104,128	2	1	0	116,036
CONDOS	1988	44	499,620	11,355	44	1,930,500	45,420	3	1	0	56,775
MIDWAY MEADOWS											
HOMES	1987	277	13,517,700	48,800	252	25,448,730	100,987	152	10	0	149,787
HOMES	1988	201	10,005,300	49,778	181	15,829,310	87,455	130	10	1	137,232
DUPLEXES	1987	74	2,727,500	36,858	71	4,599,440	64,781	8	0	0	101,639
DUPLEXES	1988	74	2,646,900	35,769	73	6,197,100	84,892	8	0	0	120,661
OAKS NORTH	1987	118	10,644,190	90,205	101	19,494,490	193,015	71	1	2	283,220
	1988	118	10,522,500	89,174	104	16,160,050	155,385	79	2	1	244,559
PECAN SQUARE	1987	63	1,112,450	17,658	63	3,858,980	61,254	13	1	0	78,912
CONDOS	1988	63	607,680	9,646	63	2,430,900	38,586	14	1	0	48,231
VALLEY OF BENT	1987	102	1,266,930	12,421	102	6,022,990	59,049	29	1	0	71,470
TREE CONDOS	1988	102	821,300	8,052	102	3,279,520	32,152	26	1	0	40,204
THE WOODS	1987	11	812,000	73,818	1	486,810	486,810	0	0	0	560,628
	1988	11	812,000	73,818	2	804,900	402,450	0	0	0	476,268
TOTALS	1987	1114	50,101,850	44,975	818	82,515,930	100,875	388	22	3	145,850
	1988	1106	41,200,550	37,252	846	66,730,250	78,877	404	24	3	116,129

Lotus\resident

TOWN OF ADDISON BUILDING OCCUPANCY/VACANCY REPORT February 12, 1990

	BUILDING NAME	ADDRESS	YEAR COMPLETED	TOTAL SQ.FT.AREA	JAN 90 TOTAL OCCUPIED	JAN 90 TOTAL VACANT	JAN 90 % OCCUPIED
1	ABERDEEN BUILDING	16841 DALLAS PKWY.	1986	329,800	329,800	0	100.0%
2	ADDISON TOWER	16415 ADDISON RD.	1987	160,000	0	160,000	0.0%
3	ADDISON NAT'L BANK	3939 BELT LINE RD.	1985	101,879	90,879	11,000	89.2%
4	ADDISON PARK PLACE I	4560 BELT LINE RD.	1973	45,000	18,000	27,000	40.0%
5	ADDISON PARK PLACE II	15000 BELTWAY	1980	135,000	117,000	18,000	86.7%
6	AIRPORT PLAZA	4500 RATLIFF LN.	1985	30,660	5,660	25,000	18.5%
7	ATRIUM AT BENT TREE	16775 ADDISON RD.	1981	112,225	62,225	50,000	55.4%
8	BANCTEXAS QUORUM	14901 QUORUM DR.	1981	175,000	162,000	13,000	92.6%
9	BELVEDERE, THE	14881 QUORUM DR.	1984	136,000	119,608	16,392	87.9%
10	BENT TREE TOWER I	16475 DALLAS PKWY.	1980	165,343	160,343	5,000	97.0%
11	BENT TREE TOWER II	16479 DALLAS PKWY.	1982	169,558	129,558	40,000	76.4%
12	COLONNADE-ROLM TOWER	15303 DALLAS PKWY	1985	316,633	293,633	23,000	92.7%
13	COLONNADE-REPUBLIC	15301 DALLAS PKWY.	1983	284,288	241,288	43,000	84.9%
14	CONCOURSE PLAZA	16051 ADDISON RD	1984	43,000	33,000	10,000	76.7%
15	CONTROL DATA (S)	14801 QUORUM DR.	1980	114,700	114,700	0	100.0%
16	SUNBELT BUILDING	16251 DALLAS PKWY	1987	545,900	0	545,900	0.0%
17	EMERALD PLAZA	14900 LANDMARK BLVD.	1985	76,000	67,500	8,500	88.8%
18	FIRST CITY BANK BLDG.	14800 QUORUM DR.	1981	105,000	95,000	10,000	90.5%
19	FIRST GIBRALTAR BANK	14951 DALLAS PKWY.	1982	227,000	187,000	40,000	82.4%
20	FORUM, THE	4002-6 BELT LINE RD.	1984	198,769	148,769	50,000	74.8%
21	GATEWAY CENTRE I	4801 KELLER SPRINGS	1982	52,000	43,500	8,500	83.7%
22	GATEWAY CENTRE II	4851 KELLER SPRINGS	1981	52,819	34,519	18,300	65.4%
23	GRAYMARK OFFICE BLDG	16801 ADDISON RD.	1983	70,000	63,000	7,000	90.0%
24	4444 WESTGROVE	4444 WESTGROVE DR.	1985	30,000	15,000	15,000	50.0%
25	GREENHILL PARK	14601 MIDWAY ROAD	1986	297,736	271,736	26,000	91.3%
26	INTERFIRST BANK BLDG	4560 BELT LINE RD	1974	45,000	18,000	27,000	40.0%
27	LANDMARK, THE	14800 LANDMARK	1985	160,000	0	160,000	0.0%
28	LANDMARK PLACE	14875 LANDMARK BLVD.	1984	67,600	61,809	5,791	91.4%
29	LIBERTY PLAZA I	5055 KELLER SPRINGS	1982	96,748	0	96,748	0.0%
30	LIBERTY PLAZA II	5057 KELLER SPRINGS	1986	119,746	0	119,746	0.0%
31	MADISON BUILDING	15851 DALLAS PKWY.	1984	275,572	235,572	40,000	85.5%
32	MIDWAY ATRIUMS	14275 MIDWAY RD.	1986	254,000	219,000	35,000	86.2%
33	MIDWAY CROSSING	15800 MIDWAY RD.	1981	34,660	7,860	26,800	22.7%
34	MIDWAY PARK NORTH II	15900 MIDWAY RD.	1983	66,634	58,234	8,400	87.4%
35	MIDWAY PLACE I & II	4125 KELLER SPRINGS	1982	110,250	60,250	50,000	54.6%
36	OFFICE IN THE PARK	14673 MIDWAY RD.	1983	174,150	165,150	9,000	94.8%
37	PALMER CENTER	5025 ARAPAHO RD.	1984	114,931	92,083	22,848	80.1%
38	PARK TREE NORTH I	17311 DALLAS PKWY.	1980	48,242	35,242	13,000	73.1%
39	PARKWAY BUSINESS CTR	4950 KELLER SPRINGS	1981	121,198	113,850	7,348	93.9%
40	PRESTONWOOD POND I	14850 MONTFORT DR.	1982	79,682	73,432	6,250	92.2%
41	PRESTONWOOD POND II	14860 MONTFORT DR.	1985	79,682	73,432	6,250	92.2%
42	PRINCETON, THE	14651 DALLAS PKWY.	1982	371,228	331,228	40,000	89.2%
43	QUORUM CENTRE I	15280 ADDISON RD.	1986	70,000	56,000	14,000	80.0%
44	14860 LANDMARK	14860 LANDMARK	1985	26,362	0	26,362	0.0%
45	SPECTRUM CENTER	5080 SPECTRUM	1983	597,108	517,108	80,000	86.6%
46	STOCKTON SAVINGS (S)	16885 DALLAS PKWY.	1985	39,000	39,000	0	100.0%
47	SUNBELT I	4400 SUNBELT	1981	82,388	70,388	12,000	85.4%
48	SUNBELT V	4300 SUNBELT	1983	25,643	23,820	1,823	92.9%
49	TREEPOINT	16901 DALLAS PKWY.	1981	43,175	33,175	10,000	76.8%
50	TRIANGLE PACIFIC (S)	16803 DALLAS PKWY.	1980	64,000	64,000	0	100.0%
51	WELLINGTON CENTER	14643 DALLAS PKWY.	1985	220,000	200,000	20,000	90.9%
52	WESTGROVE AIR PLAZA	4570 WESTGROVE	1985	60,000	53,860	6,140	89.8%

