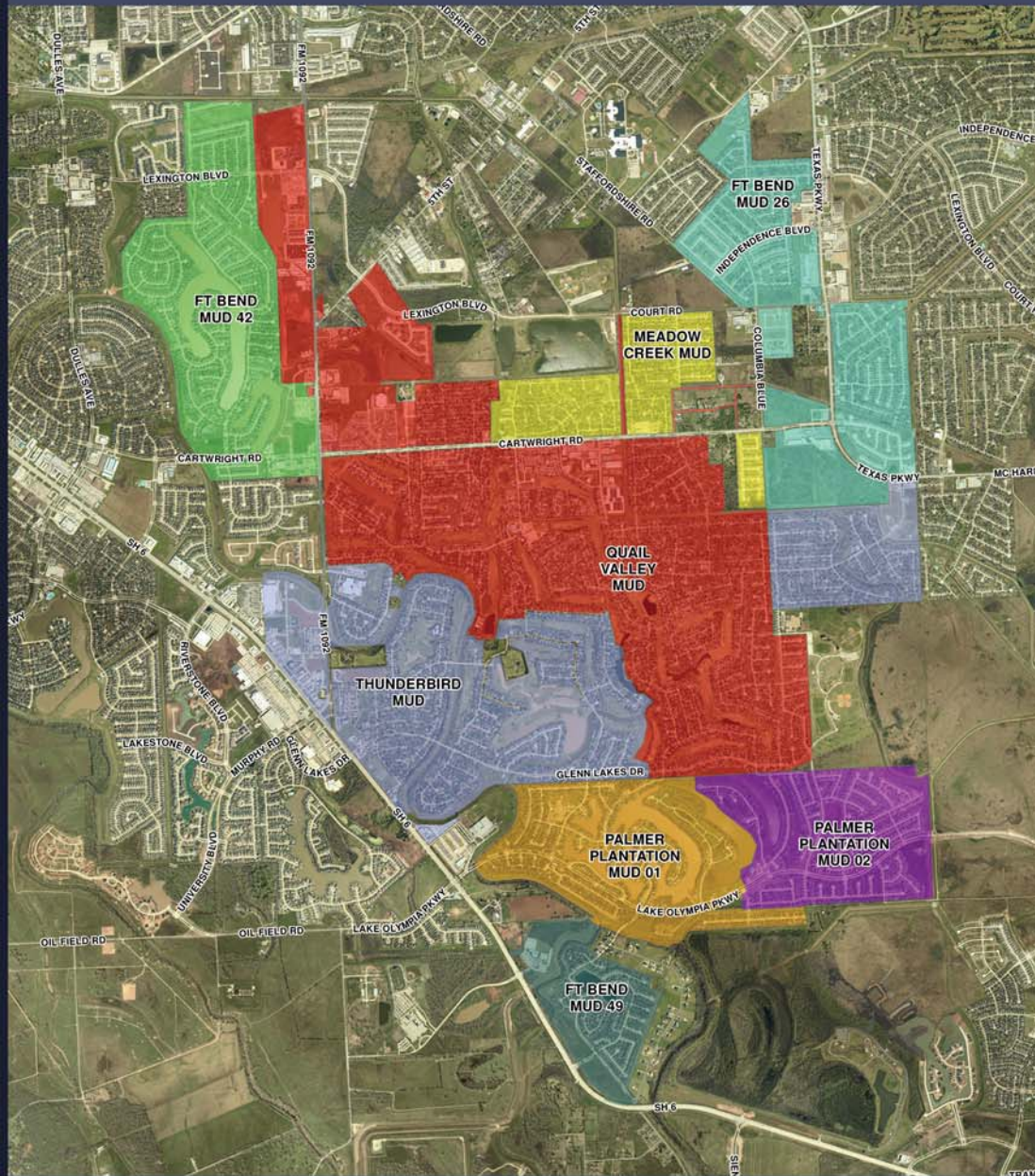


Quail Valley Utility District Regional Analysis Water Supply & Wastewater Facility Plan

Prepared for:

Quail Valley
Utility District

Texas Water
Development Board



May, 2008

Prepared by:



LJA Engineering & Surveying, Inc.



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1.1 Background

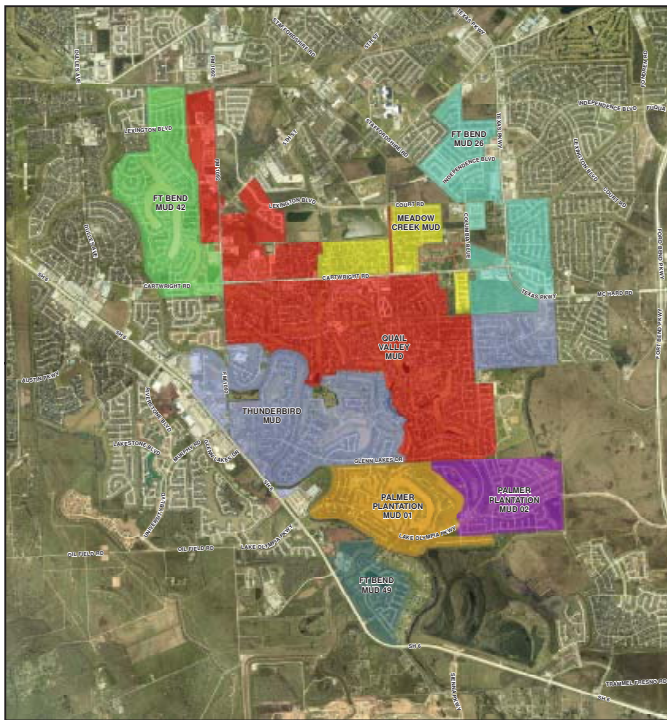
The eight participating MUDs are political subdivisions created to serve as the entities to operate and maintain the water supply and wastewater collection systems for the 4,688 acres located in northeastern Fort Bend County. The water and wastewater services are provided to approximately 11,500 connections, which serve approximately 35,000 residents and hundreds of commercial business customers. The water system -- consisting of 11 water supply plants, 13 wells, 1 elevated storage tank, and wastewater treatment services composed of 3 wastewater treatment plants and 38 lift stations -- has served the community for more than 35 years.

an overall review of their water and wastewater facility needs and the potential for consolidation and regionalization of water and wastewater facilities.

In addition, the MUDs are under a mandate from the Fort Bend Subsidence District (FBSD) to develop a plan to convert at least 30% of the water supply from groundwater to surface water by 2013 and to convert to at least 60% surface water by 2025. A plan for conversion must be submitted to the FBSD by 2008.

1.2 GIS - Utility Infrastructure and Terminology

Utility Infrastructure and GIS - Water & wastewater (sanitary) utility features are all composed of spatial (geographic) and attribute information. The physical lines, valves, tees, leads and connections all have defined locations and exist within a geographic element. These geographic features all have telling information that reflects a truer nature of that particular piece of infrastructure. These features within a utility infrastructure have values such as the size of a line (8", 12" or 24"), construction material or in service date. These attributes define the physical information of the line. In addition to these physical attributes, utility features also have functioning or working attributes such as number of current connections or the overall capacity of a line or treatment plant. These functional attributes are necessary when creating a true utility infrastructure network. When a utility network is created in such a manner, the operator, engineer or developer has the ability to model existing infrastructure, model for future expansions and/or replicate true workings of the utility infrastructure.



Service Area and Participating MUDs

Exhibit 1.1

The participating MUDs requested planning grant assistance from the Texas Water Development Board in December 2005 to derive a plan to provide the repairs and rehabilitation that are being required and to systematically identify the future facilities that will be needed to continue the operation of these systems. In addition, the older sections of the wastewater collection system have begun to experience significant infiltration and inflow (I&I).

At this stage in the growth of the community the participating MUDs also feel that it is necessary to perform

Spatial

- Locations of utility features - pipes, valves, bends, tees, flushing valves, water plants, water wells, treatment plants, lift stations, inlets, outfalls, etc.

Attribute

- Size
- Material
- In service date
- Development section (district and section)
- Elevations
- Flow lines

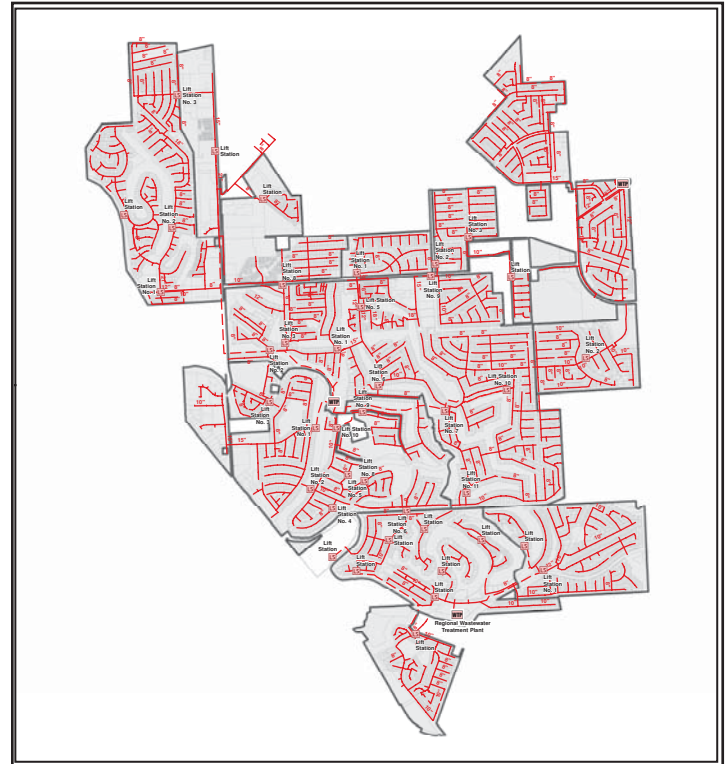
Plans

- Construction plans
- Final plat
- Address plat
- All retrievable based on location
- Map version and complete plan retrieval



Water Distribution System

Exhibit 1.2



Sanitary Sewer Distribution System

Exhibit 1.3

Network (Geometric network allowing for analysis)

- Number of connections at any point along line
- Residents connected to line (maintenance issues)
- Utility modeling

Base Map

- Lots (parcels) with ownership, addresses, appraisal and operational account numbers
- Street centerlines with addressing
- Aerial photography
- MUD boundaries
- Section boundaries
- Service area boundaries
- Type of lot (residential, commercial or retail)
- Custom navigation by district, section, account number or address

Spatial • Physical, geographic or spatial features all refer to an actual piece of infrastructure. Whether we are concerned with water or sanitary, water well or lift station, all features have a physical presence on or in the ground.

Mapping these spatial features is just the beginning of a working GIS utility interface.

All spatial features within this project are created from designed construction plans or CAD files and later verified either in the field or with as-builts. These plans are scanned and geographically rectified (placed in true location) combining aerial photography, appraisal and existing geographic data. With these construction plan layouts in order the spatial components are created. This is the base on to which the attribute and network information is created.

Attribute • The attribute information is collected from several sources. Overall construction plan layouts provide size and material data. Plan and profile sheets provide elevation and flow line information. In service dates are created by populating an external table with construction plan approval dates and known in service dates.



Plans • All available construction plats, final plats and address plats are collected, scanned and populated in an overall database for retrieval. The scanned documents can be retrieved in several ways. The layout views are displayed over the map with the utility features for a more immediate review. Also, the complete sets of construction, final and address plats are retrievable in a .pdf format based on geographic location of section. This approach gives the user or operator direct access to the associated plan and utility feature.

Network • The entire utility infrastructure is created in a geometric network allowing analysis and modeling of the network. Taking this approach allows connectivity from one pipe to the other. With the geometric network in place, the number of sanitary connections can be calculated at any point along the infrastructure and compared to the designed carrying capacity. This approach allows the study of current capacity versus the designed capacity of the system giving invaluable information for decisions on expanding facilities or building new or additional facilities.

The network will allow the identification of residents affected by a water break or planned maintenance. Its capabilities also allow a tracing of the utility lines and the retrieval of connected residents tied to that particular occurrence.

Utility Infrastructure

Tying the above sections together with the base map and custom reporting creates a complete utility infrastructure working environment. This approach gives the operator, engineer or developer a central location to retrieve, to study or to model all utility related aspects of the development.

Object ID (OID)

A constant number assigned to geographic or spatial elements. These numbers remain constant during analysis or attribute changes. This allows a global approach to isolating geographic features.

ESRI Software and Terminology

- ArcGIS is an integrated collection of GIS software products for building a complete GIS for your organization. ArcGIS enables users to deploy GIS functionality wherever it is needed—in desktops, servers, or custom applications over the web or in the field.
- ArcMap is a desktop software package that allows the user to create, edit, and analyze geographic data.

- ArcGIS Server is a complete and integrated server-based GIS. It allows end user applications and services for spatial data management, visualization, and spatial analysis.
- ArcSDE technology incorporated into ArcGIS Server is used to access multiuser geographic databases stored in relational database management systems (RDBMSs). It is an integrated part of ArcGIS Server and a core element of any enterprise GIS solution. Its primary role is to act as the database access engine to spatial data and related attributes and metadata stored in an RDBMS.

1.3 Participating MUDs and Description of Study Area

The planning area consists of the following participating Municipal Utility Districts located in Northeastern Fort Bend County: Quail Valley Utility District, Thunderbird Municipal Utility District, Meadow Creek Municipal Utility District, Fort Bend Municipal Utility District No. 26, Fort Bend Municipal Utility District No. 42, Fort Bend Municipal Utility District No. 49, Palmer Plantation Municipal Utility District No.1, Palmer Plantation Municipal Utility District No.2.

1.4 Scope of Services

In June of 2006, the Texas Water Development Board contracted with the Quail Valley Utility District to perform the Regional Facility Planning for the participating eight MUDs. The Quail Valley Utility District subcontracted with LJA Engineering & Surveying (referred to as “the engineer”) to perform the required engineering studies and GIS project creation and management. The scope of engineering services summarized below was performed to capture existing infrastructure elements and compare to the growth and future demand on this infrastructure.

Issues concerning the Surface Water Conversion plans are addressed in Appendix D.



SCOPE OF ENGINEERING SERVICES

Water Supply & Wastewater Facility Plan

Task 1 - Data Compilation

- 1.1 Recorded plats with addresses for the existing subdivisions within the service area will be compiled for use in evaluating the number of connections associated with the existing lines and plants. (CD#2)
- 1.2 Proposed future plats and land use plans will be compiled to project future water and wastewater demands. (Section 6 - undeveloped acreage was assigned projected demand values based on acreage)
- 1.3 Existing digital CAD data (where available) or hard copy plans for water distribution and wastewater collection system will be compiled for the existing water lines and valves for the water service areas and the existing sanitary sewers and manholes for the wastewater system. (CD#2)
- 1.4 Proposed water distribution systems and wastewater collection systems will be compiled in either digital CAD data or hard copy plan format. (CD#2)
- 1.5 Existing digital CAD data (where available) or hard copy plans for water supply plants and pressure maintenance facilities and wastewater treatment plants and lift stations will be compiled. (CD#2 and incorporated in the GIS database)
- 1.6 Proposed water supply plant, pressure maintenance, and wastewater treatment plant facilities and lift stations will be compiled in either digital CAD data or hard copy plan format. (CD#2)
- 1.7 Existing maintenance records will be compiled for water leaks and sewer repairs and other non-typical repair and maintenance activities. (Section 2.3)

- 1.8 Monthly water pumpage records for each water supply plant and monthly total water billing records will be compiled for each water service area. Wastewater flow records for the treatment plants and lift stations will also be compiled. (Monthly billing records were not attainable. See Appendix E for table of daily average use)
- 1.9 Boundary maps for the existing and proposed municipal utility districts in the service area will be compiled. (CD#1 QVMUD.mdb)

Task 2 - System Mapping / GIS Data Creation

- 2.1 Service area base maps will be compiled using an aerial photo base and the data collected in Task 1. (CD#1 QVMUD.mdb)
- 2.2 Existing subdivisions plats within the service area will be populated into the GIS database. (CD#1 QVMUD.mdb)
- 2.3 Proposed future subdivision plats and land use plans will be populated into the GIS database. (See section 6)
- 2.4 Existing water lines and valves and sanitary sewers and manholes will be mapped in the GIS database. Digital water line and sewer line files will be input where available. Where not available, hard-copy construction plans will be used. The line size, type of material, and age will be input. (CD#1 QVMUD.mdb)
- 2.5 Proposed water lines and valves and sanitary sewers and manholes will be input into the GIS database. The line sizes will be input. (CD#1 QVMUD.mdb - Proposed sanitary lines isolated in analysis for rehab or improvements exist in section 5)
- 2.6 Existing water supply plants and pressure maintenance facilities and wastewater treatment plants and lift stations will be populated into the GIS database. (CD#1 QVMUD.mdb)



- 2.7 Proposed water supply plants and pressure maintenance facilities and wastewater treatment plants and lift stations will be populated into the GIS database. (No Proposed water or wastewater facilities are planned)
- 2.8 All compiled construction plans will be associated with mapped GIS network features. (CD#1 QVMUD.mdb)
- 2.9 Existing maintenance and repair records will be populated into the GIS database. The date, the address of each maintenance record and the type of maintenance or repair activity will be input. (CD#1 QVUD_Maintenance_Records.mdb)
- 2.10 Existing municipal utility district boundaries will be populated into the GIS database. (CD#1 QVMUD.mdb)

Task 2 Deliverable - At the end of Task 2, a GIS-based water distribution system map and wastewater collection system map will be complete which contains the existing and proposed lines and valves, future lines, existing and future plant facilities, subdivision plats and land use, municipal utility district boundaries, and existing maintenance records. Metadata will be provided for all GIS data. (CD#1 QVMUD.mdb)

Task 3 - Water System Analysis

- 3.1 Based on the results of Task 2, the existing maintenance records will be reviewed and existing water lines which have significant continuing leaks and maintenance problems will be identified. Trends regarding the type of material and age of the problem lines will be identified to indicate where future line problems may be expected. (See section 2.3 for mapping of maintenance records and page 5-13 for review)
- 3.2 A review of the existing and projected future connections will be made and compared to the size and capacity of existing water lines to determine if any obvious undersized lines

may exist. A detailed water network analysis is not proposed. Line capacities will be reviewed based on "rule-of-thumb" estimates of the acceptable number of connections for each line size. (Section 5.1 undeveloped acreage was assigned projected demand values based on acreage and anticipated type of development)

- 3.3 A review of existing plant capacities and pressure maintenance facility capacities based on the number of connections developed in Task 2 will be made to identify potential additional plant and pressure maintenance requirements. The potential consolidation of water plants will be evaluated to determine if cost-savings may be achieved by such consolidation. (Section 5.1 and 6.5)

Task 4 - Wastewater Collection System & Treatment Plant Analysis

- 4.1 Based on the results of Task 2, the existing maintenance records will be reviewed, and existing sewers which have significant stoppages, point repairs or other maintenance problems will be identified. Trends regarding the type of material and age of the problem sewer will be identified to indicate where future sewer problems may be expected. (See section 2.3 for mapping of maintenance records and page 5-13 for review)
- 4.2 A review of the existing and projected future connections will be made and compared to the size and capacity of the existing sewers to determine if any obvious undersized sewers may exist. Sewer capacities will be reviewed based on "rule-of-thumb" estimates of the acceptable number of connections for each sewer size. (Section 5.2 and 5.3 - undeveloped acreage was assigned projected demand values based on acreage and anticipated development type)
- 4.3 Wastewater flow records at the wastewater treatment plants and lift station will be reviewed and compared to the expected



flow for the collection system service areas associated with each plant and lift station. Areas where excessive infiltration and inflow appear to be occurring will be identified. (Section 5.5)

- 4.4 The condition, age, and expected future modifications of plants will be evaluated. Based on this evaluation, the potential for consolidation of wastewater treatment plant facilities will be evaluated. Costs of consolidating facilities including cost of additional plant facilities, land, wastewater conveyance and pumping facilities, and potential operation and maintenance cost savings will be evaluated, where appropriate. Based on the cost analysis, recommendations concerning potential consolidation will be made. (Section 6.5)

Task 5 - Water Conservation and Drought Contingency Plan with Review and Analysis of the Region's Surface Water Conversion Plan (Groundwater Reduction Plan)

- 5.1 Monthly water pumpage records for the existing water supply plants will be compiled. (Information collected where available and located in Appendix E)
- 5.2 Monthly totals of water billed will be compiled for each water plant service area. (Monthly billing records were not attainable)
- 5.3 Comparisons of the pumpage versus billed water will be made to identify potential water loss or accountability problems. (Monthly billing records were not attainable)
- 5.4 Potential ideas for water reuse will be evaluated. Golf course irrigation and other non-potable uses for wastewater effluent will be identified. (Page 4-2)
- 5.5 Existing Water Conservation and Drought Contingency Plans for the participating MUD's will be updated to conform to TWDB requirements. Water Conservation Plans will be developed for any MUD's that do not have a Plan. (Appendix B and Appendix C)

- 5.6 Review the Joint Groundwater Reduction Plan currently being developed by Water Resources Management, LP. The Plan is a joint effort between the City of Missouri City and 39 separate entities (all eight districts under the TWDB project are participants). Quail Valley is in full cooperation with the Groundwater Reduction Plan process and will fully participate in the final solution to bring the region as a whole to meet the groundwater reduction requirements set forth by the Fort Bend Subsidence District. The below items are to be reviewed and isolated as to their effect on the QVUD service area. (Section 4.1)

- o Identify potential sources of surface water to supply the required quantity. Sources to be considered include the City of Houston, Brazos River Authority, Gulf Coast Water Authority, WCID No. 2, City of Sugar Land, and the City of Missouri City.
- o Obtain available information regarding the potential availability of surface water, the quantity available, potential points of delivery of the surface water, the need for additional treatment after delivery, and the cost of the water to be supplied.
- o Alternative strategies for conversion to surface water, that may involve converting only a portion of the overall service area based on the potential points of delivery of surface water.
- o Schematic designs for conveyance and distribution system facilities, and water treatment, storage and pumping facilities associated with each alternative.
- o Preliminary cost estimates for the described facilities and identify the impact of water rates if any within the QVUD service area.