TOWN OF ADDISON BUILDING OCCUPANCY/VACANCY REPORT February 12, 1990

	BUILDING NAME	ADDRESS	YEAR COMPLETED	TOTAL SQ.FT.AREA	JAN 90 TOTAL OCCUPIED	JAN 90 TOTAL VACANT	JAN 90 % OCCUPIED
53	5000 QUORUM	5000 QUORUM DR.	1984	160,732	120,732	40,000	75.1%
54	5050 QUORUM	5050 QUORUM DR.	1981	130,500	110,500	20,000	84.7%
55	14840 LANDMARK	14840 LANDMARK	1983	28,500	18,156	10,344	63.7%
56	14850 QUORUM	14850 QUORUM DR.	1985	89,000	72,200	16,800	81.1%
	TOTAL			7,830,041	5,727,799	2,102,242	73.2%

(S) INDICATES BUILDING IS OCCUPIED BY A SINGLE TENANT

SOURCES: BLACK'S OFFICE LEASING GUIDE WINTER 90 EDITION
TOWN OF ADDISON, TAX OFFICE

lotus\vacancy1

1

2

3

4

5

6

7

8

9

10

11

12

13

14

25,4
21,1
53.5%

13,321,792
11,066,528
28,059,680

January 11, 1990

SEWAGE USAGE REPORT

USAGE BASED ON ACTUAL WATER BILLED FOR ALL OF 1989

	BUSINESS	ACREAGE	USAGE	USAGE PER ACRE
1st FY 15,600	VALLEY VIEW INN 4151 Beltway	1.80	2,108,000	1,171,111
54112	ROADWAY INN (JO JO'S) 4301 Belt Line	4.98	11,124,000	2,233,734
8400	ATCHAFALAYA 4440 Belt Line	2.29	4,540,000	1,982,532
	SOLLY'S 4801 Belt Line	.91	964,000	964,000
5100	CANTINA LARADED 4546 Belt Line	2.08	1,934,000	929,807
121,318	PECAN SQUARE	3.00	4,915,000	1,638,000
	VALLEY OF BENTREE	7.29	7,332,000	1,005,761
	GREENHAVEN VILLAGE APT. 3900 Brookhaven Club Dr.	21.51	43,365,000	2,016,039
173,178	5000 QUORUM	3.80	3,696,000	972,631

SEWAGE WOULD BE CALCULATED AT 90% OF WATER USAGE

SEWER USAGE TO FARMERS BRANCH

1986 BASE YEAR GALLONS OF ADDITIONAL CAPACITY

577,031,200 X 5% = 28,515,500

1987 USAGE 556,505,600

1988 USAGE 486,648,440 ≥ 494,959,500

1989 USAGE 543,433,200

MAXIMUM USAGE ALLOWED UNDER FARMERS BRANCH CONTRACT 605,882,760

EXHIBIT "A"

SCOPE OF SERVICES

PART I

PHASE II A - Final Design

1. Upon notice to proceed meeting with owner to review Preliminary Report and establish a schedule for review and progress meetings.

2. Establish the route and parameters of the detailed topographic survey and complete surveys using Datum and Bench Marks established in Preliminary Report. The detailed scope of the topographic surveys is set forth in Part I - Phase II-B - Special Services.

3. Conduct field land surveys necessary to prepare plats and legal descriptions of all permanent and temporary easements along the route of the proposed interceptor. The detailed scope of the land surveys is set forth in Part I - Phase II - B - Special Services.

4. Prepare final design geotechnical report supplementing the soil report completed during the preliminary design phase. The detailed scope of final geotechnical report is set forth in Part I - Phase II-B - Special Services.

5. Plans will be prepared on 24-inch by 36-inch plan and profile, sheets of a scale of 1" = 20' in plan view and 1" = 5' in the profile vertical scale. Plans will be prepared using C.A.D. method.

6. Plans will include a cover sheet, a location sheet, traffic control sheets, plan and profile sheets, detail sheets, construction notes and legend sheets and standard detail sheets. All sheets will be designed and stamped by a registered engineer in the state of Texas.

7. Prepare contract documents including notice to bidders, proposal, special instructions to bidders, contract conditions, special provisions, and project specifications using the CSI standard specifications. ? I want to review a copy.
Trench Repair?

8. Prepare the required documents to obtain approval of all governmental authorities having jurisdiction over the design and/or operation of the Project and all public and private utilities including pipeline transmission companies affected by the Project; obtain the signatures of representatives of such governmental authorities and public utilities; obtain the signatures of City officials. SDHPT RR? Pipeline Companies? TRA? TWC?

9. Design the Project in compliance with the requirements of all applicable laws, codes and regulations, including the City of Farmers Branch Building Code (which is expressly made applicable to this Project); make all revisions to the plans, specifications and other contract documents necessary to provide clarifications or to correct discrepancies; provide documents necessary for obtaining a City building permit for the Project; The plans and specifications shall conform to all applicable federal and state regulations. TWC - Testing?

10. Deliver to the Cities at the 90% and 100% completion stages of Phase II a detailed cost estimate and five (5) copies of all the reports, recommendations, analyses, specifications, plans and drawings (including working drawings) or as may be modified by Exhibit "A", Scope of Services. Addison - want 2 copies

11. Assist the Cities in securing bids for the construction of the Project based upon the construction documents; attend prebid conferences; assist the City in evaluating the bid proposals; prepare tabulations of bids received; and furnish the City 20 copies of the bid tabulation and a written recommendation for the award of a construction contract for the project; Addison needs 15

12. Issue all required addenda to revise the plans, specifications and other contract documents in order to (i) provide clarifications; (ii) correct discrepancies; (iii) correct errors and/or omissions; or (iv) reflect changes in design requirements and/or field conditions. ✓

13. Upon completion of all the items in Phase III, Engineer shall deliver to City original tracings of construction plans, bid documents, preliminary plans, copies of all field work, and twenty (20) full-size set of prints. 3 for Addison

PHASE II - B - Special Services

A. SURVEYING

Perform field surveys and provide office support relative to surveying required to obtain horizontal and vertical data along the proposed interceptor sewer line, prepare temporary and permanent easements, and to prepare a working plan layout on CADD. Specific tasks are as follows:

1. Horizontal Control - Establish a baseline on a location near the centerline of the proposed interceptor sewer. A representive from CT&A will assist L/JA in identification of the shaft locations (PI's) on the baseline. The baseline will be staked at 100' station intervals. PI's will be referenced with points outside the construction area for re-establishment during construction. ✓

2. Topography - Obtain complete planimetric topography with ties to streets, buildings, trees, utilities, etc. This topo will be obtained from ROW to ROW or for a width of 150' (75' each side of the baseline) when on new location. Invert elevations of underground utilities will be obtained where accessible. Elevations will be obtained along utilities at locations probed or uncovered by utility companies. Is this overkill?