Task 6 - Water & Wastewater Facility Needs and Costs

- 6.1 Based on the results of Tasks 3 and 4, line replacements projects and additional line projects will be identified. Cost estimates will be developed for each project and a priority project list will be developed. (Section 5)



6.2 Based on the results of Tasks 3 and 4, a preliminary list of plant facility additions and proposed regional facilities will be prepared. Cost estimates will be developed and a priority project list will be developed. (Section 5)

6.3 For the projects developed in Tasks 6.1 and 6.2, estimates of the cost contributions for the individual MUD's associated with each project will be developed. (Section 5)

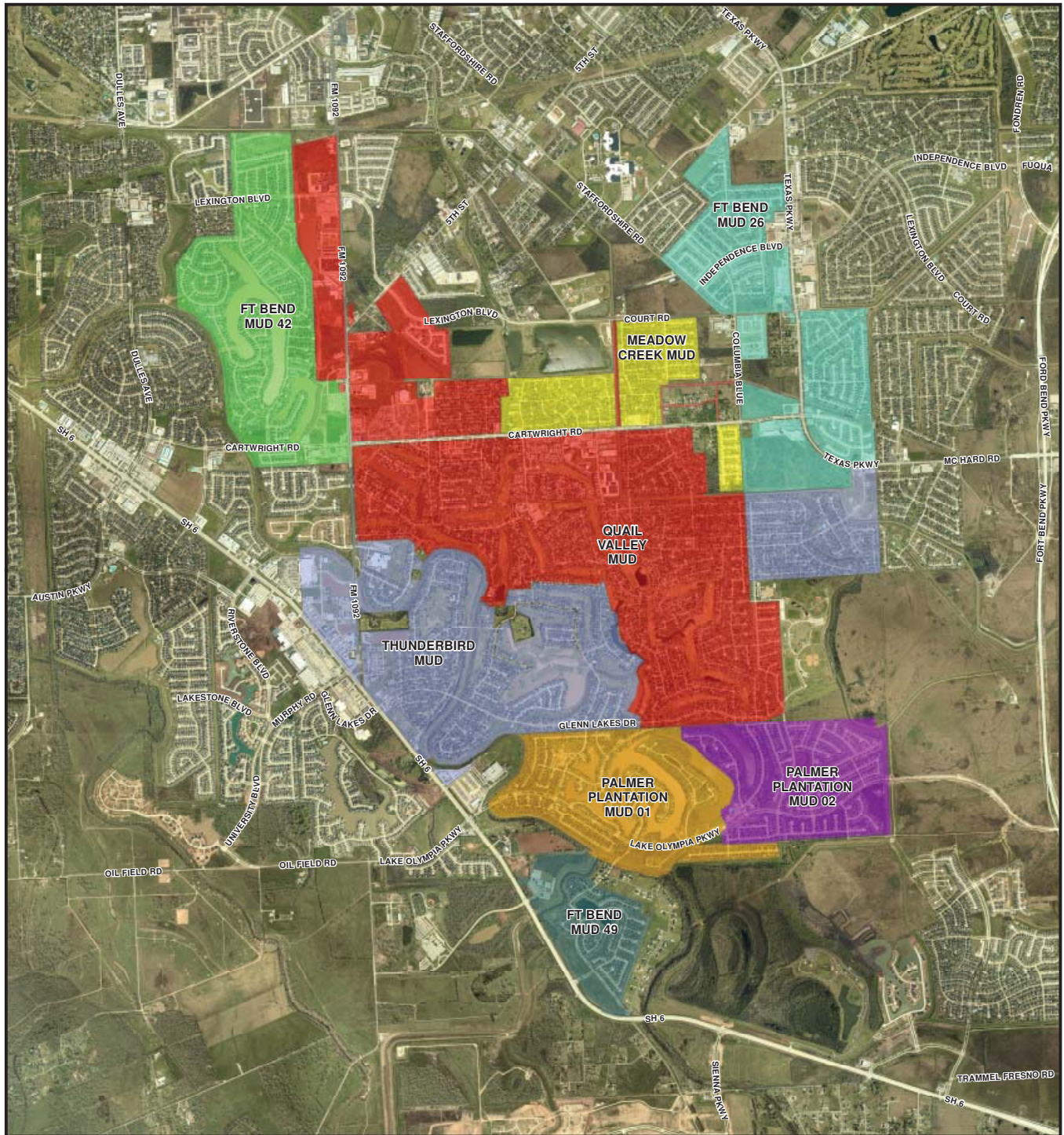
Task 7 - Reports

7.1 Monthly progress reports will be prepared which document the progress in completing the proposed tasks. An updated schedule will be provided with the progress report. Potential problems and issues that may arise which could impact the study schedule will be identified.

7.2 A final report will be prepared which documents the study results and provides a recommended list of water supply and wastewater facility projects to be accomplished by the participating MUD's. The list of projects will include estimated costs, priorities, and a proposed schedule for accomplishing the projects. Water Conservation and Drought Contingency plans will be updated or created for each district on an as needed basis.

1.5 Study Financing

The funding for the study was provided by the Texas Water Development Board and the Quail Valley Utility District. Each provided 50% of the anticipated \$300,000 study cost.



AERIAL PHOTOGRAPHY DATE: MARCH 2005

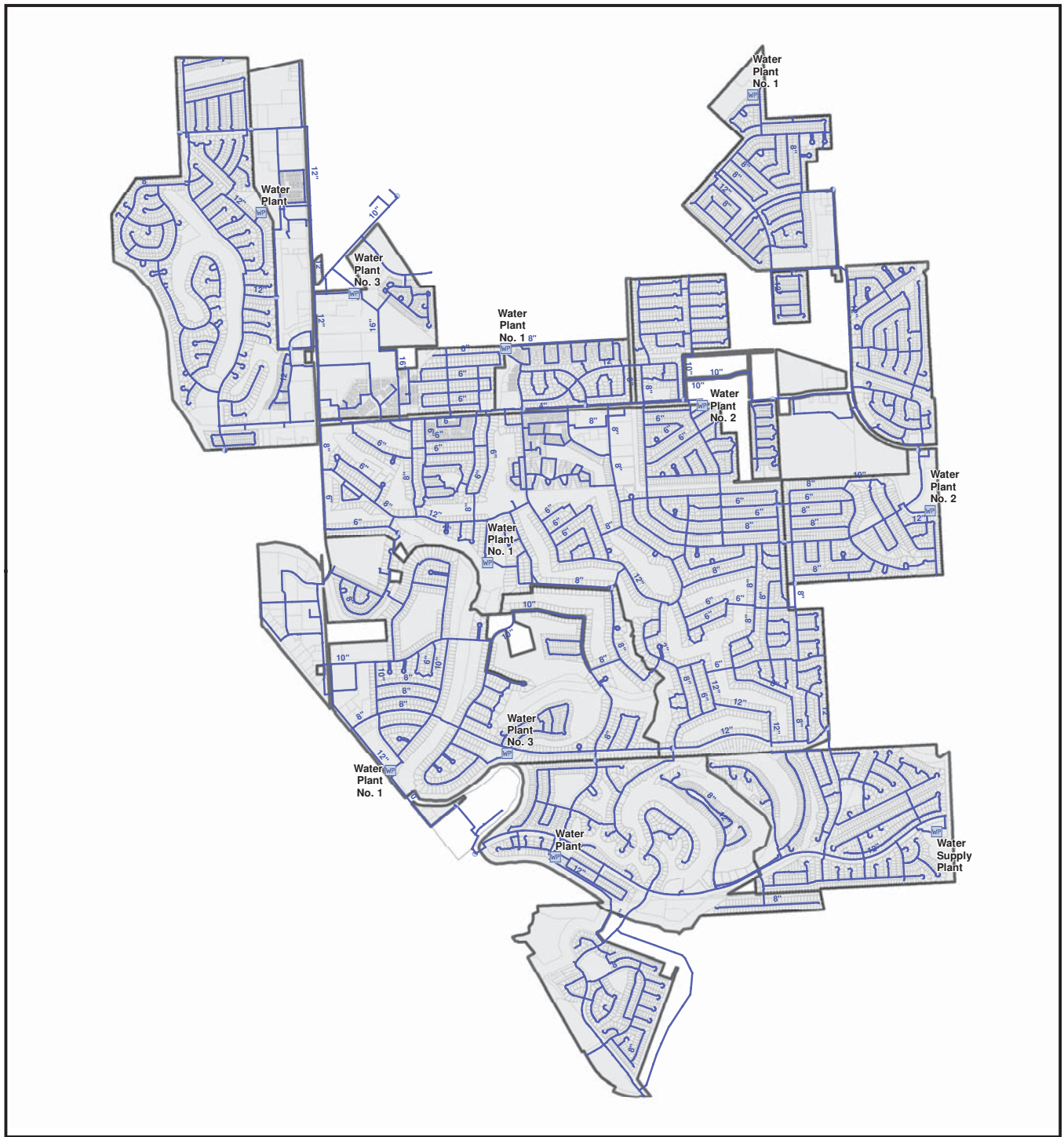
LEGEND

- FT BEND MUD 26
- FT BEND MUD 42
- FT BEND MUD 49
- MEADOW CREEK MUD
- PALMER PLANTATION MUD 01
- PALMER PLANTATION MUD 02
- QUAIL VALLEY MUD
- THUNDERBIRD MUD






**SERVICE AREA
AND
PARTICIPATING MUDs**

EXHIBIT 1.1



LEGEND

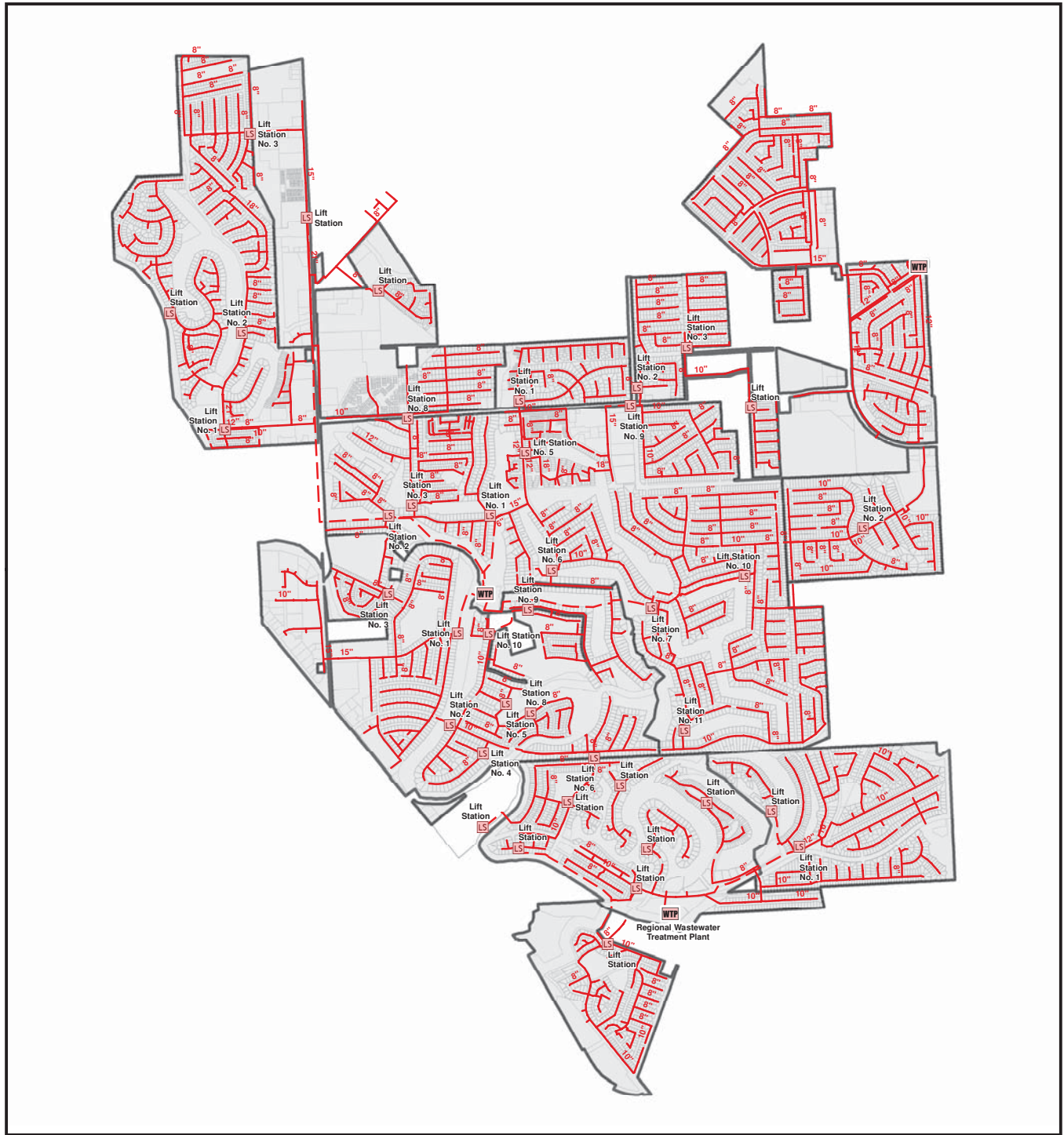
-  WATER PLANT
-  INTERCONNECT VALVE
-  8" WATER MAIN

WATER DISTRIBUTION SYSTEM





EXHIBIT 1.2

SCALE: 1" = 3400 FEET





LEGEND

-  WASTE WATER TREATMENT PLANT
-  LIFT STATION
-  8" SANITARY GRAVITY MAIN
-  FORCE MAIN

**SANITARY SEWER
DISTRIBUTION SYSTEM**

EXHIBIT 1.3

SCALE: 1" = 3400 FEET



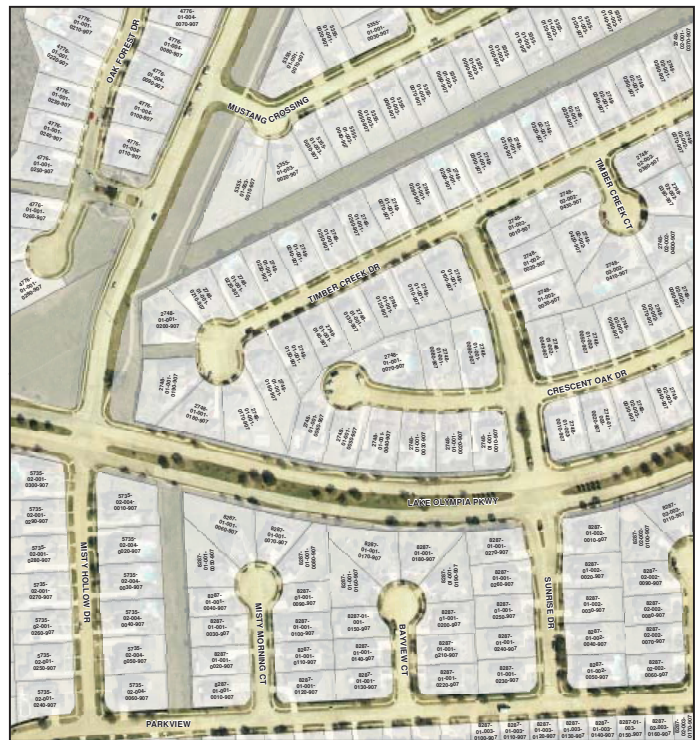


2.1 Base Map (Information and Data)

Base map information was compiled from the following regional or county agencies.

- Aerial Photography
 H-GAC (Houston Galveston Area Council)
 3555 Timmons Lane
 Suite 120
 Houston, TX 77027
 Phone: 713-627-3200
- Road centerlines (with addressing)
 City of Missouri City
 1522 Texas Parkway
 Missouri City, Texas 77489
 281-403-8500

 H-GAC
 3555 Timmons Lane
 Suite 120
 Houston, TX 77027
 Phone: 713-627-3200
- Parcels (boundaries and ownership)
 FBCAD (Fort Bend County Appraisal District)
 2801 B.F. Terry Blvd (FM 2218)
 Rosenberg, TX 77471



Dataset Example

Exhibit 2.1

2.2 Map Room

The Quail Valley Utility District supplied 100% of all designed construction plans for all eight districts. Because Quail Valley is the operator of the studied districts, its map room and operating history became the center for all information relevant to the study. The first three months of the study concentrated on the scanning and inventory of recorded plats, address plats and construction plans.

Base utility information was created from existing hard-copy designed construction plans. Platted sections were collected and scanned for project use. The scanned plans were cataloged (included on delivered DVD Basemap.gdb/ba_sections) and entered as a base reference for GIS digital data creation.

The scanned plans were geo-rectified (placed in the coordinate and projection system - Texas State Plane, South Central, NAD 83) and used as base information for digitizing location of lines and related features.

The plan and profile information for each section was used for vertical elevation information and catalogued in a spatially retrievable format.

2.3 Maintenance Records and Five-Year Manhole Rehabilitation Program

Maintenance Records

Over 2,500 maintenance records were collected and entered into the GIS data viewer (QVUD_Maintenance_Records.MDB - included on CD #1).

The initial web work order interface that was created to digitally input the maintenance information is available to Quail Valley for further use.

The maintenance records were catalogued and mapped based on addresses provided. Within the analysis phase, these records are filtered based on type of work, water vs. sanitary, and maintenance vs. repair.

This approach geographically places the work order with maintained infrastructure. The addresses on each work order places the occurrence with the utility infrastructure.

Exhibit Series 2.2 maps the locations of the maintenance records.



Table 2.1 Maintenance Records Summation

Water Records	# Record		%
Tap Leak	1165	0.675362	67.54
Line Break	72	0.041739	4.17
Main Break	391	0.226667	22.67
Other/NA	97	0.056232	5.62
Total	1725		100.00

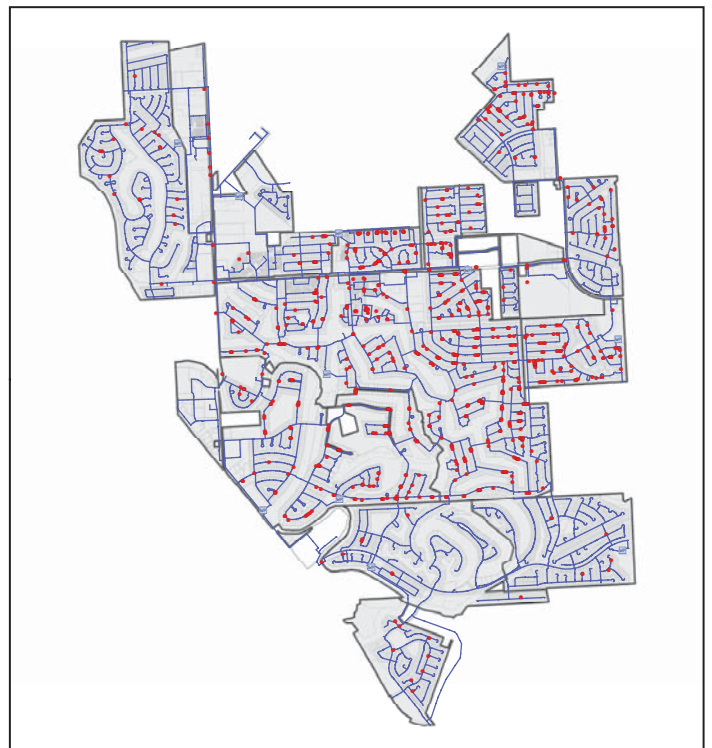
Sanitary Records	# Record		%
Jet/TV Sewer Line	266	0.338422	33.84
Excavate/Repair Line	223	0.283715	28.37
Other/NA	297	.377863	37.79
Total	786		100.00



Sanitary Sewer Maintenance Records
 Exhibit 2.2.b



Water Maintenance Records
 Exhibit 2.2a



Water Maintenance Records
 1995 - 2000
 Exhibit 2.2c



Sanitary Maintenance Records
1995 - 2000
Exhibit 2.2d



Sanitary Maintenance Records
2001 - 2007
Exhibit 2.2f



Water Maintenance Records
2001 - 2007
Exhibit 2.2e

5 Year Manhole Rehabilitation Program

Quail Valley submitted its "5 Year Manhole Rehabilitation Program" information to be included and viewed with the region analysis. This information was mapped to show areas and progress of the program. EX 2.3 illustrates the locations of the manholes and the following table lists the manhole locations and level of rehabilitation.



Table 2.1a - 5-Year Manhole Rehabilitation

Completed work					
DATE	DISTRICT	SECTION	MH ID	ADDRESS	DEPTH
NOTE: CS = Chimney Seal					
3/23/98	QV	East Sec 4	A-1+1	2115 Fall Meadow	9
3/23/98	QV	East Sec 4	B-1	2115 QVE Dr.	9
3/23/98	QV	East Sec 4	C-1+1	2119 Hilton Head	7.5
3/23/98	QV	East Sec 4	E-1	2119 Mustang Springs	8.5
3/23/98	QV	East Sec 4	A-3	2119 Turtle Creek	13.5
3/23/98	QV	East Sec 4	A-4	2143 Turtle Creek	12.5
3/23/98	QV	East Sec 4	B-2	2219 Hilton Head	4
3/23/98	QV	East Sec 4	D-1	2223 Mustang Springs	5
3/23/98	QV	East Sec 4	A-0	3202 Point Clear	16
3/24/98	QV	GL 1	A-5	2015 Wingedfoot	5.5
3/24/98	QV	GL 1	A-4	2103 Wingedfoot	6
3/24/98	QV	GL 1	A-3	2119 Wingedfoot	7.5
3/24/98	QV	GL 1	A-2	2207 Wingedfoot	7.5
3/24/98	QV	La Quinta	C-13	3126 Cypress Pt.	9
3/24/98	QV	La Quinta	C-9	3202 Cypress Pt.	11
3/24/98	QV	GL 1	BB-1	3406 Point Clear	12.5
4/7/98	QV	Oak Valley	1	FM 1092	6.5
4/7/98	QV	Oak Valley	2	FM 1092	8
4/7/98	QV	Oak Valley	3	FM 1092	7.5
4/7/98	QV	Oak Valley	4	FM 1092	10
4/7/98	QV	Oak Valley	5	FM 1092	10
4/7/98	QV	Oak Valley	6	FM 1092	10.5
4/7/98	QV	Oak Valley	7	FM 1092	12.5
4/7/98	QV	Oak Valley	8	FM 1092	13.5
4/7/98	QV	Oak Valley	9	FM 1092	13
4/7/98	QV	Oak Valley	10	FM 1092	15.5
4/7/98	QV	Oak Valley	11	FM 1092	10
4/7/98	QV	Oak Valley	O-1	FM 1092	14
4/7/98	QV	Oak Valley	O-2	FM 1092	16.5
4/7/98	QV	Oak Valley	B-1	FM 1092	16.5
4/7/98	QV	Oak Valley	B-2	FM 1092	16.5
4/7/98	QV	Oak Valley	B-3	FM 1092	13.5
4/7/98	QV	Oak Valley	B-4	FM 1092	8
4/7/98	QV	Oak Valley	B-5	FM 1092	10.5
11/19/98	QV		Spillway	2939 Blue Lakes	n/a
12/1/98	QV		C-3	Boca Raton @ Kiamesha	7
12/2/98	QV		A-6-A	2809 Nottingham	7.5
12/3/98	QV		A-7-A	Cypress Pt @ Tennis Center	3.5
12/4/98	QV		A-6	Cypress Pt. @ Old Pizza Hut	3.5
12/5/98	QV		D-1	2612 La Quinta	16
12/5/98	QV		A-5-A	Cypress Pt. @ Kelsey Seybold	4.5
12/5/98	QV		M-0	El Dorado @ #1 Tee Box	10
12/5/98	QV		M-1	Robinson @ El Dorado	11.5