3. Profiles and Cross Sections - Obtain elevations along the baseline at 100' station intervals. At creek, street, railroad, and highway crossings, obtain

addition cross sections as appropriate to represent the surface. At shaft locations, establish a 20' grid for a width of approximately 60' x 80' and obtain elevations on the grid points. ?

4. ROW/Easements - Research property information (plats, right of way plans, metes & bounds descriptions). Tie property corners, fences, etc. to define the existing street right of way. Prepare a working sketch of existing street right of way and properties which are crossed by the interceptor sewer line. Perform boundary analysis and computations to define the permanent easements required for the line (estimated 20 easements) and temporary easements at shaft locations (estimated 15 easements). Prepare individual plats and metes and bounds descriptions for each easement. Stake the limits of the easements in a semi-permanent manner as required by the cities.

B. GEOTECHNICAL INVESTIGATIONS

Perform final geotechnical services to provide soil borings, tests and reports in accordance with the following specific tasks:

1. Test borings will be drilled at approximately 500-feet intervals along the recommended.
2. Alignment to depths below the proposed sewer invert. A total of 37 borings to total depths of 25 to 100 feet are proposed as summarized in Table 1. Boring logs and related information from the preliminary geotechnical report will be used to fill in the information base along the alignment.

3. Cohesive soils will be sampled with thin-walled tube samplers. Standard penetrations tests will be performed on very sandy or cohesionless soils. The sampling intervals will be at each change in material or a maximum of five feet. The unweathered Eagle Ford Shale will be continuously cored with double-tube core barrels and appropriate bits. All samples will be extruded in the field and packaged to protect them from disturbance and preserve their in-situ moisture content.

4. Field permeability tests by the pressure packer method will be performed at selected locations in the shale bedrock to evaluate in-situ permeability. Small-diameter (2-inch PVC) groundwater observations wells will be installed at selected locations, primarily in the overburden soils, for long-term groundwater level measurements. Field permeability tests by the bailing and recovery method will be performed in these observation wells to evaluate in-situ permeability.

5. All borings will be grouted following completion of drilling.

6. An experienced field geologist will be assigned to each drilling rig to log the borings, perform field tests, assist in access and utility clearances at boring sites, and perform related duties. It is also anticipated that barricades and traffic control assistance will be needed at several locations.

7. Ground surface elevations and locations will be provided for each of the test borings (final and preliminary).

8. Laboratory tests will be performed on representative samples to establish the pertinent engineering properties of the various soil and rock strata.

   For soil samples, the following tests are anticipated:

   Natural moisture content
   Dry unit weight
   Atterberg limits and linear shrinkage
   Grain-size analysis
   Unconfined compression
   Triaxial shear
   Direct shear
   Absorption swell

For rock core samples, the following tests are anticipated:

Natural moisture content
Dry unit weight
Unconfined compression
Triaxial compression
Absorption swell
Atterberg limits

These tests will be performed in general accordance with ASTM and IRSM methods. It is also proposed to perform a limited program of special tests to further evaluate the rock durability, hardness, and mineralogy. Additional types of tests for both soil and rock samples may be performed depending on conditions encountered.

9. The results of all field and laboratory studies will be compiled into an engineering report with our comments and recommendations on various appropriate design parameters.

These will include, as a minimum, the following:

- o Test boring logs and discussion of soil and rock stratigraphy
- o Interpretive subsurface profile along the alignment
- o Discussion of geologic and hydrogeologic conditions including groundwater levels
- o Laboratory test results and discussion of engineering properties of soil and rock materials.
- o Geotechnical engineering comments and recommendations, including
  - dewatering (open cut, shafts, and tunnel)
  - soil bearing and settlement in cut and cover segment
  - pipe bedding and backfill
  - design parameters for excavation support

- cut and cover excavation slopes
- estimated ground movements
- monitoring and instrumentation

PHASE III - Construction

The Engineer shall provide professional services during construction to assist in obtaining a complete Project in accordance with the purpose and intent of the contract documents. Phase III services shall include, but not be limited to, the following:

1. Participate in pre-construction conferences and assist with the preparation of a contract between the City and the successful bidder;

2. Provide a full time resident engineer and assistant field engineers as required to provide construction management and onsite construction observation services.

3. Jay Dee Contractors Inc. will assist Consoer Townsend & Associates during construction Phase Services and will provide at least one full time representative as part of the onsite personnel referred to in Paragraph 1 above. Both Consoer Townsend and Jay Dee Contractors will assign a project manager to interface between the contractor, the cities and resident engineers and attend monthly progress meetings and any other meetings as required.

4. Administer construction contracts and prepare monthly progress reports, minutes of meetings, daily diaries, review and monitor contractor's CPM schedule adherence and project progress, and check and recommend approval of contractors pay estimates.

copies to the cities

5. Review, prepare, make recommendations, execute, and administer contract changes including field change orders and engineering design changes.

6. Review and recommend approval of contractor's submittals and schedules including shop drawings and coordinate during construction to minimize the impact of traffic disruption or dust conditions to the local populace.

7. Arrange for, and coordinate as required, all independent testing or laboratory services necessary for the project and review and administer, as needed, in accordance with the test results.

8. Coordinate with contractor, utility companies and owners public works departments to minimize disruption of utilities caused by or required by construction operations.

9. No less than 30 days and no more than 45 days before the expiration of the guarantee period established by the construction contract documents, the Engineer, in company with the cities, shall inspect the construction site. Within fourteen days after such inspection the Engineer shall furnish the cities with a written report enumerating items which require repair or replacement as provided under the guarantee and warranty provisions of the contract documents;

10. Provide two sets of "as-built" reproducible record prints of drawings, which shall become the property of the cities corrected to show significant changes made in the work during the construction of the Project. Such corrections shall be based upon " as-built" prints, drawings, field sketches and other data furnished to the Engineer by the City and the contractor, upon change orders issued during construction, and upon on-site observations of the Engineer.

South of Beltway

January 22, 1990

To: Ron Whitehead
From: Don Preece
Subject: Undeveloped Area

Carmen and I totaled all of the undeveloped area that drains to the Farmers Branch sewer drainage area. There are a total of 412.8 acres of which 192 acres are in the Les Lacs area.

undeveloped undeveloped
We have a total of 51,749,560 available gallons of additional sewage for this area. If we allocate on a per acre basis this gives a total of 125,362 gallons per acre per year, 10,446 gallons per month, and only 343 gallon per acre per day.

If I may be of any further help please call me.