12/15/98	QV		J-1	Pebble Beach Dr.	13
12/15/98	QV		J-2	Pebble Beach Dr.	14
2/12/99	QV		n/a	1903 Lantern In.	6.5
2/12/99	QV		n/a	1919 Overbrook	n/a
2/12/99	QV		n/a	2023 QVE Dr.	6
2/12/99	QV		n/a	2115 Fall Meadow	1
2/12/99	QV		n/a	2123 Hilton Head	2
2/12/99	QV		n/a	2323 Clearbrook	0.5
2/12/99	QV		n/a	2427 QVE Dr.	n/a
2/12/99	QV		n/a	2719 QVE Dr.	n/a
2/12/99	QV		n/a	2910 Hunters Glen	0.5
2/12/99	QV		n/a	3402 Deerwood	9
2/12/99	QV		n/a	3415 Deerwood	4.5
2/12/99	QV		n/a	3502 Crosscreek	5
2/12/99	QV		n/a	FM 1092	9
2/12/99	QV		n/a	FM 1092	1
2/12/99	QV		n/a	Lantern @ Mission Valley	4
2/15/99	QV		K-1	El Dorado	6
2/15/99	QV		E-6	El Dorado	8.5
2/15/99	QV		E-7	El Dorado	7
2/15/99	QV		E-8	El Dorado	7
2/15/99	QV		E-9	El Dorado	7
2/15/99	QV		F-1	El Dorado	7
2/15/99	QV		F-2	El Dorado	7
2/15/99	QV		FL 63..36	Q. Village	6
2/15/99	QV		FL 60.52	Q. Village	9
2/15/99	QV		FL68.85	Q. Village	9.5
2/18/99	QV		B-1	QVE 4	10.5
2/18/99	QV		L-6	QVE 4	4.5
2/18/99	QV		L-3	QVE 4	7.5
2/19/99	QV		F-4	El Dorado	5.5
2/19/99	QV		A-16	El Dorado	4.5
2/19/99	QV		A-15	El Dorado	9
4/14/00	QV		-	2303 Hunters Glen	9.5
4/14/00	QV		-	2323 Turtle Creek	8
4/14/00	QV		-	2507 Turtle Creek	5.2
4/14/00	QV		-	2515 Turtle Creek	5.6
4/14/00	QV		-	2523 Turtle Creek	5.2
4/14/00	QV		-	2531 Turtle Creek	4
4/14/00	QV		I-5	2718 W. Pebble Beach	9.5
4/14/00	QV		I-4	2722 W. Pebble Beach	9.5
4/14/00	QV		I-1	2834 W. Pebble Beach	12
4/14/00	QV		-	2900 Cypress Pt.	5.5
4/14/00	QV		-	2905 Cypress Pt.	5.5
4/14/00	QV		-	3102 Cypress Pt.	6.5
4/14/00	QV		-	3110 Cypress Pt.	8.5
4/14/00	QV		-	3116 Cypress Pt.	9
4/14/00	QV		I-6	3203 La Costa	8.5
4/14/00	QV		-	3214 Hunters Glen	9
4/14/00	QV		-	3254 Hunters Glen	7
4/14/00	QV		-	3270 Hunters Glen	5.4
4/14/00	QV		C-1	3303 La Costa	8.5



4/14/00	QV		6_2	3327 La Costa	7.5	
4/14/00	QV		6_1	3415 Palm Desert	5	
4/14/00	QV		6_2	3507 Palm Desert	4	
4/14/00	QV		6_3	3511 Palm Desert	4	
4/14/00	QV		-	Cypress Pt.	13	
4/14/00	QV		2nd	Deerwood @ La Quinta	9.5	
4/14/00	QV		3rd	Deerwood @ La Quinta	3.5	
4/14/00	QV		4th	Deerwood @ La Quinta	3.5	
4/14/00	QV		-	Hollow Cr. @ Turtle Creek	7.8	
8/7/00	QV		-	3138 Cypress Pt.	10	
8/7/00	QV		-	3138 Cypress Pt.	2.5	
8/7/00	QV		-	3202 Cypress Pt.	9.5	
8/7/00	QV		-	3218 Cypress Pt.	13	
8/7/00	QV		-	3230 Cypress Pt.	13.5	
8/7/00	QV		-	3234 Cypress Pt.	3.5	
2/5/01	QV	QVE 5	Q-2	2002 Fall Meadow	4	
2/5/01	QV	QVE 5	Q-3	2002 Quail Valley East Dr.	6	
2/5/01	QV	QVE 4	C-4	2003 Hilton Head	3.5	
2/5/01	QV	QVE 4	C-3	2019 Hilton Head	5	
2/5/01	QV	El Dorado	H-1	2619 Bermuda Dunes	9.5	
2/5/01	QV	El Dorado	R-2	2803 Spyglass	4	
2/5/01	QV	La Quinta	C-19	2918 Cypress Pt.	4.5	
2/5/01	QV	La Quinta	J-6	3046 Bonney Briar	4.5	
2/5/01	QV	La Quinta	I-4	3114 La Quinta Dr.	12.5	
2/5/01	QV	La Quinta	O-2	3154 Bonney Briar	7.5	
2/5/01	QV	La Quinta	I-11	3210 La Quinta Dr.	3	
2/5/01	QV	El Dorado	Z-2	3403 Covey Trail	5.5	
2/5/01	QV	El Dorado	B-2	3419 Covey Trail	8.5	
2/5/01	QV	GL	BB-3	3510 Point Clear	7	
2/10/01	QV		D-3	3107 Glenn Lakes	6	
2/12/01	QV	Patio Homes	C-2	2610 Princess	8	
2/12/01	QV	Patio Homes	C-3	2614 Princess	7.5	
2/12/01	QV	Patio Homes	C-4	2614 Princess	7	
2/12/01	QV	Patio Homes	A-7	2619 Yorktown	6.5	
2/12/01	QV	Patio Homes	A-8	2702 Kingsbrook	6.5	
2/12/01	QV	Patio Homes	A-4	2803 Quail Hollow	9.5	
2/12/01	QV	Patio Homes	B-5	2806 Cambridge	6	
2/12/01	QV	Patio Homes	B-1	2931 Camelot	5.5	
2/12/01	QV	Patio Homes	A-1	QV#5 LS La Quinta Dr	14	
1/7/02	QV	La Quinta	R-2	2131 N. Fountain Valley	5.5	
1/7/02	QV	La Quinta	T-2	2203 S. Fountain Valley	4	
1/7/02	QV	La Quinta	R-1	2215 N. Fountain Valley	7.5	
1/7/02	QV	La Quinta	E-1	2227 Wingedfoot	12.5	

1/7/02	QV	La Quinta	S-3	3002 La Quinta	8	
1/7/02	QV	La Quinta	M-2	3003 Apple Valley	6	
1/7/02	QV	La Quinta	J-4	3014 Bonney Briar	7.5	
1/7/02	QV	La Quinta	L-2	3018 Tom O'Shanter	5	
1/7/02	QV	La Quinta	M-1	3022 Apple Valley	7	
1/7/02	QV	La Quinta	J-5	3034 Bonney Briar	6	
1/7/02	QV	La Quinta	L-3	3039 Tom O'Shanter	3.5	
1/7/02	QV	La Quinta	P-2	3050 Tom O'Shanter	6.5	
1/7/02	QV	La Quinta	P-1	3070 Tom O'Shanter	4.5	
1/7/02	QV	La Quinta	O-5	3110 Bonney Briar	5	
1/7/02	QV	La Quinta	O-4	3122 Bonney Briar	5	
1/7/02	QV	La Quinta	O-3	3138 Bonney Briar	8	CS
1/7/02	QV	La Quinta	O-1	3162 Bonney Briar	7	
1/7/02	QV	La Quinta	C-6	3234 Cypress Point	7	
1/7/02	QV	La Quinta	C-5	3234 Cypress Point	11	
1/7/02	QV	La Quinta	F-1	3302 Deerwood	9.5	
1/7/02	QV	La Quinta	Q-4	3510 Deerwood	3.5	
1/15/02	QV	EL Dorado	E-3	2802 Bermuda Dunes	12	
1/15/02	QV	EL Dorado	F-3	3507 La Costa	6	
1/15/02	QV	EL Dorado	B-4	3515 Covey Trail	6	
1/15/02	QV	EL Dorado	D-6	3555 Tamerisk	7	
1/15/02	QV	EL Dorado	C-4	3559 Thunderbird St.	9.5	
1/15/02	QV	EL Dorado	C-5	3607 Thunderbird St.	9	
1/15/02	QV	EL Dorado	B-5	3611 Covey Trail	4.5	
1/15/02	QV	EL Dorado	B-6	3619 Covey Trail	5	
1/15/02	QV	EL Dorado	C-6	3706 Thunderbird St.	6.5	
1/15/02	QV	EL Dorado	Q-4	3714 Thunderbird St.	4	
1/25/02	QV		FL 61.49	#32 Warwick	8	
1/25/02	QV		FL 62.06	#34 T-Huxley	7	
1/25/02	QV	QV TH	FL 65.73	#50 T-Huxley	5	
1/25/02	QV	EL Dorado	A-9	2902 Blue Lakes	9	
1/25/02	QV	EL Dorado	A-8-A	2902 Nancy Belle	10	
1/25/02	QV	EL Dorado	A-8	2902 Nancy Belle	10	
1/25/02	QV	EL Dorado	A-10	2902 Skyline	9	
1/25/02	QV	EL Dorado	A-7	2914 Nancy Belle	5	
1/25/02	QV	EL Dorado	A-6	2934 Nancy Belle	4.5	
1/25/02	QV	EL Dorado	A-5	2934 Nancy Belle	4.5	
1/25/02	QV	EL Dorado	A-4	2943 Nancy Belle	4	
1/25/02	QV	EL Dorado	O-3	3002 Robinson	6.5	
1/25/02	QV	EL Dorado	O-1	3003 Green Tree Ct.	10.5	
1/25/02	QV	EL Dorado	O-2	3003 Suncity Ct.	10	
1/25/02	QV	EL Dorado	O-4	3006 Robinson	5	
1/25/02	QV	EL Dorado	P-1	3014 Golden Hills	6	
1/25/02	QV	EL Dorado	A-13	3319 El Dorado	9	
1/25/02	QV	Oak Valley	A	FM 1092 @ Heritage Baptist Church -	3	
2/11/02	QV		G-2	1932 Lantern Ln.	6.5	
2/11/02	QV		E-4	2003 Mustang Springs	4	
2/11/02	QV		B-3	2003 Mustang Springs	5	
2/11/02	QV		C-2	2003 Mustang Springs	6.5	
2/11/02	QV	GL	M-11	2015 Glenn Lakes	8	
2/11/02	QV	GL	M-10	2023 Glenn Lakes	8	
2/11/02	QV		E-3	2023 Mustang Springs	6	
2/11/02	QV		E-4	2031 Fall Meadow	5	



2/11/02	QV	GL	M-9	2103 Glenn Lakes	9	
2/11/02	QV		E-2	2103 Mustang Springs	7.5	
2/11/02	QV	GL	M-8	2111 Glenn Lakes	9	
2/11/02	QV	GL	M-7	2119 Glenn Lakes	10	
2/11/02	QV	GL	M-6	2131 Glenn Lakes	11	
2/11/02	QV	GL	M-5	2223 Glenn Lakes	13	
2/11/02	QV	GL	M-4	2303 Glenn Lakes	13	
2/11/02	QV	GL	M-3	2315 Glenn Lakes	15	
2/11/02	QV		A-3	2415 Turtle Creek	7	
2/11/02	QV		B-2	3122 Hunters Glen	11.5	
2/11/02	QV		B-1	3202 Hunters Glen	11	
3/19/04	QV		#1	2140 FM 1092 - El Vaquero	11	
3/20/04	QV		#2	2310 FM 1092 - JSB	7	
3/20/04	QV		A-6	2801 Brockline	9.5	
3/23/04	QV		A-15	2727 Broadmoore	7.5	
3/23/04	QV		A-16	2727 Broadmoore	7.5	
3/23/04	QV		A-14	2730 Broadmoore	6	
3/23/04	QV		A-11	2802 Broadmoore	7.5	
3/23/04	QV		A-12	2802 Broadmoore	9	
3/24/04	QV		A-8	2802 Fox Fire	8	
3/25/04	QV		I-5	3122 La Quinta	10	
3/25/04	QV		I-6	3126 La Quinta	9.5	
3/25/04	QV		I-7	3142 La Quinta	8	
3/25/04	QV		I-8	3162 La Quinta	5	
3/25/04	QV		I-9	3170 La Quinta	5	
3/30/04	QV		A-2	LA Quinta Dr, @ LS 1	12	
4/1/04	QV		A-12	2026 Valley Manor	8	
4/1/04	QV		A-11	2102 Valley Manor	9	
4/1/04	QV		A-10	2118 Valley Manor	5	
4/1/04	QV		A-9	2202 Valley Manor	11	
4/1/04	QV		A-8	2206 Valley Manor	5	
4/1/04	QV		A-7	2406 Valley Manor	10	
4/1/04	QV		I-1	3034 La Quinta	18	
4/1/04	QV		I-3	3070 La Quinta	13.5	
4/1/04	QV		A-2	3406 Mission Valley	4	
4/1/04	QV		B	3418 Mission Valley	4	
4/1/04	QV		BB-2	3502 Point Clear	10	
4/1/04	QV		B-6	Ashmont @ Meadow-creek	10	
4/1/04	QV		N-2	La Quinta Dr.	6	
4/1/04	QV		I-2	La Quinta Dr.	9	
4/30/04	QV		A-6	2710 Cypress Pt.	3.5	
4/30/04	QV		A-9	2710 Kingsbrook	5	
4/30/04	QV		A-4	2802 Camelot	9.5	
4/30/04	QV		S-3	2802 Cypress Pt.	5	
4/30/04	QV		H-1	2812 Cypress Pt.	4	
4/30/04	QV		A-3	2812 Cypress Pt.	5	
4/30/04	QV		C-19	2902 Cypress Pt.	3	
4/30/04	QV		A-13	Cypress Pt.	3.5	
4/30/04	QV		A-7	Cypress Pt.	3.5	
4/30/04	QV		A-5	Cypress Pt.	3.5	
2001-2002	QV	QV TH	FL 62.06	#34 Warwick	7	

2001-2002	QV	EL Dorado	Z-1	3415 Covey Trail	5.5	
2001-2002	QV	EL Dorado	B-3	3443 Covey Trail	7	
12/5/98	TB		STA 3+41	3319 Plumbrook, Storm Swr.	10.5	
12/5/98	TB		n/a	FM 1092 @ Denny's (New Const)	8	
7/31/99	TB		D-33	3102 Stoney Brook	3	
7/31/99	TB		D-32	3106 Stoney Brook	2	
7/31/99	TB		U-1	3122 Cherry Springs	7	
7/31/99	TB		W-4	3202 Cherry Springs	2.5	
7/31/99	TB		W-3	3202 Cherry Springs	2	
7/31/99	TB		U-2	3218 Cherry Springs	5	
7/31/99	TB		U-3	3230 Cherry Springs	5	
7/31/99	TB		66	3414 Hampton	9.5	
7/31/99	TB		62	3418 Hampton	9.5	
7/31/99	TB		B-3	3423 Oyster Cove	4	
7/31/99	TB		C-60-A	3523 E. Creek Club	3	
7/31/99	TB		60	3523 Oyster Cove	4	
7/31/99	TB		D-22	3922 E. Creek Club	5	
7/31/99	TB		T-1	Cherry Hills @ Pool	3	
7/31/99	TB		Q-5	Turtle Creek @ BRA Canal	6.5	
1/5/00	TB		Q-2	1603 Turtle Creek	3	
1/5/00	TB		Q-1	1611 Turtle Creek	3.5	
1/5/00	TB		Q-3	3102 Cherry Hills	4	
1/5/00	TB		Q-4	3102 Cherry Hills	4	
1/5/00	TB		D-21	3106 E. Creek Club	2	
1/5/00	TB		W-4	3202 Cherry Hills	2.5	
1/5/00	TB		W-3	3202 Cherry Hills	2	
1/5/00	TB		D-21	3906 E. Creek Club	2.5	
1/5/00	TB		Q-7	BRA Canal	2.5	
1/5/00	TB		Q-6	BRA Canal	3.5	
1/5/00	TB		Q-9	BRA Canal @ Turtle Creek	5	
1/5/00	TB		Q-5	BRA Canal @ Turtle Creek	6.5	
1/5/00	TB		T-1	Cherry Hills @ Parking lot	3	
3/21/00	TB		2nd	1703 Turtle Creek	1.8	
3/21/00	TB		-	1719 Hilton Head	1.8	
3/21/00	TB		B-1	1802 Turtle Creek	4	
3/21/00	TB		B-2	1803 Turtle Creek	3	
3/21/00	TB		B-9	1857 Hilton Head	4.5	
3/21/00	TB		C-4	1907 Eastfield	5	
3/21/00	TB		-	1915 Hilton Head	4	
3/21/00	TB		F-1	1923 Fall Meadow	2	
3/21/00	TB		-	1935 Hilton Head	3.2	
3/21/00	TB		O-3	2926 Mission Valley	2	
3/21/00	TB		35	3115 W. Creek Club	5	
3/21/00	TB		B-19	3118 Oyster Cove	4	
3/21/00	TB		G-1	3122 Mission Valley	2	
3/21/00	TB		O-6	3302 Hilton Head	3	



3/21/00	TB		D1A	3406 E. Creek Club	10	
3/21/00	TB		42	3707 W. Creek Club	5	
3/21/00	TB		-	BRA Canal	3.5	
3/21/00	TB		-	BRA Canal	2.5	
3/21/00	TB		S273.8	Hampton @ Access Dr.	7	
3/21/00	TB		S4483.0	Hampton @ Access Dr.	7.5	
3/21/00	TB		-	Hilton Head @ Eastfield	1.6	
2/5/01	TB	TBE	D-3	3107 Glenn Lakes	6	
2/5/01	TB	TBE	D-66	3827 Pleasant Valley	3	
2/5/01	TB	TBE	D-67	3903 Pleasant Valley	3	
2/5/01	TB	TBE	D-69	3923 Pleasant Valley	2	
2/12/01	TB	TBN	N-2	1847 Fall Meadow	4	
2/12/01	TB	TBE	C-15	2910 Hampton	3	
2/12/01	TB	TBE	C-22A	3423 Crow Valley	4	
1/15/02	TB	TBN	K-2	1715 Indian Wells	3	CS
1/15/02	TB	TBN	C-1	1719 Eastfield	3	CS
1/15/02	TB	TBN	J-3	1815 Indian Wells	3	CS
1/15/02	TB	TBN	C-3	1819 Eastfield	3	CS
1/15/02	TB	TBN	J-2	1819 Indian Wells	3	CS
1/15/02	TB	TBN	J-1	1823 Indian Wells	3	CS
1/15/02	TB	TBN	A-3	1847 Indian Wells	3	CS
1/15/02	TB	TBN	C-5	1927 Eastfield	3	CS
1/15/02	TB		D-2	3002 Mission Valley	3	CS
1/15/02	TB		D-1	3018 Mission Valley	3	CS
1/15/02	TB	TBN	A-4	3102 Apple Valley	3	CS
1/15/02	TB		A-5	3102 Blue Hills	3	CS
1/15/02	TB		S-1	3118 Cherry Hills	3	CS
1/15/02	TB		R-1	3118 Southern Hills	3	CS
1/15/02	TB	TBN	I-1	3122 Apple Valley	3	CS
1/15/02	TB		H-1	3122 Blue Hills	3	CS
1/15/02	TB		H-2	3126 Blue Hills	3	CS
1/15/02	TB		H-3	3134 Blue Hills	3	CS
1/15/02	TB		H-4	3135 Apple Valley	3	CS
1/15/02	TB	TBN	G-2	3218 Mission Valley	3	CS
1/15/02	TB		A-3	3306 Carmel Valley	8.5	
1/15/02	TB		Storm Inlet	3427 Havershire	2	Storm
1/15/02	TB		A-4	3502 Palm Grove	8	
1/15/02	TB		A-24	3514 Duncaaster	3	CS
1/15/02	TB		A-6	3610 Palm Grove	3	CS
1/15/02	TB		A-7	3622 Palm Grove	3	CS
1/15/02	TB		A-8	3642 Palm Grove	3	CS
1/15/02	TB		A-9	3654 Palm Grove	3	CS
1/15/02	TB		Q-12	Turtle Creek @ Car Wash	3	CS
1/15/02	TB		Q-9	Turtle Creek @ Roane Park	3	CS
1/15/02	TB		Q-10	Turtle Creek @ Roane Park	3	CS
1/15/02	TB		Q-11	Turtle Creek @ Roane Park	3	CS
1/23/02	TB	West	74	3306 Hampton	CS-4	
1/23/02	TB	West	72	3322 Hampton	CS--5	
1/23/02	TB	East	C-59	3502 E. Creek Club	3	CS
1/23/02	TB		46	3511 W. Creek Club	5.5	

1/23/02	TB	East	C-61	3602 E. Creek Club	3	CS
1/23/02	TB	West	44	3611 W. Creek Club	4	CS
1/23/02	TB	East	C-62	3614 E. Creek Club	3	CS
1/23/02	TB	East	C-63A	3622 E. Creek Club	3	CS
1/23/02	TB	East	C-64	3630 E. Creek Club	3	CS
1/23/02	TB	West	34	3723 W. Creek Club	5	CS
1/23/02	TB	East	D-27	3726 E. Creek Club	3	CS
1/23/02	TB	West	26	3807 W. Creek Club	6	CS
1/23/02	TB	West	20	3823 W. Creek Club	4.5	CS
1/23/02	TB	West	13	3915 W. Creek Club	6	CS
1/23/02	TB	West	12	3931 W. Creek Club	3	CS
3/23/04	TB		#7	4008 Ridgeview	9	
3/23/04	TB		#8	Ridgeview @ WCC	10	
3/23/04	TB		#1	Ridgeview @ Glenn Lakes	4	
3/23/04	TB		#2	Ridgeview @ Driveway to Park	4.5	
3/23/04	TB		#4	3323 Ridgeview - Across street	7.5	
3/23/04	TB		#3	Summit Lane - Across street	6.5	
3/25/04	TB		#5	3911 Ridgeview - Across street	9	
4/1/04	TB		C-14	2902 Hampton	13.5	
4/1/04	TB		C-15	2910 Hampton	14	
4/1/04	TB		A-1	3018 Hampton, across street	6	
4/1/04	TB		51	3710 Ridgeview Dr.	6	
4/1/04	TB		52	3626 Ridgeview Dr.	5	
4/29/04	TB		C-20	3503 Crow Valley	5	
4/29/04	TB		C-26	3519 Crow Valley	10	
4/29/04	TB		C-28	2726 Glen Echo	7.5	
4/29/04	TB		C-29	2710 Glen Echo	7.5	
4/29/04	TB		C-35	3410 Robinson	5	
4/29/04	TB		C-36	3406 Robinson	5	
4/29/04	TB		C-37	3406 Robinson	5	
4/29/04	TB		C-38	3326 Robinson	4.5	
4/29/04	TB		C-40	3310 Robinson	4.5	
4/29/04	TB		C-41	3230 Robinson	4.5	
4/29/04	TB		C-42	3226 Robinson	5	
4/29/04	TB		C-95	2810 Burning Tree	5	
96-97	TB		MH I-39			
4/24/98	MC	Sec 1	B-11	2519 Ashmont	3	
4/24/98	MC	Sec 1	B-10	2523 Ashmont	8	
4/24/98	MC	Sec 1	B-9	2607 Ashmont	8.5	
4/24/98	MC	Sec 4	D-6	2610 Creekway Cr.	5	
4/24/98	MC	Sec 1	B-7	2619 Ashmont	9.5	
4/24/98	MC	Sec 1	B-8	2619 Ashmont	9	
4/24/98	MC	Sec 4	D-5	2714 Creekway Cr.	6	
3/30/04	MC		B-1	2823 Ashmont	5	
3/30/04	MC		B-2	2811 Ashmont	12	
3/30/04	MC		B-4	2806 Ashmont - Across street	5	
3/30/04	MC		N-1	2406 Oakview	11	



3/30/04	MC		M-1	2802 Ashmont	5	
3/30/04	MC		M-2	2802 Ashmont	5	
4/1/04	MC	Sec 3	A-12	2026 Valley Manor	8	
4/1/04	MC	Sec 3	A-11	2102 Valley Manor	9	
4/1/04	MC	Sec 3	A-10	2118 Valley Manor	5	
4/1/04	MC	Sec 3	A-9	2202 Valley Manor	11	
4/1/04	MC	Sec 3	A-8	2406 Valley Manor	10	
4/1/04	MC		B-12	2503 Ashmont	6.5	
4/1/04	MC	The Woods	1	Hawks Rd. @ LS #4	9	
4/1/04	MC	Sec 1	B-6	Ashmont @ Meadow-creek	10	
3/23/98	MUD 26		Sta 8+53.48	1802 Greenstar	6	
3/23/98	MUD 26		Sta 8+53.48	1802 Greenstar	6	
3/23/98	MUD 26	QGW	Sta 7+72.12	1850 Freshmeadow	8	
3/23/98	MUD 26	QGW	Sta 3+00.75	1951 Ripple Creek	6.5	
3/23/98	MUD 26	QGW	Sta 0+35	2047 Quail Place Dr.	14.5	
3/23/98	MUD 26	QGW-3	I-10	2419 Poco Dr.	11.5	
3/23/98	MUD 26	QG-2	#38	Lot 24 Autum Dawn	6	
3/23/98	MUD 26	QG-2	#36	Lot 29 Autum Dawn	6.5	
3/23/98	MUD 26	QG-2	#24	Lot 61 Autum Dawn	7	
3/23/98	MUD 26	QG-2	#10	Lot 70 Autum Dawn	5.5	
4/24/98	MUD 26	Sec 3	I-1	Lot 1 Greencrest	5.5	
4/24/98	MUD 26	Sec 3	I-15	Lot 1 Poco Dr.	5	
4/24/98	MUD 26	Sec 3	I-5	Lot 10 Greencrest	7	
4/24/98	MUD 26	Sec 3	I-19	Lot 11 Poco Dr.	8	
4/24/98	MUD 26	Sec 3	I-20	Lot 12 Poco Dr.	9	
4/24/98	MUD 26	Sec 3	I-23	Lot 18 Greencourt	5	
4/24/98	MUD 26	Sec 3	I-6	Lot 25 Greencourt	9.5	
4/24/98	MUD 26	Sec 3	I-16	Lot 5 Poco Dr.	6.6	
4/24/98	MUD 26	Sec 3	I-4	Lot 9 Greencourt	8.5	
7/31/99	MUD 26		Sta 7+73	1507 Greendale	3	
7/31/99	MUD 26		5	1507 Greendale	7	
7/31/99	MUD 26		Sta 0+40	1902 Quail Place	11	
7/31/99	MUD 26		Sta 39+66	1902 Quail Place	3	
7/31/99	MUD 26		Sta 0+23	1902 Quail Place Dr.	11	
7/31/99	MUD 26		Sta 12+22	2066 Feather Ridge	4	
7/31/99	MUD 26		I-25	2315 Quail Place	4	
7/31/99	MUD 26		I-27	2331 Quail Place	3	
7/31/99	MUD 26		I-28	2335 Quail Place	3.5	
1/5/00	MUD 26	QG 2	17+08	1411 Green Moss Ct.	12.5	
1/5/00	MUD 26	QG 2	14+53	1419 Green Mansion	11.5	
1/5/00	MUD 26	QG 2	3	1527 Greendale (rear)	5	
2/28/00	MUD 26	QG 2	6	1410 Green Moss	13.5	
2/28/00	MUD 26	QGW	11	2315 Quail Place Dr.	4	
2/28/00	MUD 26	QG 2	7	715 Turtle Creek	14	
2/28/00	MUD 26	QG 2	8	911 Turtle Creek	14	
2/28/00	MUD 26	QGW	10	Columbia Blue @ Green Ct.	9	
3/21/00	MUD 26	QGW	I-26	2327 Quail Place	6	
3/21/00	MUD 26	QG 2	S 3+41	FM 2234, Pizza Inn	4.5	

8/7/00	MUD 26	QGW	-	1907 Green West	8	
8/7/00	MUD 26	QGW	-	1923 Green West	6.5	
8/7/00	MUD 26	QGW	-	2339 Quail Place	7	
8/7/00	MUD 26	QGW	-	Drainage Ditch 1	4	
8/7/00	MUD 26	QGW	-	Drainage Ditch 2	4	
9/5/00	MUD 26	QG 1	St. 10+66.76	1052 Quail Trace	5	
9/5/00	MUD 26	QG 1	St 13.20+01	1427 Lazy Springs	3	
9/5/00	MUD 26	QG 1	St 10+50.07	1447 Lazy Springs	4	
9/5/00	MUD 26	QG 1	St 12+43.79	1451 Lazy Springs	5	
9/5/00	MUD 26	QG 1	St 8+48	1514 Quail Trace	2	
9/5/00	MUD 26	QG 1	St 7+96	1518 Quail Trace	2	
9/5/00	MUD 26	QG 1	St 443+73	1546 Quail Trace	2	
9/5/00	MUD 26	QGW	I-42	1905 Green West	8.5	
9/5/00	MUD 26	QGW	St. 16+00	2038 Feather Ridge	5	
9/5/00	MUD 26	QGW	St. 19+37	2058 Feather Ridge	4	
9/5/00	MUD 26	QGW	St. 17+59	2058 Feather Ridge	5	
9/5/00	MUD 26	QGW	St. 21+24	2066 Feather Ridge	3	
9/5/00	MUD 26	QGW	St. 13+16	Cinema	2	
9/5/00	MUD 26	QGW	St. 15+17	Cinema	3	
9/5/00	MUD 26	QGW	St. 19+17	Cinema	3	
9/5/00	MUD 26		I-14	Drainage Ditch	14	
9/5/00	MUD 26	QG 1	St 1+13	FM 2234 @ Quail Trace	4.5	
9/5/00	MUD 26		-	Independence @ Cinema	3	
9/5/00	MUD 26	QGW	-	Independence @ Cinema 1	3.5	
9/5/00	MUD 26	QGW	-	Independence @ Cinema 2	3	
9/5/00	MUD 26	QGW	-	Independence @ Cinema 3	3	
2/12/01	MUD 26	QGW 3	I-8	2002 Greenwest	10	
2/12/01	MUD 26	QGW 3	I-9	2002 Greenwest	10	
2/12/01	MUD 26	QGW 3	Sta 9+84.50	2030 Quail Place	3	
1/23/02	MUD 26		St. 12+41.29	1451 Lazy Springs	3	CS
1/23/02	MUD 26		St. 7+04.82	1530 Quail Trace	3	CS
1/23/02	MUD 26	West	St. 2+11	2027 Summer Place	6	CS
1/23/02	MUD 26	West	St. 1+52	2046 Summer Place	3	CS
1/23/02	MUD 26	Randall's	St. 2+00	Cartwright Rd. @ Foodarama	3	CS
1/23/02	MUD 26	Randall's	St. 4+00	Cartwright Rd. @ Foodarama	3	CS
1/23/02	MUD 26	Randall's	St. 6+45	Cartwright Rd. @ Goodyear Tire	3	CS
1/23/02	MUD 26	Randall's	St. 10+75	Cartwright Rd. @ MC Dialysis	3	CS
1/23/02	MUD 26	Randall's	St. 9+60	Cartwright Rd. @ US Marines	3	CS
1/23/02	MUD 26	Randall's	SW	Cartwright Rd. @ Walgreen's	3	CS
1/23/02	MUD 26	One	St. 13+73.59	FM 2234 @ Pizza Inn / Empty lot	3	CS
1/23/02	MUD 26	One	St. 25+45.44	FM 2234 @ Shamrock	3	CS



1/23/02	MUD 26	One	St. 27+45.62	FM 2234 @ Sonic	3	CS
1/23/02	MUD 26		St. 17+43.79	STP - Inside gate	3	CS
96-97	MUD 26	QGW SEC II	MH I-22	Courtside Place Dr.	5	
96-97	MUD 26	QGW SEC II	MH I-7	Courtside Place Dr.	5	
96-97	MUD 26	QGW SEC II	MH I-8	Courtside Place Dr.	6	
96-97	MUD 26	QGW SEC II	MH I-9	Courtside Place Dr.	6	
96-97	MUD 26	QGW	MH 2-38	Freshmeadow Dr.	8	
96-97	MUD 26	QGW SEC II	MH I-24	Grove Court Dr.	8	
96-97	MUD 26	QGW SEC II		Quail Place Dr.	5	
96-97	MUD 26	QGW SEC II	MH I-23	Quail Place Dr.	9	
96-97	MUD 26	QGW SEC II	MH I-10	Spring Green Dr.	4	
96-97	MUD 26	QGW SEC II	MH I-38	Spring Green Dr.	4	
6/8/98	PP 1	STP	Clarifier MH	2415 Lake Olympia Prkwy.	10	
1/4/02	PP1	H. View V 2	S-5	2803 Four Winds	3	CS
1/4/02	PP1	H. View V 2	S-6	2907 Four Winds	3	CS
1/4/02	PP1	One	S-30	2930 Plantation Wood	3	CS
1/4/02	PP1	H. View V 2	S-3	3007 Four Winds	3	CS
1/4/02	PP1	H. View V 2	S-1	3015 Four Winds	3	CS
1/4/02	PP1	One	S-34	4118 Crow Valley	3	CS
1/4/02	PP1	One	S-35	4118 Crow Valley	3	CS
1/4/02	PP1	One	S-36	4122 Crow Valley	3	CS
1/4/02	PP1	One	S-37	4126 Crow Valley	3	CS
1/4/02	PP1	One	S-49	4306 Crow Valley	3	CS
1/4/02	PP1	One	S-25	4323 Brights Bend	3	CS
1/4/02	PP1	One	S-48	4323 Crow Valley	3	CS
1/4/02	PP1	One	S-24	4339 Brights Bend	3	CS
1/4/02	PP1	One	S-3	4350 Palmer Plantation	3	CS
1/4/02	PP1	One	S-53	Lake Olympia Parkway	3	CS
1/4/02	PP1	One	S-56	Lake Olympia Parkway	3	CS
1/4/02	PP2	COV 1,2,3	S-54	1502 Crescent Oak	3	CS
1/4/02	PP2	COV 1,2,3	S-55	1514 Crescent Oak	3	CS
1/4/02	PP2	COV 1,2,3	S-61	1514 Timber Creek	3	CS
1/4/02	PP2	M Crss 1	S-1	1607 Mustang Crossing	3	CS
1/4/02	PP2	COV 1,2,3	S-5	1826 Crescent Oak	3	CS
1/4/02	PP2	COV 1,2,3	S-8	1906 Crescent Oak	3	CS
1/4/02	PP2	COV 1,2,3	S-7	1910 Crescent Oak	3	CS
1/4/02	PP2	L.F. 1,2	S-1	4106 Lakeshore Forest	3	CS
1/4/02	PP2	L.F. 1,2	S-7	4242 Lakeshore Forest	3	CS
1/4/02	PP2	L.F. 1,2	S-9	4314 Lakeshore Forest	3	CS
1/4/02	PP2	L.F. 1,2	S-11	4338 Lakeshore Forest	3	CS
1/4/02	PP2	COV 1,2,3	S-22	L.O.P. @ Lift Station #1	3	CS
1/4/02	PP2	L.F. 1,2	S-14	Lakeshore Forest Ct.	3	CS
1/4/02	PP2	L.F. 1,2	S-15	Lakeshore Forest Ct.	3	CS
1/25/04	PP2	SB 3	S-1	1603 Morning Dew Place	3	CS
1/25/04	PP2	SB 3	S-10	1643 Morning Dew Place	3	CS

1/25/04	PP2	V Del L	S-510	1735 Corona Del Mar	3	CS
1/25/04	PP2	M Crss 1	S-4	1811 Mustang Crossing	3	CS
1/25/04	PP2	M Crss 1	S-11	4315 Mustang Crossing	3	CS
1/25/04	PP2	SB 2	S-18	4510 Sunshine Ln.	3	CS
1/25/04	PP2	SB 2	S-19	4514 Sunshine Ln.	3	CS
1/25/04	PP2	SB 2	S-11	4602 Sunshine Ln.	3	CS
1/25/04	PP2	SB 2	S-20	4602 Sunshine Ln.	3	CS
1/25/04	PP2	SB 3	S-7	4615 Sundown Ct.	3	CS
2001-2002	PP 2	SB 3	???	1651 Morning Dew Place	??	
2/19/02	MUD 49		S-33	49 Lift Station (inside fence)	14	
2/19/02	MUD 49	LS Site	S-34	49 Lift Station (outside gate)	14	
2/19/02	MUD 49	OCP 1	S-2	731 Acacia (side)	4.5	
2/19/02	MUD 49	OCP 1	S-3	731 Acacia (side)	5	
2/19/02	MUD 49	OCP 1	S-9	Coral Tree Place / Empty lot	5	
2/19/02	MUD 49	OCP 1	S-19	Oyster Creek Place Dr.	10	
2/19/02	MUD 49	OCP 1	S-18	Oyster Creek Place Dr.	9.5	
2/19/02	MUD 49	OCP 1	S-17	Oyster Creek Place Dr.	9	
2/19/02	MUD 49	OCP 1	S-16	Oyster Creek Place Dr.	8	
2/19/02	MUD 49	OCP 1	S-13	Oyster Creek Place Dr.	8	
2/19/02	MUD 49	OCP 1	S-4	Oyster Creek Place Dr.	5.5	
2/12/01	MUD 42	Lkshr		Bright ware Blvd.	7	
2/15/02	MUD 42		TL1-2	4111 Bayshore	10	
2/18/02	MUD 42		A-5	1022 Birchstone	3	CS
2/18/02	MUD 42		A-4	1102 Birchstone	3	CS
2/18/02	MUD 42		A-3	1114 Birchstone	3	CS
2/18/02	MUD 42		A-2	1218 Birchstone	3	CS
2/18/02	MUD 42		A-1	1246 Birchstone	3	CS
2/18/02	MUD 42		E-1-1	2011 Brightwater	3	CS
2/18/02	MUD 42		B-5	4214 Shady Village	3	CS
2/18/02	MUD 42		B-7	Brightwater Dr. @ Lexington	3	CS
2/18/02	MUD 42		TL1-1	Brightwater Dr. @ LS #2	9.5	
2/18/02	MUD 42		K2-A	Cartwright Rd. @ MCPD	9	
4/30/04	MUD 42		TL-22	Brightwater	10.5	
4/30/04	MUD 42		TL2-4	2223 Brightwater	9.5	
4/30/04	MUD 42		TL2-5	2215 Brightwater	10	
4/30/04	MUD 42		TL-2-7	4111 Laguna	8.5	
2001-2002	MUD 42		A-10	2011 Brightwater	CS 2	



Five Year Manhole Rehabilitation Program
 Exhibit 2.3

2.4 Facilities and Infrastructure

Water

Table 2.2 - Quail Valley Water Plants

QUAIL VALLEY UTILITY DISTRICT

Three Plants Operate as One System

QUAIL VALLEY UTILITY DISTRICT WATER PLANT No.1
 2935 Blue Lakes

Well (GPM)	Ground Storage Tanks (Gallons)	Booster Pumps (GPM)	Elevated Storage (Gallons)	Hydro Tank (Gallons)
No.1 2,021	No.1 225,000	No.1 1,000	EST at Plant No.3	
No.2 510	No.2 225,000	No.2 1,000		
	No.3 500,000	No.3 1,000		
		No.4 1,000		

QUAIL VALLEY UTILITY DISTRICT WATER PLANT No.2
 2143 Cartwright Rd.

Well (GPM)	Ground Storage Tanks (Gallons)	Booster Pumps (GPM)	Elevated Storage (Gallons)	Hydro Tank (Gallons)
No.3 1,511	No.1 750,000	No.1 1,000 No.2 1,000 No.3 1,000	EST at Plant No.3	

Emergency Generator Serves Booster Pump No. 1

QUAIL VALLEY UTILITY DISTRICT WATER PLANT No.3
 1930 Rothwell

Well (GPM)	Ground Storage Tanks (Gallons)	Booster Pumps (GPM)	Elevated Storage (Gallons)	Hydro Tank (Gallons)
No.4 2,332	No.1 1,000,000	No.1 1,000 No.2 1,000 No.3 1,000 No.4 1,000	500,000	

Emergency Right Angle Drive Serves Well No.4

Wastewater (Sanitary)

Table 2.3 - Quail Valley Lift Stations

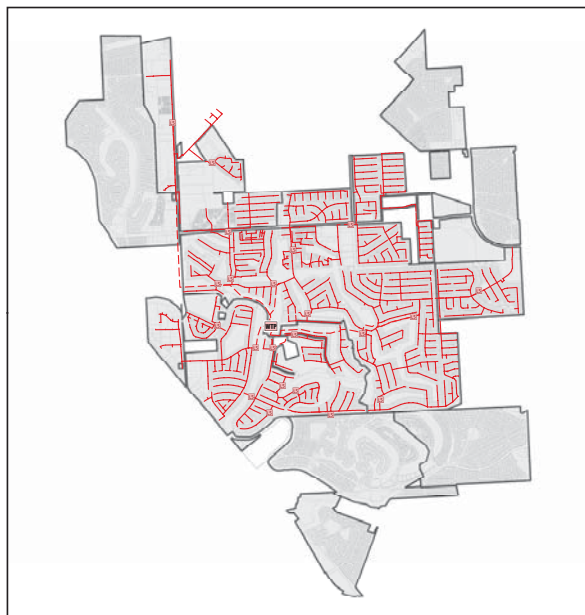
LIFT STATION ID	ACTUAL NAME	PUMP INFO	ESFC DESIGN*	ESFC ACTUAL	FM SIZE	FM VELOCITY	5 YEAR PLAN
1 QVMLS01	QUAIL VALLEY MUD LIFT STATION No1	3@ 1632	3672	3211	12	9.3	
2 QVMLS02	QUAIL VALLEY MUD LIFT STATION No2	2@ 280	315	123	6	3.2	
3 QVMLS03	QUAIL VALLEY MUD LIFT STATION No3	2@ 610	686	720	6	6.9	YES
4 QVMLS05	QUAIL VALLEY MUD LIFT STATION No5	3@ 750	1687	1772	8	9.6	YES
5 QVMLS06	QUAIL VALLEY MUD LIFT STATION No6	2@ 400	450	210	6	4.5	
6 QVMLS07	QUAIL VALLEY MUD LIFT STATION No7	3@ 1051	2364	2118	12	6.0	
7 QVMLS08	QUAIL VALLEY MUD LIFT STATION No8	2@ 400	450	511	10	1.6	YES
8 QVMLS09	QUAIL VALLEY MUD LIFT STATION No9	2@ 200	225	355	6	2.3	YES
9 QVMLS10	QUAIL VALLEY MUD LIFT STATION No10	2@ 375	421	573	8	2.4	YES
10 QVMLS11	QUAIL VALLEY MUD LIFT STATION No11	2@ 160	180	235	6	1.8	YES
11 QVMLS12	QUAIL VALLEY MUD LIFT STATION No12	2@ 709	797	646	12	2.0	
12 TBMLS01	THUNDERBIRD UD LIFT STATION No1	2@ 850	956	1329	8	5.4	YES
13 TBMLS02	THUNDERBIRD NORTH UD LIFT STATION No2	2@ 595	669	611	10	2.4	
14 TBMLS03	THUNDERBIRD UD LIFT STATION No3	2@ 155	174	207	6	1.8	YES
15 TBMLS04	THUNDERBIRD UD LIFT STATION No4	2@ 300	337	235	6	3.4	
16 TBMLS05	THUNDERBIRD UD LIFT STATION No5	2@ 245	275	42	4	6.3	
17 TBMLS06	THUNDERBIRD UD LIFT STATION No6	2@ 150	168	133	6	1.7	
18 TBMLS07	THUNDERBIRD UD LIFT STATION No7	2@ 200	225	158	8	1.3	
19 TBMLS08	THUNDERBIRD UD LIFT STATION No8	2@ 150	168	94	4	3.8	
20 TBMLS09	THUNDERBIRD UD LIFT STATION No9	2@ 245	275	190	6	2.8	
21 TBMLS10	THUNDERBIRD UD LIFT STATION No10	2@ 300	337	440	6	3.4	YES
22 FB42LS1	FORT BEND MUD Ng42 LIFT STATION No1	3@ 1100	2475	1451	12	6.2	
23 FB42LS2	FORT BEND MUD Ng42 LIFT STATION No2	2@ 656	738	662	8	4.2	
24 FB42LS3	FORT BEND MUD Ng42 LIFT STATION No3	2@ 216	243	381	6	2.5	YES
25 FB42LS4	FORT BEND MUD Ng42 LIFT STATION No4	2@ 450	506	424	8	2.9	
26 PP1LS01	No1 LIFT STATION No1	2@ 300	337	316	6	3.4	
27 PP1LS02	No1 LIFT STATION No2	100	112	73	4	2.6	
28 PP1LS03	No1 LIFT STATION No3	2@ 350	393	104	6	4.0	
29 PP1LS04	No1 LIFT STATION No4	300	675	378	6	6.8	
30 PP1LS05	No1 LIFT STATION No5	100	112	76	4	2.6	
31 PP1LS06	No1 LIFT STATION No6	2@ 138	155	122	4	3.5	
32 PP2LS01	No2 LIFT STATION No1	2@ 600	675	632	10	2.5	
33 PP2LS02	No2 LIFT STATION No2	2@ 95	106	79	4	2.4	
34 MCMLS01	MEADOW CREEK MUD LIFT STATION No1	2@ 299	336	354	6	3.4	YES
35 MCMLS02	MEADOW CREEK MUD LIFT STATION No2	2@ 430	483	553	6	4.9	YES
36 MCMLS03	MEADOW CREEK MUD LIFT STATION No3	2@ 128	144	293	4	3.3	YES
37 MCMLS04	MEADOW CREEK MUD LIFT STATION No4	2@ 190	213	140	6	2.2	
38 FB49LS0	FORT BEND MUD Ng49 OYSTER CREEK PLACE LIFT STATION	3@ 180	404	302	4	4.6	
39 LEXLS00	LEXINGTON PLACE LIFT STATION	2@ 321	361	130	6	3.6	

* Design ESFC value based on pumping rate @ 320 gpd/ESFC w/ Peaking Factor=4

Wastewater Treatment Plants

Quail Valley MUD

The Quail Valley MUD currently operates one wastewater treatment plant. The permit (TPDES Permit No. WQ0011046-001) authorizes four million gallons per day (4MGD) of annual average flow. The plant is operated by Quail Valley Utility. The Permit is attached as Appendix F - Wastewater Treatment Plant Permits.



Quail Valley MUD
Sanitary Sewer Distribution System

Thunderbird UD

The Thunderbird UD wastewater is sent to the Quail Valley MUD WWTP.

Fort Bend County MUD No. 42

The Fort Bend County MUD No. 42 wastewater is sent to Oyster Creek Plantation Lift Station and ultimately sent to FBC MUD 9 outside of this area of study.

Palmer Plantation MUD Nos. 1 & 2, and Fort Bend County MUD No. 49

The Palmer Plantation MUD Nos. 1&2 wastewater treatment plant serves both districts as well as Fort Bend County MUD No.49. The permit (TPDES Permit No. WQ0012937-001) authorizes six hundred thousand gallons per day (0.6MGD) of annual average flow. The plant is operated by Quail Valley Utility. The Permit is attached as Appendix F - Wastewater Treatment Plant Permits.