Sincerely,

Don Preece

ALLOWABLE INCREASE OVER 1989 USAGE WITH NO CONSIDERATION FOR INFILTRATION * 62,449,560 *

APPROXIMATELY 8 ACRES OF HIGH RISE NOT OCCUPIED OR 7,000,000 GALLONS OF POTENTIAL SEWAGE USAGE

APPROXIMATELY 50 ACRES OF OFFICE SHOW ROOM NOT OCCUPIED OR 2,700,000 GALLONS OF POTENTIAL SEWAGE USAGE

MISCELLANEOUS UNOCCUPIED USAGES 1,000,000

TOTAL POTENTIAL UNOCCUPIED USAGE 10,700,000 SEWAGE POTENTIAL

ACTUAL EXPANSION ALLOWED ABOVE 1989 SEWAGE USAGE 62,449,560 -

10,700,000 = 51,749,560 WITHOUT ANY INFILTRATION CONSIDERED

ANNUAL USAGE PER ACRE BASED ON CURRENT USAGE

SMALL HOTEL ---------- 1,523,180 GALLONS PER ACRE YEAR

RESTAURANT ---------- 1,162,901 GALLONS PER ACRE YEAR

CONDOS & APTS. -------- 1,397,940 GALLONS PER ACRE YEAR

HIGH RISE OFFICE ------ 875,367 GALLONS PER ACRE YEAR

OFFICE SHOW ROOM ----- 55,000 GALLONS PER ACRE YEAR

SINGLE FAMILY ------ 240,000 GALLONS PER ACRE YEAR
SINGLE FAMILY BASED ON 5 UNITS PER ACRE 4000 GAL. USAGE PER MONTH

IF LES LACS DEVELOPED TOTALLY AS IT IS ZONED THE SEWAGE USAGE WOULD BE:

HIGH RISE OFFICE 875,367 GALLONS X 73.6 ACRES =64,427,011 GALLONS PER YEAR

CONDO'S & APARTMENTS 1,359,810 GALLONS X 94.1 ACRES = 127,958,121 GALLONS PER YEAR

TOTAL SEWAGE REQUIREMENT FOR LES LACS 192,385,132

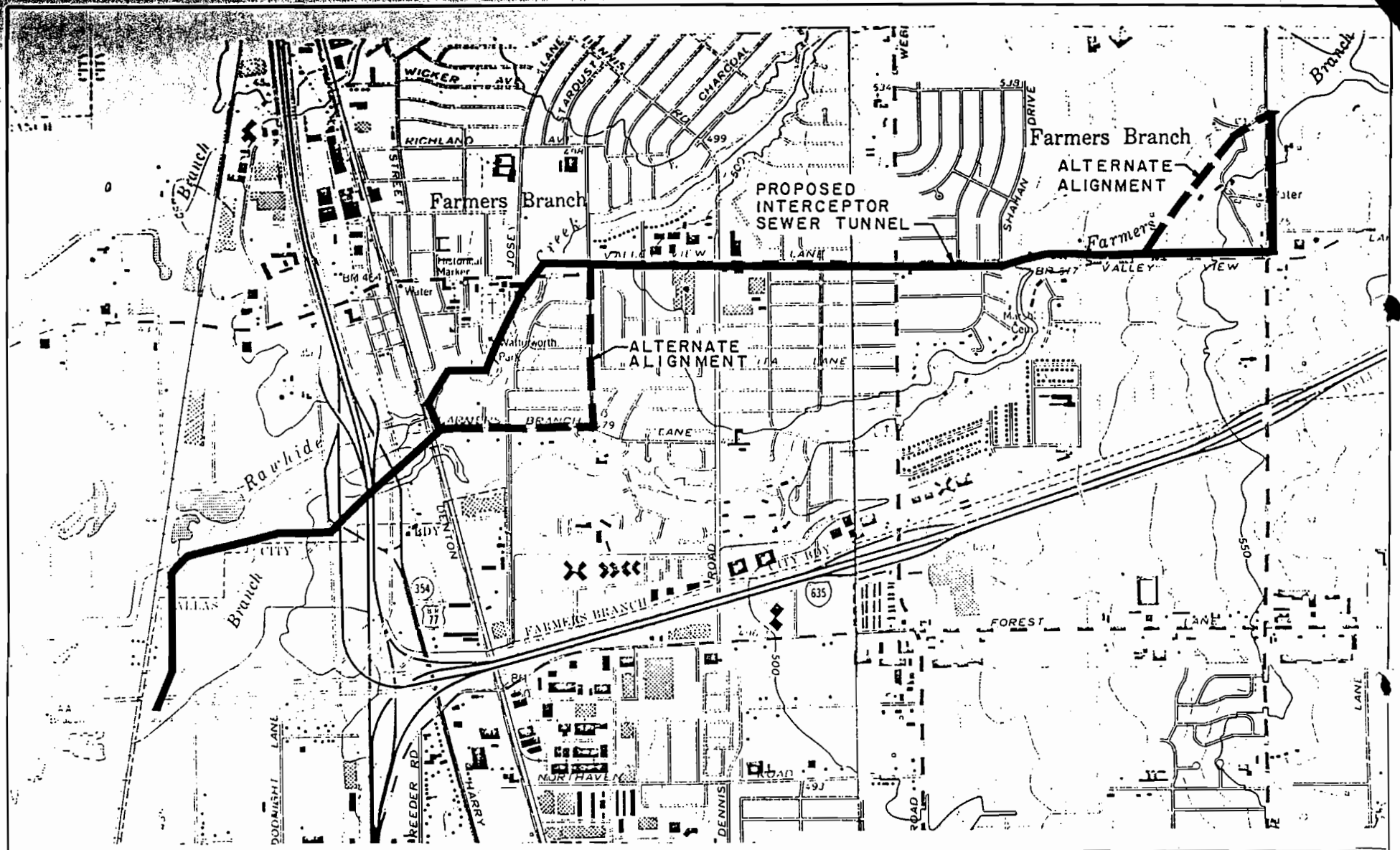


FIGURE 1

SITE VICINITY MAP

SWL 89-229

JANSING ASSOCIATES, INC.
8701 N. Mopac, Suite 265
Austin, Texas 78759 · 512-338-1974

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____

	Acres	Ave Flow (gpd)	Peak Flow (gpd)	Cumulative peak flow w/ existing (gpd)	Cumulative peak flow w/ new development (gpd)	Net Peaking Factor Existing	Net Peaking Factor with New Development
Addison							
Existing	n/a	150,000	375,000	375,000	n/a	2.5	n/a
New Dev.	n/a	350,000	875,000	375,000	1,250,000	2.5	2.5
Farmers Branch							
12" Basin	118	165,000	577,500	952,500	1,827,500	3.02	2.75
15" Basin	715	1,001,000	3,503,500	4,456,000	5,331,000	3.39	3.200
18" Basin	387	542,000	1,897,000	6,353,000	7,228,000	3.42	3.27
Totals	n/a	2,208,000	7,228,000	n/a	n/a		Ave 3.27 pf

Notes: 1. Addisons peaking factor 2.5 from historic data.
2. Farmers Branch peaking factor estimated @ 3.5
3. Farmers Branch development estimated at 4 living unit equivalents (LUE's) / gross acre.
4. One living unit equivalent produces 350 gpd of sewer
5. Addison's flow based on historic record

JANSING ASSOCIATES, INC.
8701 N. Mopac, Suite 265
Austin, Texas 78759 · 512-338-1974

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____

12" line Full

0.3%	1,263,700				
0.4%	1,459,196				
0.5%	1,631,430				

15" line

0.2%	1,870,000	0.7%			
0.3%	2,290,200	0.8%	= 3,739,900	2.0%	5,913,400
0.4%	2,644,500	1.0%	4,181,400		
0.5%	2,956,700	1.2%	4,580,500		
0.6%	3,238,882	1.4%	4,947,500		

18"

0.2%	3,034,700	0.8%	6,067,500	
0.3%	3,716,800	1.0%	6,785,900	
0.4%	4,291,800	1.2%	7,433,500	
0.5%	4,798,324	1.4%	8,029,100	
0.6%	5,256,300			