Meadow Creek MUD

The Meadow Creek MUD wastewater is sent to the Quail Valley MUD WWTP.

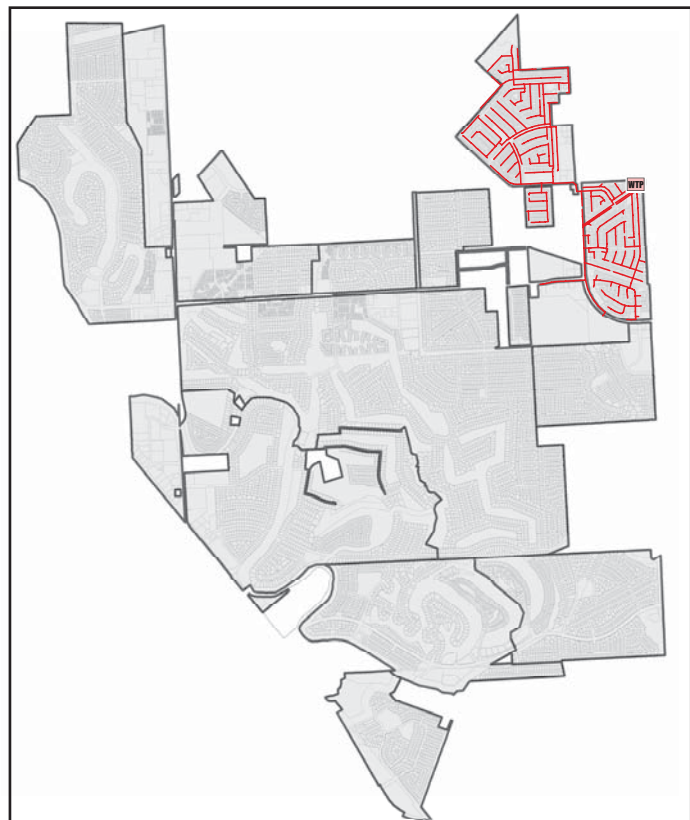
Fort Bend County MUD No. 26

The Fort Bend County MUD No.26 MUD currently operates one wastewater treatment plant. The permit (TPDES Permit No. WQ0012073-001) authorizes five hundred thousand gallons per day (0.5MGD) of annual average flow in the interim phase and an ultimate flow of eight hundred thousand gallons per day (0.8MGD). The plant is operated by Quail Valley Utility. The Permit is attached as Appendix F - Wastewater Treatment Plant Permits.

2.5 Line Summations by MUD



Palmer Plantation MUD 01
Sanitary Sewer Distribution System



Fort Bend County MUD 26
Sanitary Sewer Distribution System



As the GIS infrastructure was created, the data was categorized by MUD boundary. With the MUD boundaries provided by the Quail Valley Utility District, an infrastructure summation was performed. The tables below list the summed results per MUD.

2.6 Data Delivery

Table 2.4 - MUD Feature Table
Ft Bend MUD 26

WATER		SANITARY	
Mains		Mains	
12"	25,923'	18"	923'
10"	2,701'	15"	4,163'
8"	46,718'	12"	8,103'
6"	2,392'	10"	11,956'
4"	6,641'	8"	56,416'
2"	222'	6"	214'
Total	84,597'	Total	81,775'
Valves		Manholes	
2"	22	Total	428
4"	32		
6"	10		
8"	120		
10"	6		
12"	74		
Total	264		
Hydrants			
Total	157		

Ft Bend MUD 42

WATER		SANITARY	
Mains		Mains	
12"	30,545'	24"	45'
8"	34,684'	21"	893'
6"	5,199'	18"	5,018'
4"	3,787'	15"	40'
Total	74,215'	12"	1,170'
		10"	4910'
Valves		8"	61,649'
2"	22	6"	3,585'
4"	20	4"	10'
6"	9	Total	77,320'
8"	79		
12"	84	Manholes	
Total	214	Total	456
Hydrants			
Total	152		

Ft Bend MUD 49

WATER		SANITARY	
Mains		Mains	
12"	4,884'	16"	30'
8"	16,364'	12"	2,334'
6"	1,773'	10"	6,180'
4"	430'	8"	13,085'
Total	23,449'	6"	1,868'
		Total	23,497'
Valves		Manholes	
2"	10	Total	135
4"	4		
6"	3		
8"	39		
12"	6		
Total	62		
Hydrants			
Total	46		

MCMUD

WATER		SANITARY	
Mains		Mains	
14"	109'	12"	23'
12"	9,327'	10"	9,604'
10"	4,369'	8"	32,883'
8"	36,059'	6"	4,237'
6"	6,207'	4"	449'
4"	181'	Total	47,195'
2"	179'		
Total	56,432'	Manholes	
		Total	192
Valves			
2"	6		
4"	1		
6"	17		
8"	68		
10"	14		
12"	21		
Total	127		
Hydrants			
Total	75		



PPMUD01

WATER		SANITARY	
Mains		Mains	
12"	17,353	30"	463'
10"	877	24"	878'
8"	27,873	20"	1,338'
6"	4,761	16"	40'
4"	1,513	10"	11,606'
2"	319	8"	23,689'
Total	52,697	6"	2,361'
		4"	3,108'
Valves		Total	43,483'
2"	17		
4"	6	Manholes	
6"	11	Total	248
8"	93		
10"	3		
12"	41		
Total	171		
Hydrants			
Total	93		

QVMUD

WATER		SANITARY	
Mains		Mains	
16"	4,574'	24"	265'
12"	56,616'	21"	1,694'
10"	6,084'	18"	4,427'
8"	66,741'	15"	5,145'
6"	77,119'	12"	18,101'
4"	9,933'	10"	21,393'
2"	8,255'	8"	140,492'
Total	229,322'	6"	3,578'
		Total	196,095'
Valves			
2"	47	Manholes	
4"	59	Total	751
6"	142		
8"	139		
10"	16		
12"	106		
16"	8		
Total	517		
Hydrants			
Total	289		

PPMUD02

WATER		SANITARY	
Mains		Mains	
16"	969'	15"	49'
12"	12,336'	12"	549'
8"	25,556'	10"	18,283'
6"	4,347'	8"	19,366'
4"	6,763'	4"	755'
Total	49,972'	Total	39,002'
Valves		Manholes	
2"	25	Total	214
4"	10		
6"	16		
8"	100		
12"	27		
16"	2		
Total	180		
Hydrants			
Total	91		

TBMUD

WATER		SANITARY	
Mains		Mains	
12"	13,579'	18"	178'
10"	34,704'	15"	5,202'
8"	45,924'	12"	5,048'
6"	18,515'	10"	29,247'
4"	1,445'	8"	77,497'
2"	4,808'	6"	5,398'
Total	118,975'	Total	122,570'
Valves		Manholes	
2"	18	Total	512
4"	8		
6"	36		
8"	110		
10"	67		
12"	34		
Total	273		
Hydrants			
Total	187		



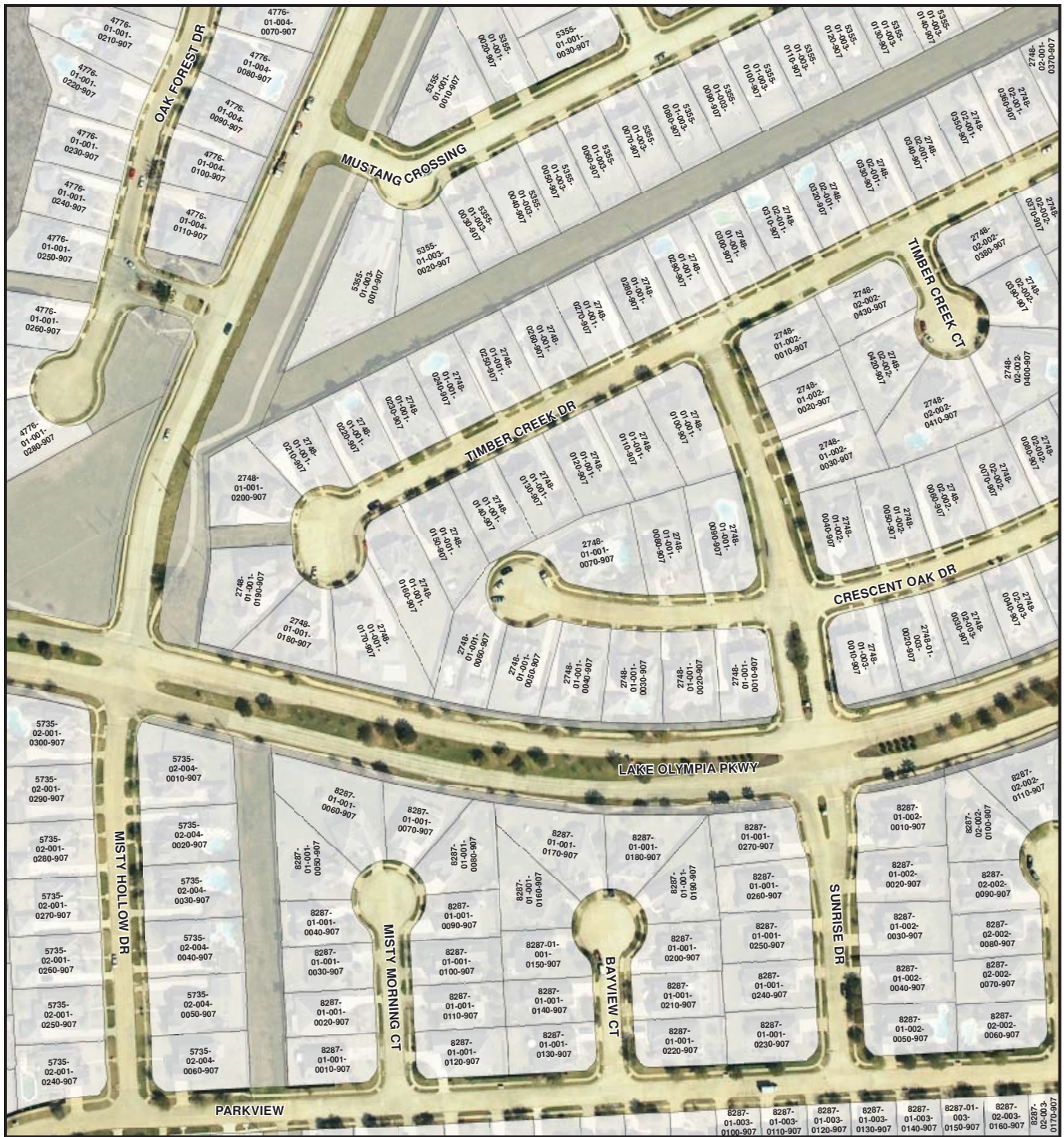
Data delivered under the regional analysis is included on CD #1 (qvud-deliverable -contentsdescription.xls)

The table below lists data location, type and description. Additional information for each data set is listed under the GIS Metadata which is viewable within ArcCatalog.

Table 2.5 - QVUD Deliverable Content Description

TABLE 2 - CONTENTS OF GDB (Data is viewable with ESRI's ArcCatalog or ArcMap)

Geodatabase/Dataset/Table	Feature Class	Description
QVUD.MDB		
BASEMAP (dataset)		
	ba_CL	Street center lines
	ba_ESFD	Equivalent Single Family Dwelling
	ba_Lots	Lot boundaries
	ba_mud	MUD boundaries with names
	ba_Sections	Residential Section boundaries with names
SANITARY (dataset)		
	MH_Rehab_Improvement (feature class)	5 year Improvement Program from Quail Valley
	san_Case	Sanitary casings
	san_Lateral	Sanitary lateral lines
	san_LS	Sanitary Lift Stations
	san_Main	Sanitary Mains
	san_Manhole	Sanitary Manholes
	san_Network	Sanitary Network
	san_Network_Junctions	Sanitary Network Junctions
	san_Valve	Sanitary Valves
	san_WWTP	Sanitary Waste Water Treatment Plant
WATER (dataset)		
	ky_nodes (feature class)	Node locations for use in KY Pipe analysis
	wat_Case	Water Casing
	wat_EST	Water Elevated Storage Tank
	wat_Fitting	Water Fittings
	wat_Hydrant	Water Hydrants
	wat_Lateral	Water Lateral Lines
	wat_Main	Water Mains
	wat_Network	Water Network
	wat_Network_Junctions	Water Network Junctions
	wat_Plant	Water Plants
	wat_Valve	Water Valves
	wat_Well	Water Wells
BondIssue (table)		
		List of Bond Issues
data_collection (table)		
		Data collection tracking by MUD
district (table)		
		List of district Abbreviations
mud_link(table)		
		MUD abbreviations and names
sanitary_demand_0907 (table)		
		Calculated present day demand based on ESFD values
SectionTrack (table)		
		Section Work track and paths to scanned documents
web_comments (feature class)		
		QAQC comments by QVUD personnel via web
wo (table)		
		List of work orders since 1992, not comprehensive
QVUD_Maintenance_Records.MDB		
	QVUD_maintenance_record_move (feature class)	The geocoded work orders received from Quail Valley
	qvud_temp_wo (table)	List of work orders since 1992, not comprehensive
	rd_mocity (feature class)	Missouri City streets
QVUD_raster.MDB		
	qv_construction_plans (raster dataset)	Scanned and georectified construction plans
	qv_imagery	Aerial photography of QVUD



AERIAL PHOTOGRAPHY DATE: MARCH 2005

LEGEND

- LOT
- RESERVE

DATASET EXAMPLE

EXHIBIT 2.1

SCALE: 1" = 200 FEET





LEGEND

- MAINTENANCE RECORD
- WATER PLANT
- WATER MAIN

TOTAL # OF RECORDS = 1725

**WATER
MAINTENANCE RECORDS**






EXHIBIT 2.2a

SCALE: 1" = 3400 FEET





LEGEND

-  MAINTENANCE RECORD
-  WASTE WATER TREATMENT PLANT
-  LIFT STATION
-  SANITARY GRAVITY MAIN
-  FORCE MAIN

TOTAL # OF RECORDS = 786

**SANITARY SEWER
MAINTENANCE RECORDS**

EXHIBIT 2.2b

SCALE: 1" = 3400 FEET





LEGEND

- MAINTENANCE RECORD
- WP WATER PLANT
- WATER MAIN

**WATER
MAINTENANCE RECORDS
1995 - 2000**

EXHIBIT 2.2c

SCALE: 1" = 3400 FEET





LEGEND

- MAINTENANCE RECORD
- WTP WASTE WATER TREATMENT PLANT
- LS LIFT STATION
- SANITARY GRAVITY MAIN
- - - - - FORCE MAIN

**SANITARY
MAINTENANCE RECORDS
1995 - 2000**

EXHIBIT 2.2d

SCALE: 1" = 3400 FEET





LEGEND

- MAINTENANCE RECORD
- WP WATER PLANT
- WATER MAIN

**WATER
MAINTENANCE RECORDS
2001 - 2007**

EXHIBIT 2.2e

SCALE: 1" = 3400 FEET





LEGEND

- MAINTENANCE RECORD
- WTP WASTE WATER TREATMENT PLANT
- LS LIFT STATION
- SANITARY GRAVITY MAIN
- - - - - FORCE MAIN

**SANITARY
MAINTENANCE RECORDS
2001 - 2007**







EXHIBIT 2.2f

SCALE: 1" = 3400 FEET





LEGEND

-  MANHOLE REHABILITATION
-  MANHOLE
-  WASTE WATER TREATMENT PLANT
-  LIFT STATION
-  8" SANITARY GRAVITY MAIN
-  FORCE MAIN

FIVE YEAR MANHOLE REHABILITATION PROGRAM

EXHIBIT 2.3

SCALE: 1" = 3400 FEET





3.1 Water

All utility infrastructure was built in a geographic network, creating a relationship between all features (see list of definitions in section 1.2 - Network). With this process in place a number and connection type was assigned to each designated node. The node value is accumulated down system in which each node will result in the total number of connections from all connections at that point.

The water analysis was performed in the Hydraulic Modeling software "KY Pipe" (<http://www.kypipe.com/>). This modeling software was chosen based on two priorities. First, the effort involved in creating the GIS data was leveraged by utilizing the inherent capabilities of GIS to determine line lengths and equivalency values (single family equivalency related to residential, office or retail) to directly import into KY Pipe. Second, KY Pipe provided the ability

to model the distribution system during a period of time (Dynamic). The dynamic modeling approach was preferred to a static model because it better represents actual field conditions and allows the modeling of peak usage periods and non-peak usage periods. The TCEQ minimum pressure allowed is 35 psi. The lowest pressure obtained during the modeling of the domestic demand was 49.5psi.

The model was then run with a fire flow added at the lowest pressure point that was identified during the domestic demand modeling. The fire flows for specific types of development are shown on the following table. The TCEQ minimum pressure allowed during an emergency, i.e. fire demand, is 20psi. The lowest pressure obtained during the modeling of the fire demand was 32.8 psi.

KY Pipe data is supplied in Appendix E.

Table 3.1 - Criteria

POTABLE WATER SUPPLY and WASTEWATER TREATMENT									
PLANNING / DESIGN CRITERIA									
PARAMETER	CODE	DEMAND CONVERSION CRITERIA							
POPULATION DENSITY									data input
Equivalent Single Family Connection	ESFC					=	3.2		people per ESFC
Multi-Family Dwelling Unit	MFD					=	2.5		people per MFD
Retirement Apartment Unit	ELD					=	1.1		people per ELD
AVERAGE POTABLE WATER USE									
Per-Capita-Per-Day Use						=	130		gpcd
Equivalent Single Family Connection	ESFC	3.2	people	x	130	gpcd	=	416	gpd
Multi-Family Dwelling Unit	MFD	2.5	people	x	130	gpcd	=	325	gpd
Retirement Apartment Unit	ELD	1.1	people	x	130	gpcd	=	143	gpd
Office Space	OFF						=	0.169	gpd per sf
Commercial/Retail Space	C/R						=	0.143	gpd per sf
Community Activity Space	CA						=	0.143	gpd per sf
Lodging	LOD						=	325	gpd per room
Retirement Home	ELD						=	130	gpd per bed
Institutional (School/Church) Site	SCH / CH						=	1953	gpd per acre
Industrial/Warehouse Site	I/W						=	0.065	gpd per sf

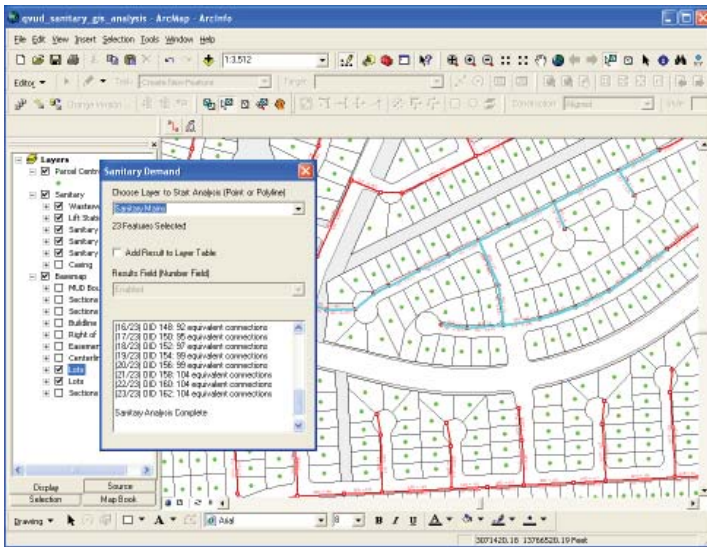


AVERAGE WASTEWATER DISCHARGE									
Per-Capita-Per-Day Use							=	100	gpcd
Equivalent Single Family Connection	ESFC	3.2	people	x	100	gpcd	=	320	gpd
Multi-Family Dwelling Unit	MFD	2.5	people	x	100	gpcd	=	250	gpd
Retirement Apartment Unit	ELD	1.1	people	x	100	gpcd	=	110	gpd
Office Space	OFF						=	0.13	gpd per sf
Commercial/Retail Space	C/R						=	0.11	gpd per sf
Community Activity Space	CA						=	0.11	gpd per sf
Lodging	LOD						=	250	gpd per room
Retirement Home	ELD						=	100	gpd per bed
Institutional (School/Church) Site	SCH / CH						=	1502	gpd per acre
Industrial/Warehouse Site	I/W						=	0.05	gpd per sf
SFDU EQUIVALENTS									
Equivalent Single Family Connection					1	ESFC	=	1.00	ESFC
Multi-Family Dwelling Unit					1	ESFC	=	1.28	MFD
Retirement Apartment Unit					1	ESFC	=	2.91	ELD
Office Space					1	ESFC	=	2461	sf
Commercial/Retail Space					1	ESFC	=	2909	sf
Community Activity Space					1	ESFC	=	2909	sf
Lodging					1	ESFC	=	1.28	rooms
Retirement Home					1	ESFC	=	3.20	beds
Institutional (School/Church) Site					1	ESFC	=	0.213	acre
Industrial/Warehouse Site					1	ESFC	=	6400	sf
POTABLE WATER CAPACITIES									
Average Daily Rate							=	0.289	gpm per 1 ESFC
Well Supply							=	0.693	gpm max-daily-rate per 1 ESFC
Water Plant Pumping Capacity							=	0.693	gpm max-daily-rate per 1 ESFC
Ground Storage Tank Capacity							=	100	gal per person (320 gal/ESFC)
Elevated Storage Tank Capacity							=	55	gal per person (176 gal/ESFC)
Peaking Factors:	Average Daily Use						=	1.0	
	Maximum Daily Use						=	2.4	(x Ave. Daily Use)
	Peak Hourly Use						=	3.6	(x Ave. Daily Use)
WASTEWATER FLOW CAPACITIES									
Wet Weather Peak Flow Factor							=	4.0	(x Ave. Annual Flow)
Wastewater Treatment Plant Capacity							=	320	gpd per 1 sfdue

3.2 Sanitary

As in the case of the water infrastructure, all sanitary features were created in a geographic network (see list of definitions in section 1.2 - Network). This approach allows the analysis of the number of con-

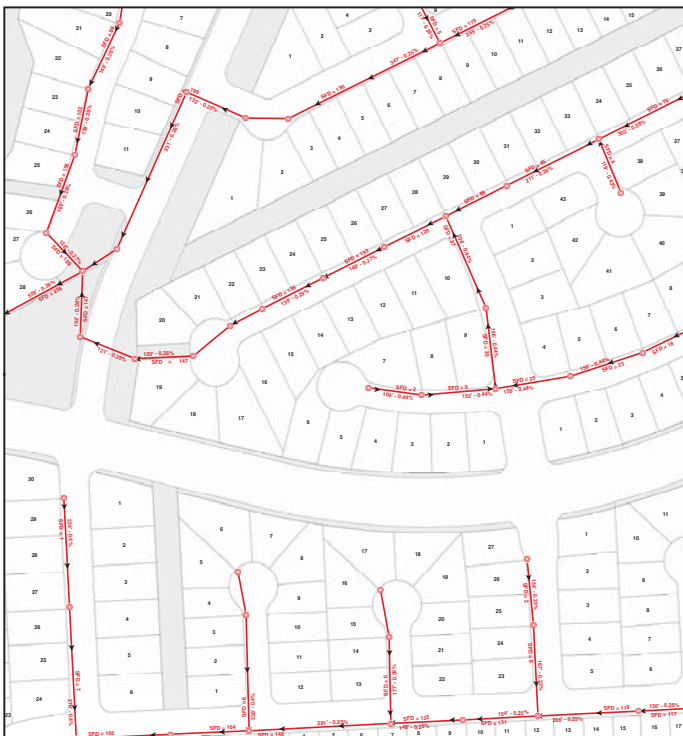
nection based on line size to be performed solely within GIS. Unlike the water analysis which needed a secondary modeling package (KY Pipe), the sanitary analysis was performed within the ArcGIS environment.



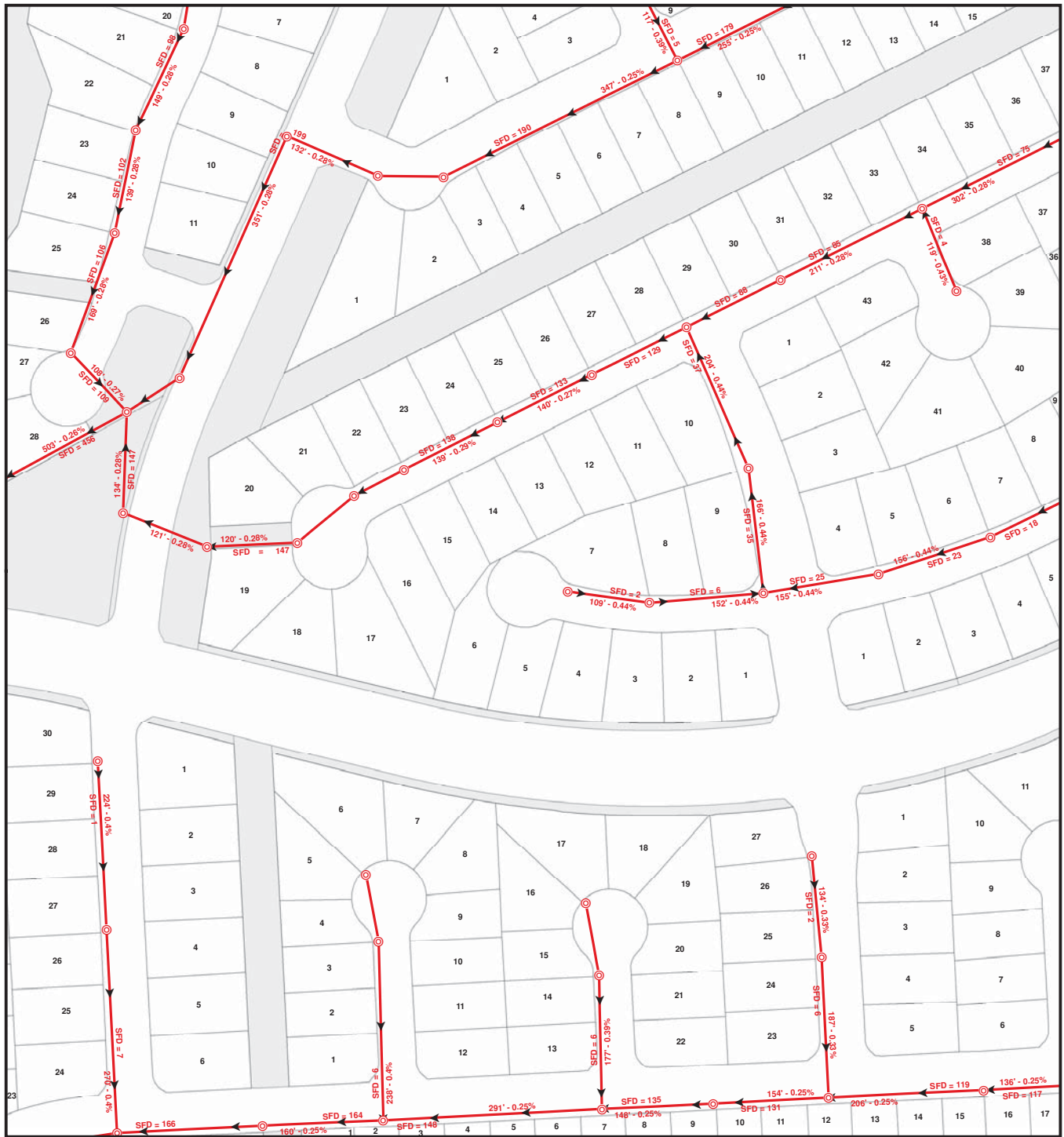
Sanitary Analysis

LJA developed an analysis code that calculated the number of connections per line cumulatively. The accumulated numbers were then compared to line sizes and represented in percentages of current capacities/ designed capacities.




The connection values were derived from the type of connection and the average daily use. Design criteria is listed on Table 3.1 on page 3 - 1.



Sanitary Analysis Results



LEGEND

-  PLUG
-  MANHOLE
-  CLEAN OUT

SFD = 164
 SANITARY GRAVITY MAIN
 100' - 0.04%

SANITARY GIS ANALYSIS

EXHIBIT 3.2

SCALE: 1" = 200 FEET





Drought Contingency

A drought contingency plan was developed for all eight districts. Drought contingency plans are listed in Appendix B - Drought Contingency Plans Per District.

Water Conservation

A water conservation plan was developed for all eight districts. Water conservation plans are listed in Appendix C - Water Conservation Plans per District.

Review of the Groundwater Reduction Plan

All eight (8) districts are located in Fort Bend County and are subject to the Fort Bend County Subsidence District (FBSD) requirements. In September 2003, the FBSD adopted its District Regulatory Plan. This Plan, among other things, requires that utilities develop and submit a ground water reduction plan by January 2008. The ground water reduction plan must develop a strategy that allows the utilities to achieve a 30% reduction in groundwater pumping by the year 2013, and a 60% reduction by 2025. The Fort Bend County Subsidence District (FBSD) requires that all utilities in Fort Bend County submit a ground water reduction plan by January 1, 2008 to reduce groundwater consumption by 30% in 2013 and by 60% in 2025. Being that the conversion to surface water is a major initiative, the following eight (8) districts, Fort Bend County MUD No. 26, Fort Bend County MUD No. 42, Fort Bend County MUD No. 49, Meadow Creek MUD, Palmer Plantation MUD No. 1, Palmer Plantation MUD No. 2, Quail Valley UD, and Thunderbird UD, along with 31 other separate entities, have entered into an agreement with the City of Missouri City to find a regional solution to meeting this need. As a result the City of Missouri City has engaged a consultant to prepare and submit a ground water conservation plan. This City of Missouri City Joint Groundwater Reduction Plan is currently being prepared as a draft that was submitted to all members of the plan in the spring of 2007 and the plan will be submitted to the Fort Bend County Subsidence District by the June, 2008 deadline.

While the FBCSD requires each individual district to be part of a plan for an overall reduction in groundwater consumption, they are not necessarily

required to convert themselves. The FBCSD allows for entities to participate in a group plan in which some of the entities convert to surface water and some do not, and the resultant outcome is an overall reduction meeting the groups' targeted percentages.

The Missouri City Joint GRP (MC J-GRP) divides the 39 participating entities into a northern service area and a southern service area. All eight (8) of the districts are located in the northern service area. The Draft MC J-GRP calls for the conversion to surface water for southern service area and some of the southern portion of the northern service area. As the converting, southern service areas that are not yet built-out, there is some risk associated with this plan as the MC J-GRP is still required to meet the conversion percentages outlined by the Subsidence District, regardless of whether growth projections occur. As a contingency the MC J-GRP has entered into inter-local agreements with every participant in the Group requiring them to convert to surface water if and when directed by the MC J-GRP. The MC J-GRP would convert entities one by one beginning in the southern portion of the southern service area and work in a generally northerly direction.

Initial raw water supplies will be obtained through the City of Missouri City. The City of Missouri City entered into an option water agreement with the Gulf Coast Water Authority (GCWA) in 1997. This agreement allowed the City the "option" to eventually purchase raw water from the GCWA in an amount up to 15MGD. This agreement further required the City to "convert" to a "take-of-pay" contract by 2009. The City is exercising its option to take the entire 15MGD. Based on the current projected demands, this water will allow the MC J-GRP to meet the Subsidence District's conversion requirements through 2028. Beyond 2028, the MC J-GRP will need to obtain additional supplies. Unfortunately, the GCWA does not have any additional water that can be acquired; therefore, alternate sources are being sought. The MC J-GRP has identified several sources for this additional water, including, but not limited to, the City of Houston and the Brazos River Authority. The MC J-GRP is continuing to explore other options and will secure additional water supplies as necessary to meet the MC J-GRP requirements.



The MC J-GRP will rely entirely upon surface water which will be treated by a proposed membrane filtration surface water treatment plant to be owned and operated by Sienna Plantation MUD No. 1. The City of Missouri City will provide the raw surface water through its contract with the Gulf Coast Water Authority. The initial plant size will be 10MGD, which is projected to meet the MC J-GRP's maximum demand through 2019, at which time the plant will be expanded to its ultimate capacity. A portion of the initial converting entities will require additional water supplies immediately. Therefore, rather than continuing to develop groundwater supplies, the project anticipates the new water treatment facility will be online in the second quarter of 2011. The FBCSD requires the 30% reduction be achieved by the year 2013. By converting the initial entities to surface water early, the MC J-GRP will be able to take advantage of early conversion credits offered by the Subsidence District. The early conversion credits enable the initial plant to be sized slightly smaller and to slightly delay the construction of the ultimate facility.

The total estimated project development cost of the initial phase of the project is approximately \$40,500,000. This includes the plant, raw water storage ponds, transmissions pipelines, land and easement acquisition, and engineering and legal services.

Details of the plan such as location of surface water treatment plant, source of surface water, areas to be converted, and costs estimates are not fully determined at this time. A preliminary Business Plan outlining the plan process with possible costs is attached as Appendix D.

Water Reuse

Lake Olympia Permitted wells 357 & 358 pumpage records for water reuse

2006	46,457,200
2005	30,279,700
2004	7,261,400
2003	14,012,400
2002	19,962,000
2001	65198,500
2000	138,500,400

The following text and projections have been extracted from the "City of Missouri City Joint Groundwater Reduction Plan"

Reuse projections identified in the "City of Missouri City Joint Groundwater Reduction Plan" for the Quail Valley Utility District (Lake Olympia) are as follows.

Reuse Pumpage

	Quail Valley Reuse
2009	208,295,701
2011	208,295,703
2013	208,295,705
2015	208,295,707
2020	208,295,712
2025	208,295,717
2028	208,295,720
2030	208,295,722

Reclaimed Water Reuse

The use of reclaimed water for irrigation of golf courses and landscaped areas is a desirable means of not only meeting the guidelines set forth by the Subsidence District, but also an effective means of utilizing limited water resources more effectively. Fortunately, some significant water reuse projects are already operational and have established track-records for usage, and new projects have been planned.

Quail Valley Utility District has an established track record of reuse demands. As a result, it was assumed that their usage will continue into the future in an amount equal to their last years' usage.



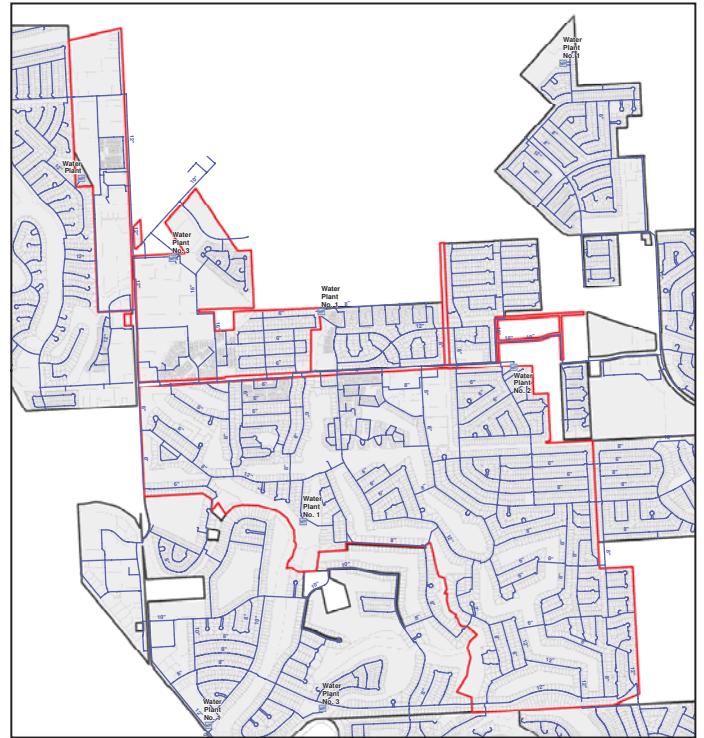
5.1 Water

Quail Valley MUD

Existing System

The Quail Valley MUD water distribution system consists of three (3) water plants, four (4) water wells, five (5) ground storage tanks, and one (1) elevated storage tank. The water facilities were sized based on existing and proposed water demands within District. The system pressure is maintained by the use of a 0.5 Million Gallon elevated storage tank. The water distribution system consists of line sizes from 4" to 16" diameter. A layout of the water system is shown in EX 5.1a.

The water supply is obtained entirely from ground water. The Evangeline Aquifer is the source of the well water. A summary of the facilities at each water plant and isolated water wells that service each plant is summarized in the following table.



Quail Valley
Water Distribution System

Exhibit 5.1a

Analysis of System

A dynamic water model using KY pipe was used to model the water system and determine the adequacy and efficiency of the system. Using existing con-

Table 5.1a

QUAIL VALLEY UTILITY DISTRICT					
Three Plants Operate as One System					
QUAIL VALLEY UTILITY DISTRICT WATER PLANT No. 1					
2935 Blue Lakes					
	Well	Ground Storage Tanks	Booster Pumps	Elevated Storage	Hydro Tank
	(GPM)	(Gallons)	(GPM)	(Gallons)	(Gallons)
	No.1 2,021	No.1 225,000	No.1 1,000	EST at Plant No.3	
	No.2 510	No.2 225,000	No.2 1,000		
		No.3 225,000	No.3 1,000		
			No.4 1,000		
QUAIL VALLEY UTILITY DISTRICT WATER PLANT No. 2					
2143 Cartwright Rd.					
	Well	Ground Storage Tanks	Booster Pumps	Elevated Storage	Hydro Tank
	(GPM)	(Gallons)	(GPM)	(Gallons)	(Gallons)
	No.3 1,511	No.1 750,000	No.1 1,000	EST at Plant No.3	
			No.2 1,000		
			No.3 1,000		
Emergency Generator Serves Booster Pump No.1					



QUAIL VALLEY UTILITY DISTRICT WATER PLANT No.3					
1930 Rothwell					
	Well	Ground Storage Tanks	Booster Pumps	Elevated Storage	Hydro Tank
	(GPM)	(Gallons)	(GPM)	(Gallons)	(Gallons)
	No.4 2,332	No.1 1,000,000	No.1 1,000	500,000	
			No.2 1,000		
			No.3 1,000		
			No.4 1,000		
Emergency Right Angle Drive Serves Well No.4					

struction plans, waterline sizes, gate valves, flushing valves, water plants, water wells and elevated storage tanks were input to the GIS data base in order to run the model. The model is based on full development of the District. For areas that are not fully developed, demand was assigned to undeveloped acreage using the planning and design criteria shown in the Planning and Design Criteria Table found on page 3 - 1 of this report.

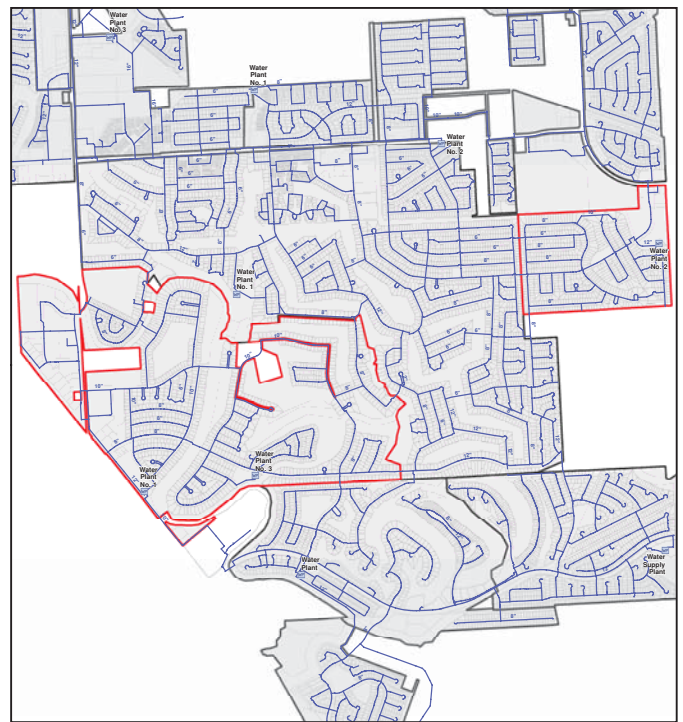
Proposed Improvements

The results of the water model have shown that there is no current need for any improvements at the water plants. At this time no water lines appear to be undersized.

Thunderbird UD

Existing System

The Thunderbird UD operates two separate systems. Thunderbird UD System No. 1 consists of two (2) water plants, two (2) water wells, and three (3) ground storage tanks. The water facilities were sized based on existing and proposed water demands within District. The system pressure is maintained by the use of a hydropneumatic tank. The System No.1 water distribution system consists of line sizes from 4" to 12" diameter. Thunderbird UD System No. 2 consists of one (1) water plant, one (1) water well, and one (1) ground storage tank. The water facilities were sized based on existing and proposed water demands within District. The system pressure is maintained by the use of (2) hydropneumatic tanks. The System No.2 water distribution system consists of line sizes from 4" to 12" diameter. A layout of the water system is shown in Exhibit EX 5.1b



Thunderbird MUD
 Water Distribution System

Exhibit 5.1b

Both water systems water supply is obtained entirely from ground water. The Evangeline Aquifer is the source of the well water. A summary of the facilities at each system and water plant is summarized in the table on the following page.

Analysis of System

A dynamic water model using KY pipe was used to model the water system and determine the adequacy and efficiency of the system. Using existing construction plans, waterline sizes, gate valves, flushing



Table 5.1b

THUNDERBIRD UTILITY DISTRICT						
Plants No. 1 and No.2 Operate as One System						
THUNDERBIRD UTILITY DISTRICT WEST WATER PLANT No.1						
6605 Highway 6						
		Well	Ground Storage Tanks	Booster Pumps	Elevated Storage	Hydro Tank
		(GPM)	(Gallons)	(GPM)	(Gallons)	(Gallons)
		No.1 1,327	No.1 430,000	No.1 650		24,000
			No.2 210,000	No.2 650		
				No.3 650		
				No.4 650		
Emergency Generator Serves Well and Booster Pump No.1						
THUNDERBIRD UTILITY DISTRICT EAST WATER PLANT No.2						
3003 Glenn Lakes Dr.						
		Well	Ground Storage Tanks	Booster Pumps	Elevated Storage	Hydro Tank
		(GPM)	(Gallons)	(GPM)	(Gallons)	(Gallons)
		No.1 947	No.1 300,000	No.1 500		20,000
				No.2 500		
				No.3 500		
				No.4 500		
Emergency Generator Serves Well and Booster Pump No.1						
THUNDERBIRD UTILITY DISTRICT NORTH WATER PLANT						
1455 Turtle Creek						
		Well	Ground Storage Tanks	Booster Pumps	Elevated Storage	Hydro Tank
		(GPM)	(Gallons)	(GPM)	(Gallons)	(Gallons)
		No.1 717	No.1 500,000	No.1 650		20,000
				No.2 650		
				No.3 650		
Emergency Generator Serves Well and Booster Pump No.1						

valves, water plants, water wells and elevated storage tanks were input to the GIS data base in order to run the model. The model is based on full development of the District. For areas that are not fully developed, demand was assigned to undeveloped acreage using the planning and design criteria shown in the Planning and Design Criteria Table found on page 3 - 1 of this report.

Proposed Improvements

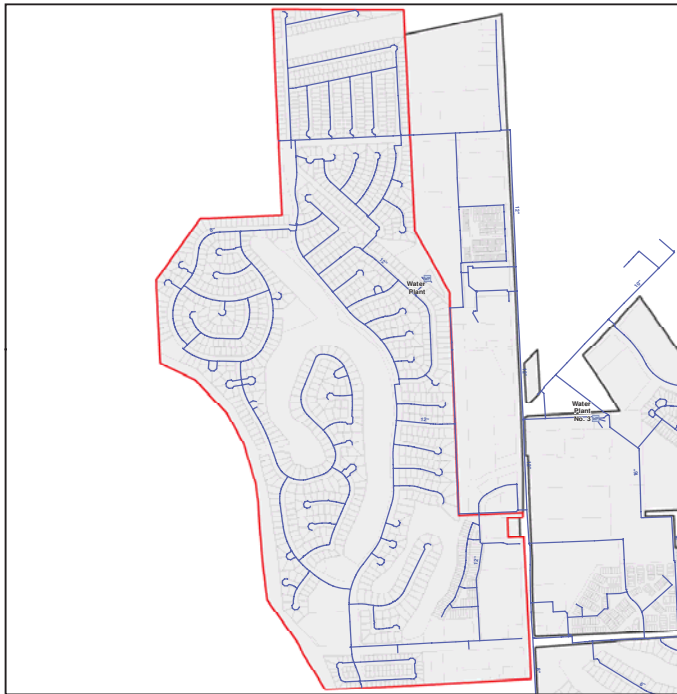
The results of the water model have shown that there is no current need for any improvements at

the water plants. At this time no water lines appear to be undersized.

Fort Bend County MUD No. 42

Existing System

The Fort Bend County MUD No42 water distribution system consists of one (1) water plant, one (1) water well, and one (1) ground storage tank. The water facilities were sized based on existing and proposed water demands within District. The system pressure is maintained by the use of a hydropneumatic



Fort Bend County MUD 42
 Water Distribution System

Exhibit 5.1c

model the water system and determine the adequacy and efficiency of the system. Using existing construction plans, waterline sizes, gate valves, flushing valves, water plants, water wells and elevated storage tanks were input to the GIS data base in order to run the model. The model is based on full development of the District. For areas that are not fully developed, demand was assigned to undeveloped acreage using the planning and design criteria shown in the Planning and Design Criteria Table found on page 3 - 1 of this report.

Proposed Improvements

The results of the water model have shown that there is no current need for any improvements at the water plants. At this time no water lines appear to be undersized.

Palmer Plantation MUD Nos. 1 & 2, and Fort Bend County MUD No. 49

Existing System

The Palmer Plantation MUD Nos. 1&2 water distribution system serves both districts as well as Fort Bend County MUD No.49. The water distribution system

Table 5.1c

FORT BEND COUNTY MUNICIPAL UTILITY DISTRICT No.42						
FORT BEND COUNTY MUD No.42 Water Plant No.1						
1819 1/2 Lakewinds						
	Well	Ground Storage Tanks	Booster Pumps	Elevated Storage	Hydro Tank	
	(GPM)	(Gallons)	(GPM)	(Gallons)	(Gallons)	
	No.1 1,589	No.1 420,000	No.1 750		No.1 35,000	
			No.2 750			
			No.3 750			
Emergency Right Angle Drive Serves Well No.1						

tank. The water distribution system consists of line sizes from 4" to 12" diameter. A layout of the water system is shown in EX 5.1c.