646,272/gpd = 1 cfs

n = 0.013

Farmers Branch Sewer
Rawhide Creek

8-25-91

SEWER FLOW ESTIMATE

Addison Flow

Existing	150,000 gpd	Peak 375,000
New construction	350,000 gpd	Peak 875,000 (2.5 peaking factor)
Totals	500,000	1,250,000

Farmers Branch

Assumptions: 1. Development at a rate of 4 living units/gross acre.
2. Peaking factor of 3.5

12" line

118 Ac. ≈ 472 lue's ≈

165,200 gpd (ave) 578,200 gpd's peak

Total with Addison 665,000 1,828,000

15" 938 Ac ≈ 3,752 lue ≈ 1,313,200 gpd
≈ 4,596,000 gpd peak

Total with Addison + 12" = 1,978,200 gpd 6,424,000

FARMERS BRANCH SUMMERY OF COSTS

15,000 → LJA

I.	Design		$591,760
II.	Services During Construction		933,709
III.	Special Services		
	A. Surveying		
	1. Aerial Photogrammetry		
	Controls Vertical & Horizontal		21,416
	Photogrammetry		12,098
	Subtotal		33,514
	2. Base Line Survey		14,716
	3. Field Topographic Survey		15,486
	4. Underground Utilities		8,228
	Special Profiles & Cross Sections		21,152
	Subtotal Surveying		93,096
	Plus 10%		9,309
	Total Surveying		102,405
	B. Right-of-Ways		
	Easements		49,408
	Plus 10%		4,940
	Total R.O.W. and Easements		54,348
	C. Construction Staking and Control		21,400
	Plus 10%		2,140
	Total Construction Staking & Control		23,540
	ODC's Surveying		9,550
	D. Geotechnical Investigation		
	1. Field Studies		91,000
	2. Laboratory Tests		17,000
	3. Engineering Report		41,000
	4. Pumping Tests		16,000
	5. Environmental & Water Quality Assessment		9,500
	Subtotal		174,500
	Plus 10%		17,450
	Total Geotechnical		191,950

Summary:

Design	591,760
Services During Construction	933,709

Special Services:

Surveying	102,405
Right-of-Way	54,348
Construction Staking & Control	23,540
ODC's	9,550
Geotechnical	191,950
Subtotal	381,793

Direct Costs:

Printing	5,500
Milage & Travel	9,690
CAD Cost	13,840
Subtotal	29,030
Total	$1,936,292

1. Why did the base design fee go up?

2. ~~Where did the $23,340 - other direct costs~~

3. Explain the flow monitoring to me.
   ie: why are we doing it?
   what do we expect to learn?

4. Explain why we need aerials and extensive topographic survey.

5. Who is Lichliter · Jamesons Rep.?

Brian Ice, Engineer — Paul Lichte
Surveying
Utility coordination

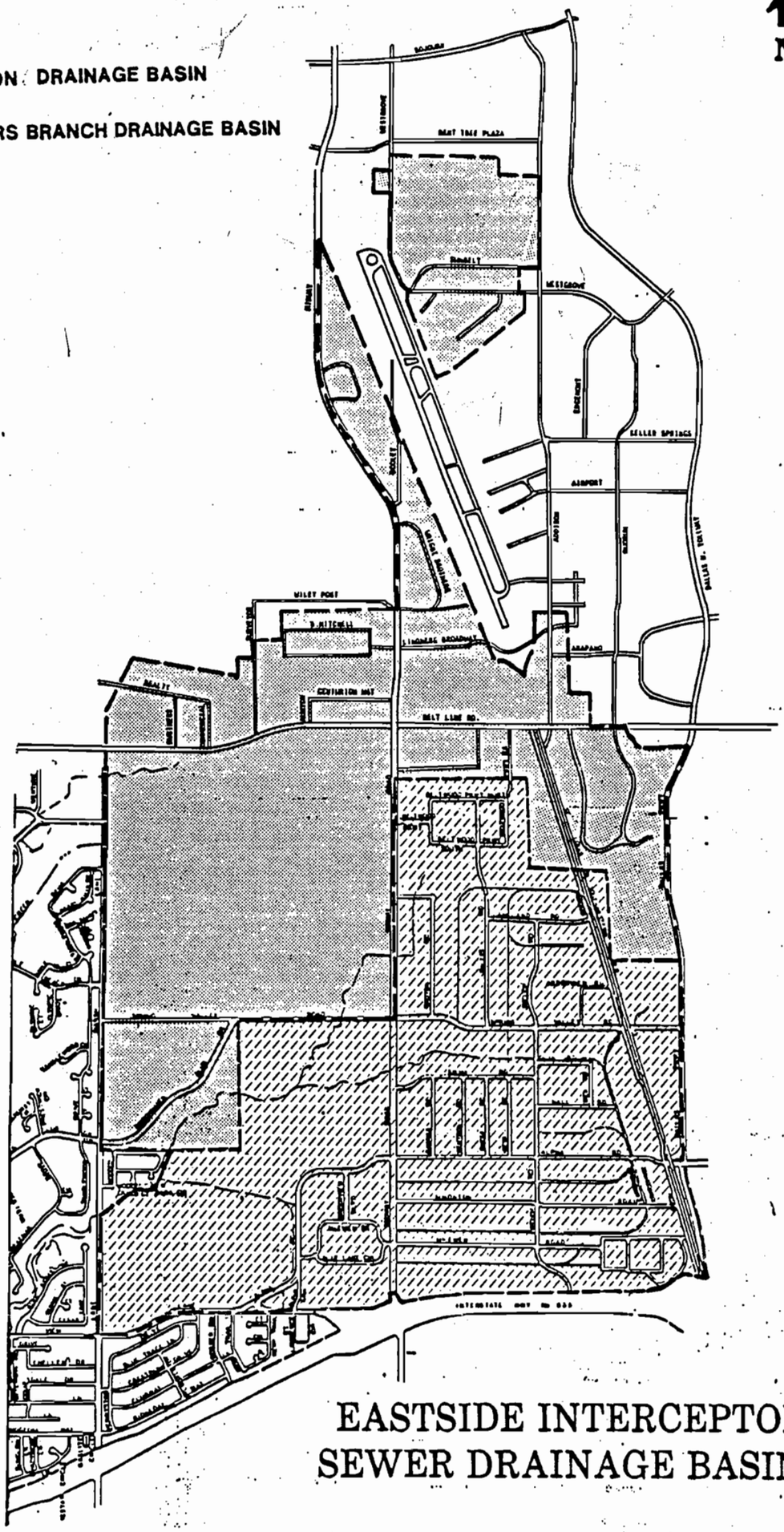
EXHIBIT C

LEGEND

ADDISON DRAINAGE BASIN

FARMERS BRANCH DRAINAGE BASIN

N



EASTSIDE INTERCEPTOR SEWER DRAINAGE BASINS

DATE: 9-19-90

4-10-91

	FARMERS BRANCH DESIGN LIST OF TASKS	DIR.	PROJ. MGR.	PROJ. ENG.	SR. CON. ENG.	SR. CIVIL	CIVIL	STRUCT.	CAD	TECH. OFFICE	TECH. FIELD	SR. EST.	STAFF EST.	COST PER
I.	DESIGN:													
1.	MEET WITH CITY START UP	8	8		8				2	4				$3,080
2.	ESTABLISH COMM. PROCEDURES - CITY	8	8	4	8					4				$3,304
3.	MEETING WITH TEAM REGARDING SCOPE	8	8	8	8					4				$3,640
4.	ESTABLISH COMMUNICATION AND SCOPES	8	8	4	8					4				$3,304
5.	ESTABLISH SCHEDULES AND CPM	8	8	8	8					4				$3,640
6.	START AERIAL AND FIELD SURVEYS		8	8						4				$1,752
7.	START GEOTECHNICAL INVESTIGATION		8	8	4					4				$2,180
8.	FIELD CHECK AND FINALIZE ROUTE		16	16	8									$3,960
9.	REVIEW PROP. FB/ADDISON SEWERS		16	16						4				$3,304
10.	DETERMINE FLOW METER LOCATIONS		8	16						4				$2,424
11.	START FLOW METERING (2-3 LOCATIONS)		8	4							40			$3,056
12.	ANALYZE FLOW METER DATA		16	24		16				4				$5,224
13.	DETERMINE FLOWS DRY-WET-FUTURE		12	40			24							$6,240
14.	LAB & OTHER ANALYSIS OF WASTEWATER	8	16	24	16	24				4				$8,592
15.	MEET WITH TRINITY RIVER AUTHORITY	8	8		8					4				$2,968
16.	REVIEW DEVELOPMENT ~~EAST~~ WEST OF I-35		8	4						4				$1,416
17.	FINALIZE ROUTE THRU DEVELOPMENT		8	8	4									$1,980
18.	RECEIVE AERIAL TOPO/CONTOUR DISKS		8	16					2	16				$3,136
19.	DRAFT CAD DETAIL FIELD SURVEY TOPO		8	16					80					$6,704
20.	PREPARE CAD STRIP TOPO/CONTOUR MAPS		8	16			80		44					$9,888
21.	PREPARE CAD STRIP PROFILE MAPS		8	16			80		77					$11,736
22.	PLOT STRIP MAPS TOPO AND PROFILE		8	8					22					$2,784
23.	PRELIMINARY DESIGN SEWER PLAN		20	40	16		80		17					$13,424
24.	PRELIMINARY DESIGN PROFILE		20	40	16		80		22					$13,704
25.	DRAFT PRELIM. PLANS PROFILE DWGS.		8	22					190					$13,368
26.	PLOT PRELIM. PLANS PROFILE DWGS.								24					$1,344
27.	PRELIM. P & P DWGS. TO UTIL. COMPANIES		8	8						1				$1,602
28.	PRELIM. P & P DWGS. TO CITY RE: UTIL.		4	8						1				$1,162
29.	DRAFT ALL UNDERGROUND UTIL. - PLAN		4	8			80		66	12				$10,608
30.	DRAFT ALL UNDERGROUND UTIL. - PROF.		4	8			80		264	12				$21,696
31.	DRAFT GEOTECH. BORINGS PLAN AND PROF.		4	4			10		4	4				$1,850
32.	PLOT PLAN AND PROFILE SHEETS								24	12				$1,944
33.	FIELD CHECK TOPO AND UTILITIES		24	24							24			$5,760