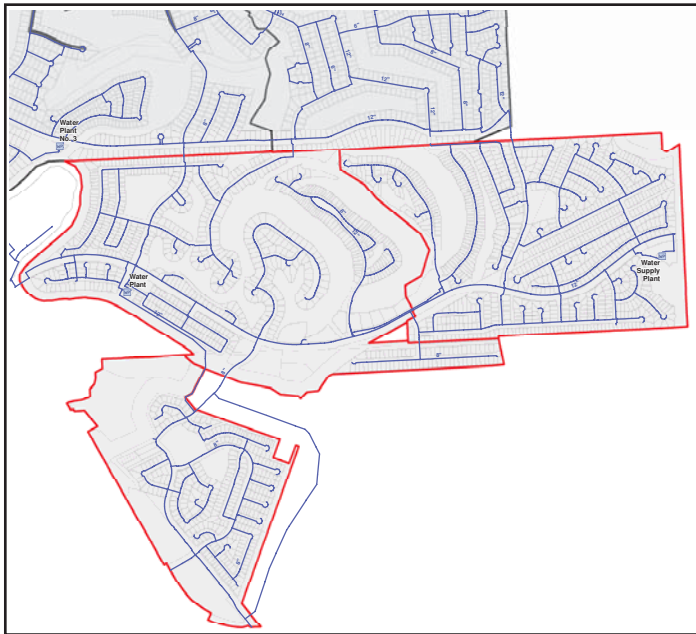
The water supply is obtained entirely from ground water. The Evangeline Aquifer is the source of the well water. A summary of the facilities at each water plant and isolated water wells that service each plant is summarized in the table on the following page.

Analysis of System

A dynamic water model using KY pipe was used to

consists of two (2) water plants, two (2) water wells, and two (2) ground storage tanks. The water facilities were sized based on existing and proposed water demands within District. The system pressure is maintained by the use of three (3) hydropneumatic tanks. The water distribution system consists of line sizes from 4" to 12" diameter. A layout of the water system is shown in Exhibit EX 5.1d.

The water supply is obtained entirely from ground water. The Evangeline Aquifer is the source of the well water. A summary of the facilities at each wa-



Palmer Plantation MUD 01
 Palmer Plantation MUD 02
 Fort Bend County MUD 49
 Water Distribution System

Exhibit 5.1d

ter plant and isolated water wells that service each plant is summarized in table on the following page. (Palmer Plantation MUD No. 1 and 2)

Analysis of System

A dynamic water model using KY pipe was used to model the water system and determine the adequacy and efficiency of the system. Using existing construction plans, waterline sizes, gate valves, flushing valves, water plants, water wells and elevated storage tanks were input to the GIS data base in order to run the model. The model is based on full development of the District. For areas that are not fully developed, demand was assigned to undeveloped acreage using the planning and design criteria shown in the Planning and Design Criteria Table found on page 3 - 1 of this report.

Proposed Improvements

The results of the water model have shown that there is no current need for any improvements at the water plants. At this time no water lines appear to be undersized.

Table 5.1d

PALMER PLANTATION MUNICIPAL UTILITY DISTRICT No.1 and No.2						
Plants No.1 and No.2 Operate as One System Serving Palmer Plantation MUDs No.1 & No.2 and FBCMUD No.49						
PALMER PLANTATION MUD No.1 WATER PLANT No.1						
4335 Crow Valley Dr.						
		Well	Ground Storage Tanks	Booster Pumps	Elevated Storage	Hydro Tank
		(GPM)	(Gallons)	(GPM)	(Gallons)	(Gallons)
		No.1 1,515	No.1 420,000	No.1 1,000		No.1 20,000
				No.2 1,000		No.2 20,000
				No.3 1,000		
				No.4 1,000		
Emergency Generator Serves Well and Booster Pump No.1						
PALMER PLANTATION MUD No.2 WATER PLANT No.2						
1603 Lake Olympia Parkway						
		Well	Ground Storage Tanks	Booster Pumps	Elevated Storage	Hydro Tank
		(GPM)	(Gallons)	(GPM)	(Gallons)	(Gallons)
		No.1 1,214	No.1 500,000	No.1 1,000		20,000
				No.2 1,000		
				No.3 1,000		
Emergency Right Angle Drive Serves Well No.1						



Meadow Creek MUD

Existing System

The Meadow Creek MUD water distribution system consists of one (1) water plant, one (1) water well, and one (1) ground storage tank. The water facilities were sized based on existing and proposed water demands within District. The system pressure is maintained by the use of a hydropneumatic tank. The water distribution system consists of line sizes from 4" to 12" diameter. A layout of the water system is shown in Exhibit EX 5.1e.

The water supply is obtained entirely from ground water. The Evangeline Aquifer is the source of the well water. A summary of the facilities at each water plant and isolated water wells that service each plant is summarized in the following table. (Meadow Creek Utility District)

Analysis of System

A dynamic water model using KY pipe was used to model the water system and determine the adequacy and efficiency of the system. Using existing construction plans, waterline sizes, gate valves, flushing valves, water plants, water wells and elevated storage tanks were input to the GIS data base in order to run the model. The model is based on full development of the District. For areas that are not fully developed, demand was assigned to undeveloped acreage using the planning and design criteria shown in the Planning and Design Criteria Table found on page 3 - 1 of this report.



Meadow Creek MUD
 Water Distribution System

Exhibit 5.1e

MEADOWCREEK UTILITY DISTRICT						
MEADOWCREEK UTILITY DISTRICT WATER PLANT No. 1						
3100 Northpark						
	Well	Ground Storage Tanks	Booster Pumps	Elevated Storage	Hydro Tank	
	(GPM)	(Gallons)	(GPM)	(Gallons)	(Gallons)	
	No. 1 804	No. 1 300,000	No. 1 750		No. 1 20,000	
			No. 2 750			
			No. 3 750			
			No. 4 750			
Emergency Generator Serves Well and Booster Pump No. 1						

age tanks were input to the GIS data base in order to run the model. The model is based on full development of the District. For areas that are not fully developed, demand was assigned to undeveloped acreage using the planning and design criteria shown in the Planning and Design Criteria Table found on page 3 - 1 of this report.

Proposed Improvements

The results of the water model have shown that there is no current need for any improvements at the water plants. At this time no water lines appear to be undersized.



Fort Bend County MUD No. 26

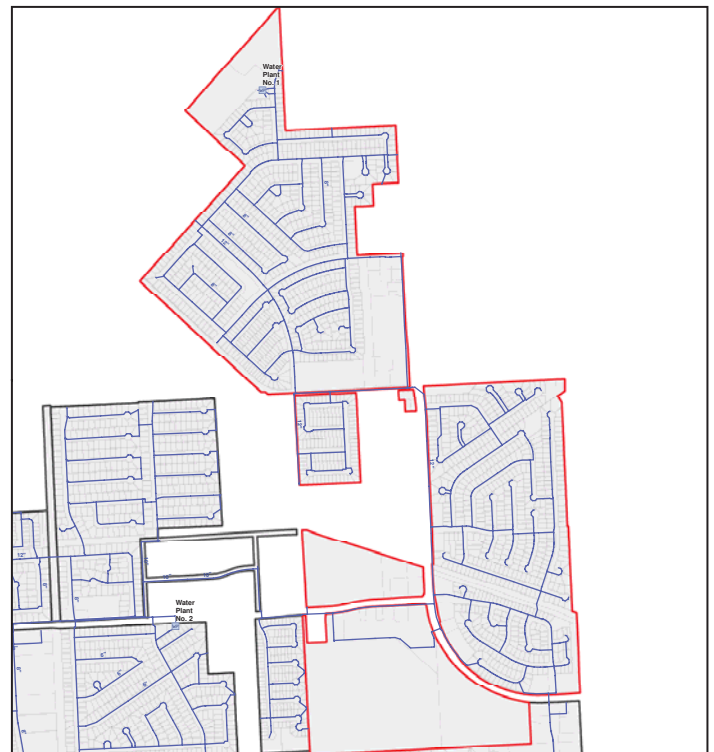
Existing System

The Fort Bend County MUD No.26 water distribution system consists of one (1) water plant, two (2) water wells, and one (1) ground storage tank. The water facilities were sized based on existing and proposed water demands within District. The system pressure is maintained by the use of two (2) hydropneumatic tanks. The water distribution system consists of line sizes from 4" to 12" diameter. A layout of the water system is shown in EX 5.1f.

The water supply is obtained entirely from ground water. The Evangeline Aquifer is the source of the well water. A summary of the facilities at each water plant and isolated water wells that service each plant is summarized in the following table. (Fort Bend County MUD 26)

Analysis of System

A dynamic water model using KY pipe was used to model the water system and determine the adequacy and efficiency of the system. Using existing construction plans, waterline sizes, gate valves, flushing valves, water plants, water wells and elevated storage tanks were input to the GIS data base in order to run the model. The model is based on full development of the District. For areas that are not fully developed, demand was assigned to undeveloped acreage using the planning and design criteria shown in the Planning and Design Criteria Table found on page 3 - 1 of this report.



Fort Bend County MUD 26
 Water Distribution System

Exhibit 5.1f

Proposed Improvements

The results of the water model have shown that there is no current need for any improvements at the water plants. At this time no water lines appear to be undersized.

Table 5.1f

FORT BEND COUNTY MUNICIPAL UTILITY DISTRICT No. 26						
FORT BEND COUNTY MUD No.26 Water Plant No. 1						
1812 Freshmeadow Dr.						
		Well	Ground Storage Tanks	Booster Pumps	Elevated Storage	Hydro Tank
		(GPM)	(Gallons)	(GPM)	(Gallons)	(Gallons)
		No.1 1,031	No.1 500,000	No.1 250		No.1 20,000
		No.2 193		No.2 750		No.2 20,000
				No.3 1,000		
Emergency Right Angle Drive Serves Well No.1						
Emergency Right Angle Drive Serves Booster Pump No.3						



5.2 Wastewater (Sanitary) Lift Stations

Upon completion of the sanitary analysis (mentioned in section 3.1), LJA performed a review of the existing and future connections within all eight reported MUDs. The analysis compared the size, capacity and slope of the existing sanitary sewer lines to determine if any of the lines are or will be undersized. This analysis was extended to the additional facilities of Lift Stations and Treatment Plants.

Sanitary Lift Stations

LJA completed a review of the existing sanitary sewer lift stations within all 8 MUDs and compared them to current TCEQ regulations for sizing of the lift stations. All lift stations were designed and constructed using current design standards of the time and approved by the TCEQ, TNRCC, or TWC, the current agency at the construction.

Quail Valley Lift station table (Table 2.3) shows by district; pump information, Equivalent Single Family Connections (ESFC), the designed and actual number of ESFC the station is currently serving.

Quail Valley MUD

Quail Valley MUD currently operates eleven (11) lift stations. The lift stations range in size from 180 ESFC to 3,672 ESFC. The operator is not encountering performance issues regarding these lift stations. All lift stations were designed and constructed using current design standards of the time and approved by the TCEQ, TNRCC, or TWC, the current agency at the construction.

Upon completion of the Sanitary Analysis 5 lift stations were identified as undersized compared to today's design standards. These 6 lift stations are included in the 5 Year Revolving Rehabilitation Plan. The 6 lift stations are listed below (See Table 5.4).

Quail Valley MUD Lift Station No. 3 (QVMLS03) / Design ESFC = 686 - Actual ESFC = 720
Quail Valley MUD Lift Station No. 5 (QVMLS05) / Design ESFC = 1687 - Actual ESFC = 1772
Quail Valley MUD Lift Station No. 8 (QVMLS08) / Design ESFC = 450 - Actual ESFC = 511
Quail Valley MUD Lift Station No. 9 (QVMLS09) / Design ESFC = 225 - Actual ESFC = 355
Quail Valley MUD Lift Station No. 10 (QVMLS10) /

Design ESFC = 421 - Actual ESFC = 573
Quail Valley MUD Lift Station No. 11 (QVMLS11) / Design ESFC = 180 - Actual ESFC = 235

Thunderbird UD

Thunderbird UD currently operates ten (10) lift stations. The lift stations range in size from 168 ESFC to 956 ESFC. The operator is not encountering performance issues regarding these lift stations. All lift stations were designed and constructed using current design standards of the time and approved by the TCEQ, TNRCC, or TWC, the current agency at the construction.

Upon completion of the Sanitary Analysis 3 lift stations were identified as undersized compared to today's design standards. These 3 lift stations are included in the 5 Year Revolving Rehabilitation Plan. The 3 lift stations are listed below (See table 5.4).

Thunderbird UD Lift Station No. 1 (TBMLS01) / Design ESFC = 956 - Actual ESFC = 1329
Thunderbird UD Lift Station No. 3 (TBMLS03) / Design ESFC = 174 - Actual ESFC = 207
Thunderbird UD Lift Station No. 10 (TBMLS10) / Design ESFC = 337 - Actual ESFC = 410

Fort Bend County MUD No. 42

Fort Bend County MUD No. 42 currently operates four (4) lift stations. The lift stations range in size from 243 ESFC to 2,475 ESFC. The operator is not encountering performance issues regarding these lift stations. All lift stations were designed and constructed using current design standards of the time and approved by the TCEQ, TNRCC, or TWC, the current agency at the construction.

Upon completion of the Sanitary Analysis 1 lift station was identified as undersized compared to today's design standards. This 1 lift station is included in the 5 Year Revolving Rehabilitation Plan. The 1 lift station is listed below (See table 5.4).

Fort Bend MUD No. 42 Lift Station 3 (FB42LS3) / Design ESFC = 243 - Actual ESFC = 381

Palmer Plantation MUD No. 1

Palmer Plantation MUD No. 1 currently operates six (6) lift stations. The lift stations range in size from 112 ESFC to 675 ESFC. The operator is not encountering



tering performance issues regarding these lift stations. All lift stations were designed and constructed using current design standards of the time and approved by the TCEQ, TNRCC, or TWC, the current agency at the construction.

Palmer Plantation MUD No. 2

Palmer Plantation MUD No.2 currently operates two (2) lift stations. The lift stations range in size from 106 ESFC to 675 ESFC. The operator has not encountered any performance issues regarding these lift stations.

Meadow Creek MUD

Meadow Creek MUD currently operates three (3) lift stations. The lift stations range in size from 144 ESFC to 483 ESFC. The operator is not encountering performance issues regarding these lift stations. All lift stations were designed and constructed using current design standards of the time and approved by the TCEQ, TNRCC, or TWC, the current agency at the construction.

Upon completion of the Sanitary Analysis 3 lift stations were identified as undersized compared to today's design standards. These 3 lift stations are included in the 5 Year Revolving Rehabilitation Plan. The 3 lift stations are listed below (See table 5.4).

Meadow Creek MUD Lift Station No. 1 (MCMLS01) / Design ESFC = 336 - Actual ESFC = 354

Meadow Creek MUD Lift Station No. 2 (MCMLS02) / Design ESFC = 483 - Actual ESFC = 553

Meadow Creek MUD Lift Station No. 3 (MCMLS03) / Design ESFC = 144 - Actual ESFC = 203

Fort Bend County MUD No. 49

Fort Bend County MUD No. 49 currently operates one (1) lift station. The current ESFC is 202 for this lift station. The operator is not encountering performance issues regarding this lift station. This lift station was designed and constructed using current design standards of the time and approved by the TCEQ, TNRCC, or TWC, the current agency at the construction.

Fort Bend County MUD No. 26

Fort Bend County MUD No. 26 does not currently operate any lift stations.

Final Analysis of Lift Stations

The above 13 Lift Stations determined to be undersized by today's standards are listed in table 5.4 "5 Year Revolving Rehabilitation Plan". QVUD has committed to upgrading these facilities by implementing a 5 Year Revolving Rehabilitation Plan to upgrade existing facilities and plan for future growth.

5.3 Wastewater (Sanitary) Conveyance Lines

Upon completion of the sanitary analysis (mentioned in section 3.1), LJA performed a review of the existing and future connections within all eight reported MUDs. The analysis compared the size, capacity and slope of the existing sanitary sewer lines to determine if any of the lines are or will be undersized.

Conveyance Lines

LJA completed a review of the existing sanitary conveyance lines within all 8 MUDs and compared them to current TCEQ regulations for sizing and capacities. All lines were designed and constructed using current design standards of the time and approved by the TCEQ, TNRCC, or TWC, the current agency at the construction.

Quail Valley MUD

QVUD currently maintains approximately 196,000 linear feet of sanitary lines within Quail Valley Utility District. Within this district the analysis has isolated 3 sections of lines that are by today's standards undersized. QVUD has not experienced any difficulties or issues concerning these lines but are committed to performing upgrades to these lines to better serve its residents as needed. These sections of line are included in QVUD's 5 Year Revolving Rehabilitation Plan in which one section "Quail Valley La Quinta" will be accelerated and the remaining 2 will be rotated within the plan to accommodate district budgeting.

Quail Valley La Quinta

In the development of Quail Valley La Quinta, there are approximately 2,890 linear feet of sanitary sewer lines that are undersized. This total linear footage includes 1,980 linear feet of 8" PVC sanitary sewer, 755 linear feet of 10" PVC sanitary sewer, and 155 linear feet of 12" PVC sanitary sewer that is recommended to be replaced due to undersized capacity. This includes two separate segments of sanitary



sewer, both out falling into the lift station identified as QVMLS07. The first segment begins with OID 2995 and runs north along Kiamesha Drive, consisting of OID 2996, 2991, 2992, and 2990, then turns east onto Boca Raton Drive. The continued segment includes OID 2812, 2813, 2811, and 2765 along Boca Raton Drive before out falling into the lift station. The second segment of undersized sanitary sewer begins on Cypress Point Drive with OID 2808 and runs south and west, consisting of OID 2809, 2807 and 2802. The segment then turns south onto Boca Raton Drive with OID 2803 then ties into the manholes between OID 2811 and 2765.

The existing 8" sanitary sewer along Kiamesha Drive and Boca Raton Drive ultimately serves 531 connections, and, according to the TCEQ design criteria, an 8" sanitary sewer lines can serve a maximum of 322 connections at a velocity of 2.0 feet per second,

with a minimum slope of 0.33%. The existing 10" sanitary sewer along Cypress Point Drive ultimately serves 969 connections, and, according to the TCEQ design criteria, a 10" sanitary sewer line serves a maximum of 503 connections at a velocity of 2.0 feet per second, with a minimum slope of 0.25%. The short span of existing 12" sanitary sewer serves 1,507 connections, and, according to TCEQ design criteria, a 12" sanitary sewer line can serve a maximum of 725 connections at a velocity of 2.0 feet per second, with a minimum slope of 0.19%.

Our recommendation includes replacing the existing 8" sanitary sewer with 10" sanitary sewer, replace the existing 10" sanitary sewer with 12" sanitary sewer, and replace the existing 12" sanitary sewer with 16" sanitary sewer. The engineer's estimate for this sanitary sewer line replacement totals \$314,418.00. (See Table 5.3a)

Table 5.3a

QUAIL VALLEY UTILITY DISTRICT					
SANITARY SEWER ANALYSIS					
Quail Valley M.U.D. / La Quinta					
	ITEM	UNIT	QUANTITY	UNIT COST	TOTAL COST
1	Remove existing 8" PVC sanitary sewer (all depths)	LF	1978	\$26.00	\$51,428.00
2	Remove existing 10" PVC sanitary sewer (all depths)	LF	755	\$28.00	\$21,140.00
3	Remove existing 12" PVC sanitary sewer (all depths)	LF	155	\$30.00	\$4,650.00
4	Bypass sanitary sewer line using a portable lift station, pumping from existing MH's to wet well of lift station	DAYS	10	\$1,500.00	\$15,000.00
5	10" PVC sanitary sewer line (all depths)	LF	1041	\$42.00	\$43,722.00
6	12" PVC sanitary sewer line (all depths)	LF	937	\$50.00	\$46,850.00
7	16" PVC sanitary sewer line (all depths)	LF	910	\$60.00	\$54,600.00
8	Core into existing MH for expansion from existing smaller sanitary sewer lines to proposed larger sanitary sewer lines	EA	9	\$1,250.00	\$11,250.00
9	Replace Longside Sanitary Sewer Leads	LF	480	\$28.00	\$13,440.00
10	Replace Shortside Sanitary Sewer Leads	EA	14	\$475.00	\$6,650.00
11	Dewatering	LF	1070	\$25.00	\$26,750.00
12	Wet sand construction	LF	1070	\$15.00	\$16,050.00
13	Trench safety	LF	2888	\$1.00	\$2,888.00
				TOTAL	\$314,418.00



QVUD will also anticipate an additional 10% contingency variable for inflation and unforeseen issues in addition to a 15% engineering fee based on overall construction cost.

Quail Valley El Dorado

In the residential development Quail Valley El Dorado, there are approximately 1,036 linear feet of 10" sanitary sewer line that are undersized. The segment begins with OID 3184 and runs east along El Dorado Boulevard, consisting of OID 3186, 3188, 3190, 3191, 3192, and 3193. After OID 3193 the existing sanitary sewer lines increase to a 24" sanitary sewer line, which is large enough to serve the existing connections.

The existing 10" sanitary sewer along El Dorado Boulevard ultimately serves 890 connections, and, according to the TCEQ design criteria, a 10" sanitary sewer line can serve a maximum of 503 connections at a velocity of 2.0 feet per second, with a minimum slope of 0.25%.

Our recommendation includes replacing the existing

10" sanitary sewer mentioned above with 12" sanitary sewer. The engineer's estimate for this sanitary sewer line replacement totals \$138,769.00. (See Table 5.3b)

QVUD will also anticipate an additional 10% contingency variable for inflation and unforeseen issues in addition to a 15% engineering fee based on overall construction cost.

Quail Valley Cottages and El Dorado

In the residential developments of Quail Valley Cottages and Quail Valley El Dorado, there are approximately 1,746 linear feet of sanitary sewer lines that are undersized. This total linear footage includes 403 linear feet of 12" PVC sanitary sewer, 1,343 linear feet of 15" PVC sanitary sewer that is recommended to be replaced due to undersized capacity. The first segment begins with OID 3063 and runs south along La Quinta Drive, consisting of OID 3272, 3273, and 3147, then turns west onto El Dorado Boulevard. The segment along El Dorado Boulevard includes OID 3118 and 3119.

The existing 12" sanitary sewer along La Quinta Drive is ultimately serving 1,816 connections, and,

Table 5.3b

QUAIL VALLEY UTILITY DISTRICT					
SANITARY SEWER ANALYSIS					
Quail Valley M.U.D. / El Dorado					
	ITEM	UNIT	QUANTITY	UNIT COST	TOTAL COST
1	Remove existing 10" PVC sanitary sewer (all depths)	LF	1036	\$28.00	\$29,008.00
2	Bypass sanitary sewer line using a portable lift station, pumping from existing MH's to wet well of lift station	DAYS	10	\$1,500.00	\$15,000.00
3	12" PVC sanitary sewer line (all depths)	LF	937	\$50.00	\$46,850.00
4	Core into existing MH for expansion from existing smaller sanitary sewer lines to proposed larger sanitary sewer lines	EA	5	\$1,250.00	\$6,250.00
5	Replace Longside Sanitary Sewer Leads	LF	660	\$28.00	\$18,480.00
6	Replace Shortside Sanitary Sewer Leads	EA	3	\$475.00	\$1,425.00
7	Dewatering	LF	518	\$25.00	\$12,950.00
8	Wet sand construction	LF	518	\$15.00	\$7,770.00
9	Trench safety	LF	1036	\$1.00	\$1,036.00
				TOTAL	\$138,769.00



according to the TCEQ design criteria, a 12" sanitary sewer line can serve a maximum of 725 connections at a velocity of 2.0 feet per second, with a minimum slope of 0.19%. The existing 15" sanitary sewer along El Dorado Boulevard ultimately serves 2,072 connections, and, according to the TCEQ design criteria, a 15" sanitary sewer line serves a maximum of 1,132 connections at a velocity of 2.0 feet per second, with a minimum slope of 0.14%.