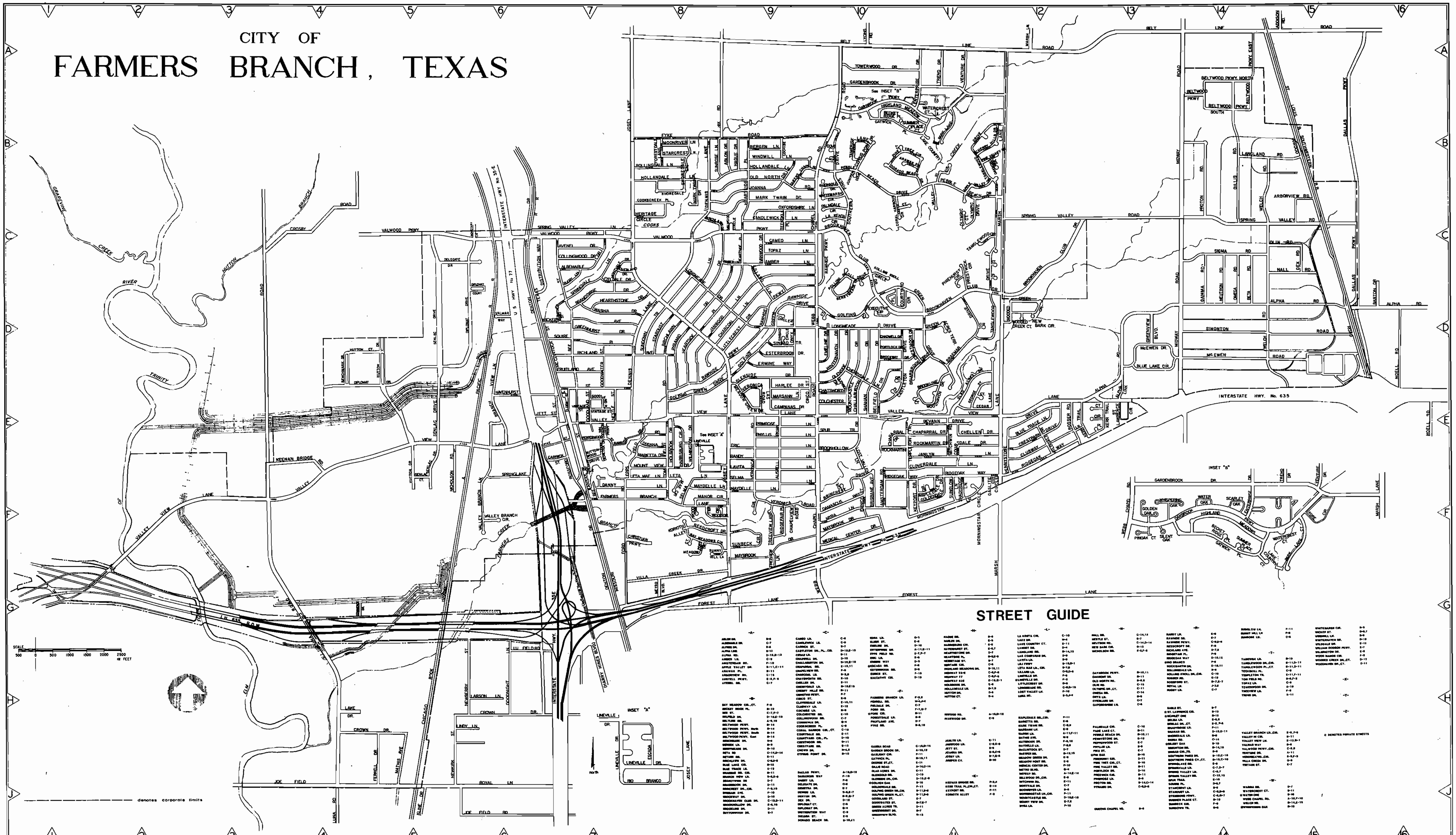
4-10-91

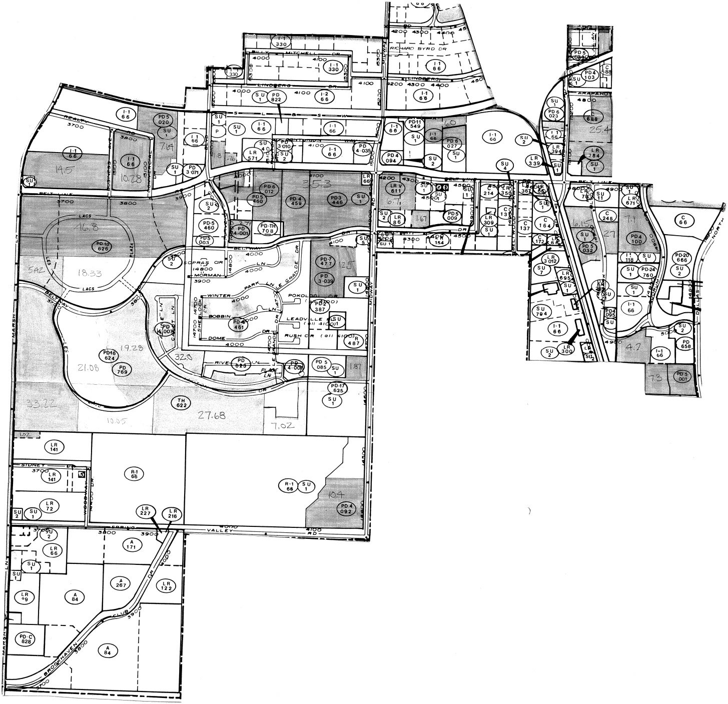
	FARMERS BRANCH DESIGN LIST OF TASKS	DIR.	PROJ. MGR.	PROJ. ENG.	SR. CON. ENG.	SR. CIVIL	CIVIL	STRUCT.	CAD	TECH. OFFICE	TECH. FIELD	SR. EST.	STAFF EST.	COST PER
34.	REVIEW GEOTECHNICAL REPORT	4	8	8	16					4				$3,980
35.	FINAL DESIGN PLAN RED LINE		22	88	22	80	176							$29,846
36.	FINAL DESIGN PROFILE RED LINE		22	88	22	80	176							$29,846
37.	TRAFFIC CONTROL PLAN		4	40	8		40		6	80				$11,592
38.	DRAFT FINAL DESIGN PLAN & PROF. CAD		20	20					176					$13,736
39.	QUALITY CONTROL DESIGN CHECK	16	4	4	24	80	40		66	48				$20,344
40.	PLOT FINAL DESIGN PLAN AND PROFILE								24					$1,344
41.	MEETINGS WITH FB/ADD 50% REVIEW	8	24	24	24									$8,256
42.	SUBMIT PLANS TO HIGHWAY DEPARTMENT		2	8						16				$1,692
43.	SUBMIT PLANS TO TRINITY RIVER AUTH.		2	4						8				$956
44.	DESIGN REVISIONS REVIEW	4	8	40	8		80		8	8				$11,660
45.	DRAFT REVIEW REVISIONS		2	8					88	60				$8,820
46.	PLOT REVISED PLANS								24					$1,344
47.	STRUCTURAL DESIGN STRUCTURES		8	16				120	120	80				$22,664
48.	ESTIMATE OF QUANTITIES		40	44	20		88			80		40	40	$24,156
49.	CHECK ESTIMATE	4	16	8		80				40		40	40	$15,388
50.	ESTIMATE OF COST		16	24	40					80		80	40	$18,656
51.	CHECK ESTIMATE OF COST	4	8	4	20	40						20	20	$9,092
52.	DEVELOPE CONTRACT DOCUMENTS	4	40	40	20	80				40				$18,656
53.	DEVELOPE SPECIAL CONDITIONS		40	80	40	80								$21,640
54.	SELECT CONST. METHODOLOGY AND MATE	4	24	40	24									$9,084
55.	OUTLINE TECHNICAL SPECIFICATIONS	4	8	24	24									$5,980
56.	WRITE SPECIFICATIONS		80	100	40	100				120				$35,280
57.	REVIEW SPECIFICATIONS	8	24		16	80								$11,624
58.	90% REVIEW FB/ADDISON	8	40	16	8			20		8				$9,652
59.	FINAL SPECIFICATION/PLANS REVISIONS	4	40	16	8	40	40		44	40				$17,300
60.	PLOT FINAL BID DWGS.								50					$2,800
61.	SUBMIT TO REGULATORY AGENCIES +/- (4)		16	40						16				$5,920
62.	APPLY FOR PERMITS		8	40						16				$5,040
63.	SUBMIT CONTRACT DOCUMENTS		4	16						16				$2,584
64.	ADVERTIZE FOR BIDS		8	16						8				$2,624
65.	PRE BID MEETING	8	16	16	8									$4,992
66.	RECEIVE BIDS		8	8										$1,552
67.	REVIEW BIDS AND RECOMMEND AWARD	8	24	16	24									$7,584
	TOTALS	144	894	1322	528	780	1154	140	1444	878	64	180	140	$576,458

#75 (7668)

MIKE CTA 4-10-91

	SERVICES DURING CONSTRUCTION LIST OF TASKS	PROJ. DIR.	PROJ. MGR.	SR. CON. ENGR.	PROJ. ENGR.	TECH. OFFICE	RESID. ENGR. P.E.	ASST. RES. ENGR.	CLERK				COST PER TASKS
1.	PRE CON. MTG. CITY - CONTRACTOR	8	16	8									$3,648
2.	APPROVE SCHEDULE/INSURANCE	8	16	16									$4,504
3.	PRE CON. VIDEO SURVEY		8	8									$1,736
4.	ESTABLISH PROJECT REPORTING	4	16	4									$2,704
5.	APPROVE CPM		16	16									$3,472
6.	ESTABLISH ENVIRONMENTAL PARAMETERS		8	8									$1,736
7.	ESTABLISH TRAFFIC MAINTENANCE		8	8	24								$3,752
8.	DETAILED OBSERVATION OF CON.						4160	3633	3633				$698,679
9.	PROVIDE LINE AND GRADE CONTROLS		8	8	16								$3,080
10.	ESTABLISH INSTRUMENTATION move to Contractor		16	8	16								$3,960
11.	SHOP DRAWING REVIEW AND APPROVAL		16	40	60								$11,080
12.	REVIEW CONTRACTOR SUBMITTALS		24	36	60								$11,532
13.	MONTHLY PROGRESS MEETING	64	176	176									$46,448
14.	REVIEW TESTING LABORATORY SUBMISSIONS			24									$2,568
15.	DAILY FIELD REPORTS												$0
16.	DAILY QUANTITY INPUT		40		200								$21,200
17.	CHECK MONTHLY CONTRACTOR PAY ESTIMATE		44	22	100								$15,594
18.	SUBMIT MONTHLY REPORT AND ESTIMATE	88	192	44		48							$39,580
19.	CONSTRUCTION CLAIMS RESOLUTION	20	40	48		24							$13,316
20.	MAINTAIN CPM SCHEDULE		24	48	88								$15,168
21.	MAINTAIN INSTRUMENTATION PROCEDURES												$0
22.	LOG EXPEDITE AND FOLLOW UP CITIZEN COMP.		24		60	60							$10,680
23.	MAINTAIN TRAFFIC MAINTENANCE												$0
24.	CHECK CONSTRUCTION LINE AND GRADE												$0
25.	INSPECTION AT SUBSTANTIAL COMPLETION		16	16									$3,472
26.	FINAL PUNCH LIST		16	16		8							$3,872
27.	COMPLETE PUNCH LIST					8							$400
28.	FINAL INSPECTION	8	16	16									$4,504
29.	FINAL QUANTITY MEASUREMENTS		8	8	4	4							$2,272
30.	FINAL PAY ESTIMATE	8	16	8	4	4							$4,184
31.	ACCEPTANCE BY FB/ADD.	8	16	8									$3,648
	TOTALS	216	780	586	632	156	4160	3633	3633	0	0	0	$936,789


CITY OF
FARMERS BRANCH, TEXAS
STREET GUIDE
INSET "A"
INSET "B"
See INSET "A"
See INSET "B"
denotes corporate limits
☆ DENOTES PRIVATE STREETS
SCALE IN FEET
BELT LINE ROAD
SPRING VALLEY ROAD
VALWOOD PKWY
VALLEY VIEW LANE
FARMERS BRANCH LN
FOREST LANE
INTERSTATE HWY. No. 635
INTERSTATE HWY No. 35-E
U S HWY No 77
JOSEY LANE
WEBB CHAPEL ROAD
MARSH LANE
MIDWAY ROAD
DALLAS PKWY
ALPHA RD
McEWEN ROAD
SIMONTON ROAD
BROOKHAVEN CLUB DR
KEENAN BRIDGE RD
JOE FIELD
ROYAL LN
LUNA RD
DENTON DR
HARRY HINES BLVD
ST LOUIS & SOUTHWESTERN R.R.
CHICAGO ROCK
TRINITY RIVER
ELM
GRAPEVINE CREEK
HUTTON BRANCH
FARMERS BRANCH CREEK



BILLY MITCHELL DR
LINDBERG DR
RICHARD BYRD DR
MIDWAY RD
BELT LINE
ARAPAHO
REALTY
BUSINESS AVE
COMMERCIAL DR
BELTWAY
LACS
PLAZA
MARSH LN
SOPRAS CIR
MORMAN
WINTER PARK LN
LE GRANDE DR
POKOLODI CIR
BOBBIN
LEADVILLE PL
DOME DR
RUSH CIR
SIDNEY DR
VALLEY RD
BROOKHAVEN CLUB DR
DALLAS NORTH

JAN 13 20 27 | FEB 3 10 17 24 | MAR 2 9 16 23 30 | APR 6 13 20 27 | MAY 4 11 18 25 | JUN 1 8 15 22 29 | JUL 6 13 20 27 | AUG 3 10 17 24 31 | SEP 7 14 21 28 | OCT 5 12 19 26 | NOV 2 9 16 23 30 | DEC 7 14 21 28 | JAN 4 11 18 25 | FEB 1

Establish Schedules & CPM
1000 6/0

Finalize Route Thru Development
1100 5/0

Prepare CAD Strip Topo/Contour Maps
1190 10/0

Preliminary Design Sewer Profile
1250 14/0

Structural Design
1390 11/0

Plot Final Design Plan & Profile
1410 2/0

Design Revisions from 50% Review
1520 9/0

Check Estimate of Cost
1570 5/7

Final Plans & Specifications Revisions
1610 5/0

Receive Bids
1680 0/0

Prep for Start-Up Meeting
1010 2/0

Receive Aerial Topo/Contour Disks
1130 14/0

Property/Ownership
1061 8/0

Develop Special Conditions
1450 15/12

Apply for Permits
1470 5/7

Estimate of Cost
1560 19/7

Review Final Specifications
1590 9/0

Draft Final Revisions
1620 6/0

Prep for Pre-Bid Meeting
1670 2/0

Review Bids & Recommend Award
1690 9/0

Start-up Meeting
1015 0/0

Draft CAD Detail Field Survey Topo
1140 19/0

Prepare CAD Strip Profile Maps
1200 30/0

Draft Geotech Broings Plan & Profile
1330 3/0

Outline Technical Specifications
1460 15/7

Draft Revisions from 50% Review
1530 6/0

Submit 90% Review Documents
1595 0/0

Pre-Bid Meeting
1675 0/0

End Contract
1695 0/0

Establish Comm Procedures-City
1020 1/0

Start Flow Metering (2-3 Locations)
1160 24/0

Exist R.O.W. Ties
1062 30/0

Draft all Underground Utilities-Plan
1310 10/0

Quality Control Design Check
1420 10/0

Write Specifications/Bid Documents
1580 16/0

Print Final Plans & Specifications
1630 2/0

Meeting With Team Regarding Scope
1030 1/0

Obtain Railroad Design Criteria
1110 10/0

Determine Flows Dry-Wet-Future
1180 20/0

Property Appraisals
1067 16/0

Submit 50% Review Documents
1485 0/0

90% Review FB/Addison
1600 15/0

Final Review of Contract Documents
1640 2/0

Establish Comm & Scope
1040 3/0

Lab & Other Analysis of Wastewater
1150 25/0

Preliminary Design Sewer Plan
1240 12/0

Plot Prelim Plan & Profile Dwgs
1270 2/0

Prelim P&P Dwgs to RailRoad
1280 17/0

Acquire Easements
1069 45/0

Submit Final Contract Documents
1645 0/0

Aerial & Field Surveys
1050 77/0

Draft all Underground Utilities-Profile
1320 10/0

50% Review FB/Addison
1490 13/0

Plot Revised Plans
1540 2/0

Submit Plans to Regulatory Agencies (4)
1650 2/0

Maintain Schedule
1700 145/4

Field Check & Finalize Route
1060 2/0

Property Surveys
1063 5/0

Offer to Owners
1068 44/0

Check Estimate of Quantities
1550 5/0

Advertise for Bids
1660 29/0

Review Prop FB/Addison Sewers
1070 2/0

Plot Strip Maps Topo & Profile
1210 2/0

Prelimin P&P Dwgs to Utility Cos & Hwy
1290 7/0

Submit Plans to Highway Dept
1500 8/14

Determine Flow Meter Locations
1080 2/0

Draft Prelim Plan & Profile Dwgs
1260 20/0

Final Design Plan Red-Line
1360 11/0

Submit Plans to Trinity River Authority
1510 8/14

Estimate of Quantities
1480 13/7

Geotechnical Investigation
1120 7/0

Review Development of I-35
1090 10/0

Boundary Analysis
1064 10/0

Field Notes/Plats
1065 9/0

Analyze Flow Meter Data
1170 15/0

Final Design Profile Red-Line
1370 11/0

Meet With Trinity River Authority
1230 3/0

Review Geotechnical Report
1220 3/0

Prelim P&P Dwgs to City RE: Util
1300 9/0

Plot Plan & Profile Sheets
1340 2/0

Field Check Topo & Utilities
1350 3/0

Select Const Methodology & Materials
1430 13/15

Develop Contract Documents
1440 21/7

Traffic Control Plan
1380 14/12

Draft Final Design Plan & Profile CAD
1400 22/0

Stake Easements
1066 9/0

LEGEND

DESC | PROGRESS | △ MILESTONE
Act. No. | Dur/Tot Flt | CRITICAL PATH

LINK KEY: CONTROLLING | NON-CONTROLLING | FINISH TO START | START TO START | FINISH TO FINISH

RUN DATE 15JUU92	NORTH DALLAS WATER SUPPLY CORP
REVISION NO 3	
START DATE 13JAN92	ORIGINAL SCHEDULE
DATA DATE 08JUU92	
FILE NAME: FARMERS	SCHEDULE USED:
SURETRAK	FARMERS BRANCH/ADDISON TUNNEL