Our recommendation includes replacing both the existing 12" sanitary sewer and 15" sanitary sewer mentioned above with 20" sanitary sewer. The engineer's estimate for this sanitary sewer line replacement totals \$201,963.00. (See Table 5.3c)

QVUD will also anticipate an additional 10% contingency variable for inflation and unforeseen issues in addition to a 15% engineering fee based on overall construction cost.

Thunderbird UD

QVUD currently maintains approximately 122,500 linear feet of sanitary lines within Thunderbird UD. All lines meet current standards and the operator is not encountering any performance issues.

Fort Bend County MUD No. 42

QVUD currently maintains approximately 77,000 lin-

ear feet of sanitary lines within FBCMUD 42.

In the residential development of Lakeshore Point at Brightwater, Section one, there is approximately 122 linear feet of 8" sanitary sewer lines that are under-sized. The segment begins with OID 5308 and runs west from Lakefront Drive to Lift Station # FB42LS4, consisting of OID 5304.

The existing 8" sanitary sewer ultimately serves 424 connections, and, according to the TCEQ design criteria, an 8" sanitary sewer line can serve a maximum of 322 connections at a velocity of 2.0 feet per second, with a minimum slope of 0.33%.

Our recommendation includes replacing the existing 8" sanitary sewer mentioned above with 10" sanitary sewer. The engineer's estimate for this sanitary sewer line replacement totals \$21,990.00. (See Table 5.3d)

QVUD will also anticipate an additional 10% contingency variable for inflation and unforeseen issues in addition to a 15% engineering fee based on overall construction cost.

Palmer Plantation MUD No. 1

QVUD currently maintains approximately 43,500 linear feet of sanitary lines within PPMUD 1. All lines

Table 5.3c

QUAIL VALLEY UTILITY DISTRICT					
SANITARY SEWER ANALYSIS					
Quail Valley M.U.D. / Valley Cottages & El Dorado					
	ITEM	UNIT	QUANTITY	UNIT COST	TOTAL COST
1	Remove existing 12" PVC sanitary sewer (all depths)	LF	403	\$30.00	\$12,090.00
2	Remove existing 15" PVC sanitary sewer (all depths)	LF	1343	\$35.00	\$47,005.00
3	Bypass sanitary sewer line using a portable lift station, pumping from existing MH's to wet well of lift station	DAYS	15	\$1,500.00	\$22,500.00
4	20" PVC sanitary sewer line (all depths)	LF	1041	\$72.00	\$74,952.00
7	Core into existing MH for expansion from existing smaller sanitary sewer lines to proposed larger sanitary sewer lines	EA	7	\$1,250.00	\$8,750.00
8	Dewatering	LF	873	\$25.00	\$21,825.00
9	Wet sand construction	LF	873	\$15.00	\$13,095.00
10	Trench safety	LF	1746	\$1.00	\$1,746.00
				TOTAL	\$201,963.00



Table 5.3d

QUAIL VALLEY UTILITY DISTRICT					
SANITARY SEWER ANALYSIS					
Ft. Bend County M.U.D. 42 / Lakeshore Point at Brightwater					
ITEM		UNIT	QUANTITY	UNIT COST	TOTAL COST
1	Remove existing 8" PVC sanitary sewer (all depths)	LF	110	\$26.00	\$2,860.00
2	Bypass sanitary sewer line using a portable lift station, pumping from existing MH #__ to wet well of lift station	DAYS	5	\$1,500.00	\$7,500.00
3	10" PVC sanitary sewer line (all depths)	LF	110	\$42.00	\$4,620.00
4	Core into existing MH for expansion of an 8" sanitary line to a 10" sanitary line	EA	2	\$1,250.00	\$2,500.00
5	Dewatering	LF	110	\$25.00	\$2,750.00
6	Wet sand construction	LF	110	\$15.00	\$1,650.00
7	Trench safety	LF	110	\$1.00	\$110.00
				TOTAL	\$21,990.00

meet current standards and the operator is not encountering any performance issues.

Palmer Plantation MUD No. 2

QVUD currently maintains approximately 390,000 linear feet of sanitary lines within PPMUD 2. All lines meet current standards and the operator is not encountering any performance issues.

Meadow Creek MUD

QVUD currently maintains approximately 47,000 linear feet of sanitary lines within Meadow Creek MUD. All lines meet current standards and the operator is not encountering any performance issues.

Fort Bend County MUD No. 49

QVUD currently maintains approximately 23,500 linear feet of sanitary lines within FBCMUD 49. All lines meet current standards and the operator is not encountering any performance issues.

Fort Bend County MUD No. 26

QVUD currently maintains approximately 82,000 linear feet of sanitary lines within FBCMUD 26. All lines meet current standards and the operator is not encountering any performance issues.

Final analysis of sanitary conveyance lines

The 4 isolated sections of sanitary lines that have been determined to be undersized by today's standards are listed in table 5.4 "5 Year Revolving Rehabilitation Plan". QVUD has committed to upgrading

these lines by implementing a 5 Year Revolving Rehabilitation Plan allowing QVUD to accommodate both district budgets and the residents they serve.

In addition to the conveyance line capacity review, the maintenance records were mapped by category within all eight districts. The districts have not experienced issues beyond the typical maintenance routines for the newer and older districts. The Meadow Creek MUD and the older portions of Quail Valley MUD have experienced a higher ratio of maintenance repairs compared to the other districts, but nothing beyond the typical experience of comparable districts.

All maintenance records can be found in GIS format in QVUD_Maintenance_Records.mdb on CD #1. The data catalogs the date, location and type of maintenance.

5.4 - 5 Year Revolving Rehabilitation Plan with Estimated Costs

Upon the completion of the Sanitary and Water analysis performed under the Texas Water Development Board grant funding contract number 0604830590, QVUD has isolated 13 Lift Stations and 6696 linear feet of sanitary conveyance lines that have been identified as in need of rehabilitation or improvements. The water system has been determined adequate and shows no need for rehabilitation or improvements.



QVUD has derived a 5 year Revolving Rehabilitation Plan to facilitate these improvements (see table 5.4). These improvements have been distributed over a revolving 5 year cycle to accommodate the individual districts existing and projected funds.

QVUD anticipates a commitment of \$60,000 per Lift Station upgrade (\$780,000 total) and an estimated total of \$700,000 for sanitary conveyance line upgrades.

QVUD is committed to improving these facilities and lines to adequately serve its residents. QVUD

has chosen to utilize a Revolving Rehabilitation Plan allowing the opportunity to address facility issues as they arise and require an accelerated path to repair. The order in which QVUD will address their facilities is based on severity (design ESFC - actual ESFC) and number of residents being served by these facilities.

The table below "table.5.4 - 5 Year Revolving Rehabilitation Plan" addresses the order and estimated costs associated with the facility rehabilitation.

Table 5.4

5 YEAR REHABILITATION PLAN							
LIFT STATION ID	ACTUAL NAME	PUMP INFO	ESFC DESIGN*	ESFC ACTUAL	5 YEAR PLAN	ESTIMATED COST	EXHIBIT #
	QUAIL VALLEY UTILITY DISTRICT						
QVMLS03	QUAIL VALLEY MUD LIFT STATION No3	2@ 610	686	720	YEAR 2	\$60,000	5.2a
QVMLS05	QUAIL VALLEY MUD LIFT STATION No5	3@ 750	1687	1772	YEAR 1	\$60,000	5.2b
QVMLS08	QUAIL VALLEY MUD LIFT STATION No8	2@ 400	450	511	YEAR 4	\$60,000	5.2c
QVMLS09	QUAIL VALLEY MUD LIFT STATION No9	2@ 200	225	355	Year 5	\$60,000	5.2d
QVMLS10	QUAIL VALLEY MUD LIFT STATION No10	2@ 375	421	573	YEAR 3	\$60,000	5.2e
QVMLS11	QUAIL VALLEY MUD LIFT STATION No11	2@ 160	180	235	YEAR 5	\$60,000	5.2f
					TOTAL	\$360,000	
	THUNDERBIRD UD						
TBMLS01	THUNDERBIRD UD LIFT STATION No1	2@ 850	956	1329	YEAR 1	\$60,000	5.2g
TBMLS03	THUNDERBIRD UD LIFT STATION No3	2@ 155	174	207	YEAR 5	\$60,000	5.2h
TBMLS10	THUNDERBIRD UD LIFT STATION No10	2@ 300	337	440	YEAR 4	\$60,000	5.2i
					TOTAL	\$180,000	
	FORT BEND MUD No. 42						
FB42LS3	FORT BEND MUD No42 LIFT STATION No3	2@ 216	243	381	YEAR 5	\$60,000	5.2j
					TOTAL	\$60,000	
	MEADOW CREEK MUD						
MCMLS01	MEADOW CREEK MUD LIFT STATION No1	2@ 299	336	354	YEAR 5	\$60,000	5.2k
MCMLS02	MEADOW CREEK MUD LIFT STATION No2	2@ 430	483	553	YEAR 3	\$60,000	5.2l
MCMLS03	MEADOW CREEK MUD LIFT STATION No3	2@ 128	144	293	YEAR 2	\$60,000	5.2m
					TOTAL	\$180,000	
* Design ESFC value based on pumping rate @ 320 gpd/ESFC w/ Peaking Factor=4							
					Estimated Lift Station Costs	\$780,000	
CONVEYANCE LINE		CURRENT SIZE			5 YEAR PLAN	ESTIMATED COST	EXHIBIT #
	QUAIL VALLEY UTILITY DISTRICT						
QVUD	QV La Quinta	8" - 12"			Year 2	\$314,418	5.3a
QVUD	QV Valley Cottages & El Dorado	12" - 15"			Year 5	\$201,963	5.3b
QVUD	QV El Dorado	10" -24"			Year 5	\$138,769	5.3c
						\$655,150	
	FORT BEND MUD No. 42						
FBMUD 42	Lakeshore Point at Brightwater	8"			Year 5	\$21,990	5.3d
						\$21,990	
					Estimated Line Costs	\$677,140	
					Combined Estimated Costs	\$1,457,140	
* 10 % contingency for future inflation and unseen complications should be anticipated in addition to estimated costs							
* 15% for Engineering fees based on construction costs should be anticipated in addition to estimated costs.							

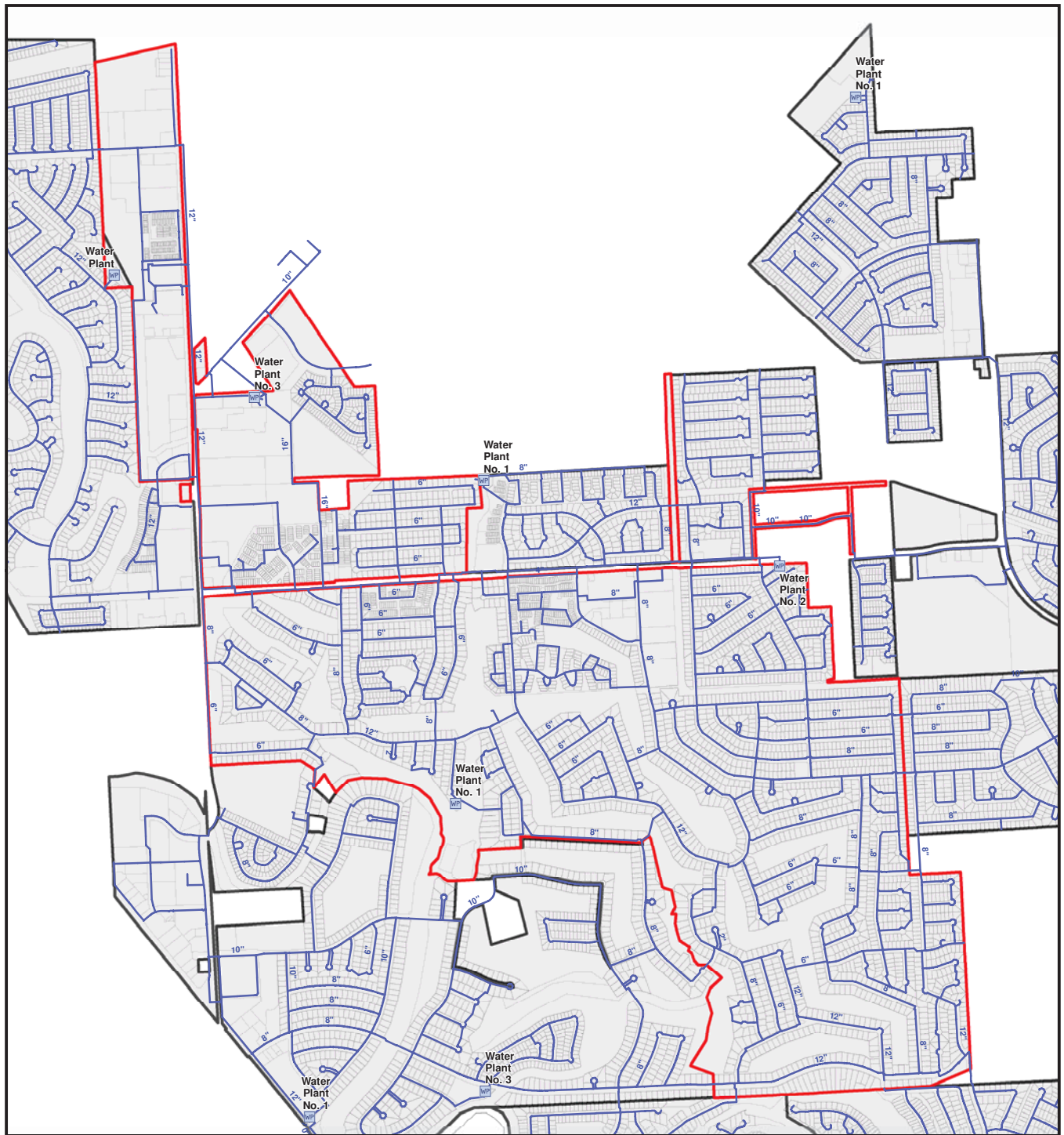


5.5 Wastewater Flow




Available wastewater flow records were collected and compared to projected numbers based on an Equivalent Single Family Connection (ESFC) value equaling 320 gallons per day. These numbers are compared in table 5.2c "Wastewater Flow - Average vs. Projected".

The accumulative rates flowing downstream are consistent with the anticipated numbers showing a constant difference between the two values telling of no areas of excessive infiltration or inflow based on available data.

Exhibit 5.4 (page 5-39) maps the projected numbers (listed as LJA) compared to the available flow records provided by Quail Valley (listed as QV). See also Table 5.5a (pages 5-4 thru 5-46), Table 5.5b (page 5-47) and Table 5.5c (page 5-48).



LEGEND

-  WATER PLANT
-  8" WATER MAIN
-  MUD BOUNDARY

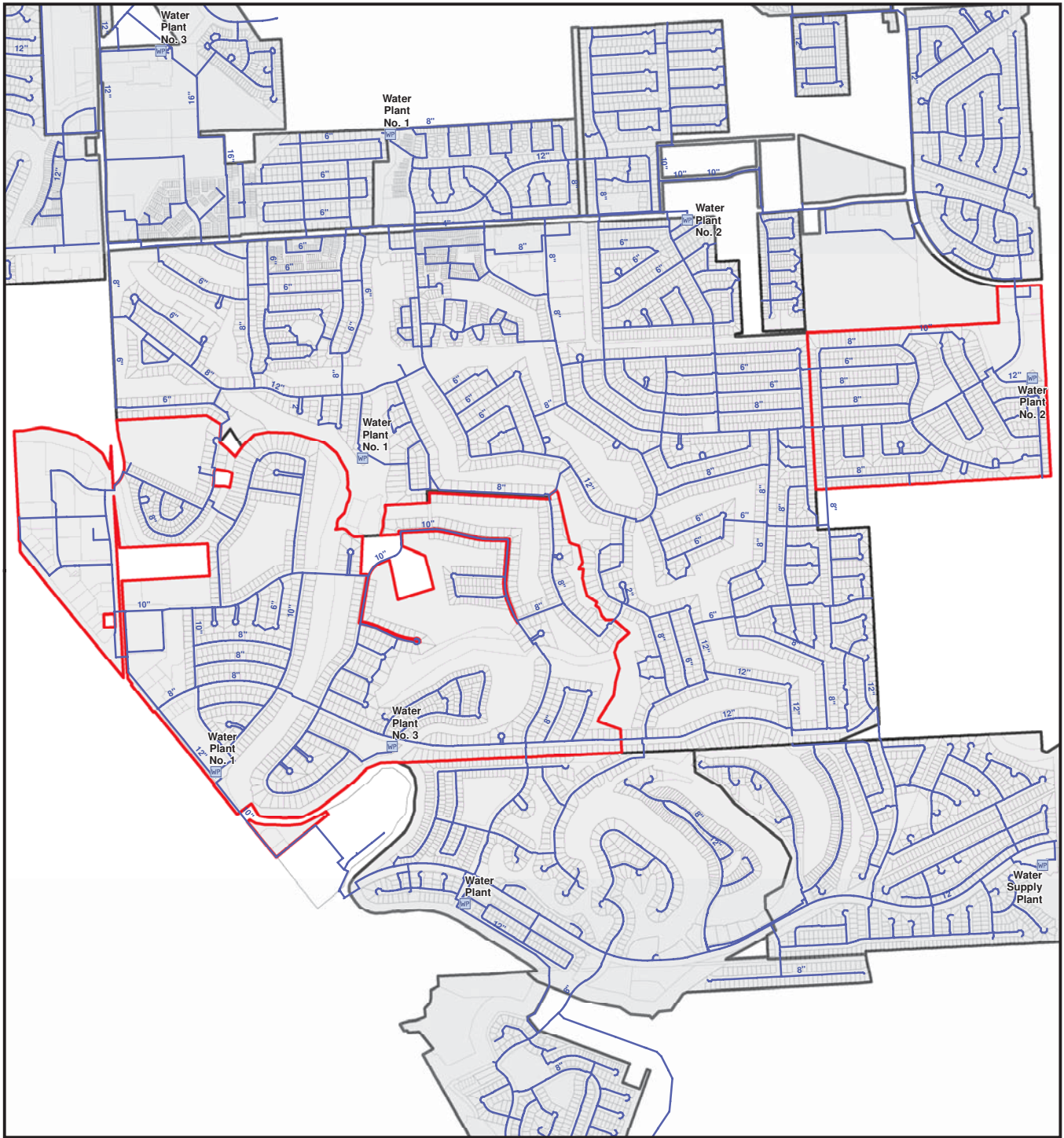
QUAIL VALLEY MUD

**WATER
DISTRIBUTION SYSTEM**




EXHIBIT 5.1a

SCALE: 1" = 2250 FEET





LEGEND

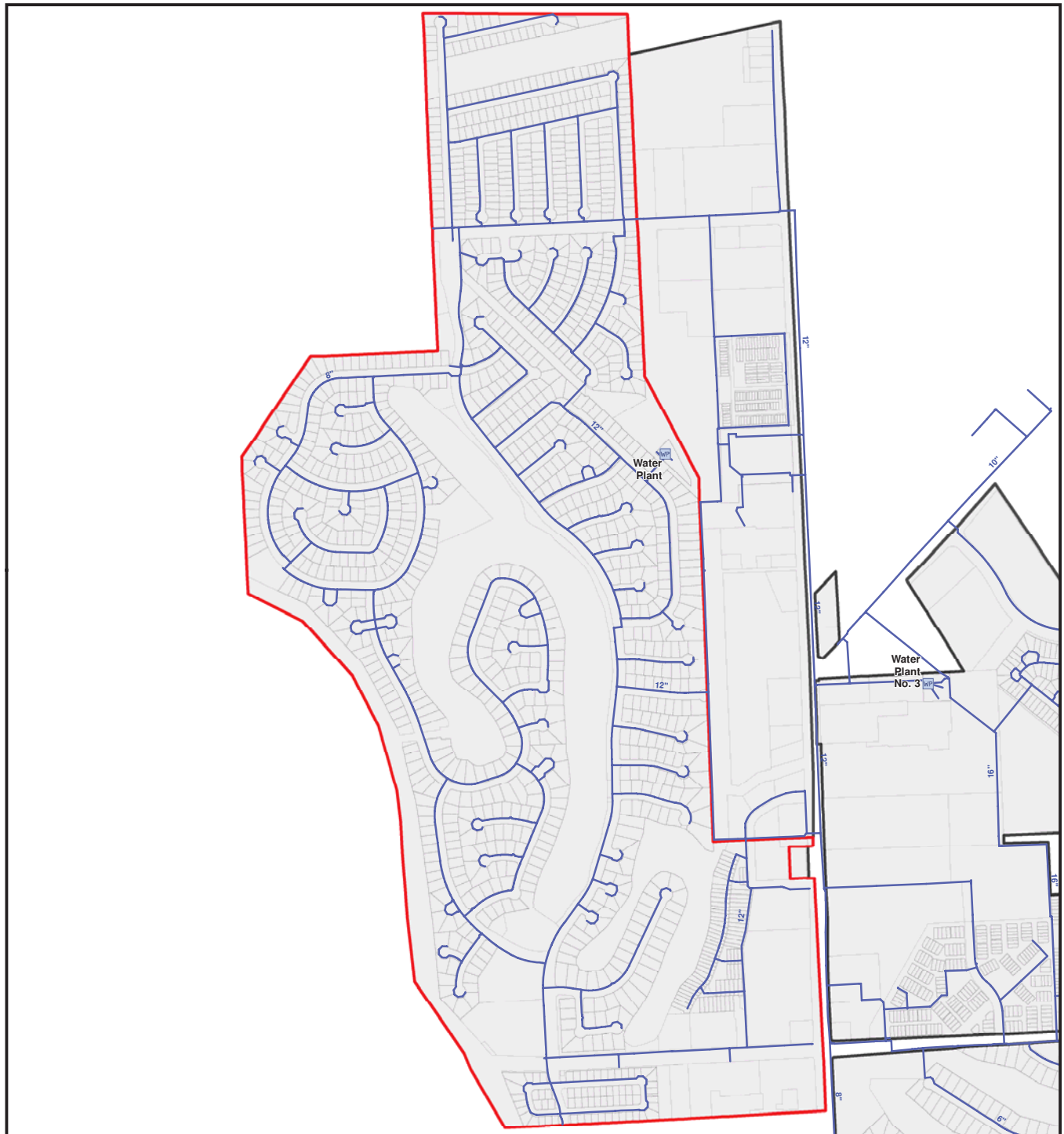
-  WATER PLANT
-  8" WATER MAIN
-  MUD BOUNDARY

THUNDERBIRD MUD
WATER
DISTRIBUTION SYSTEM




EXHIBIT 5.1b

SCALE: 1" = 2250 FEET





LEGEND

-  WATER PLANT
-  8" WATER MAIN
-  MUD BOUNDARY

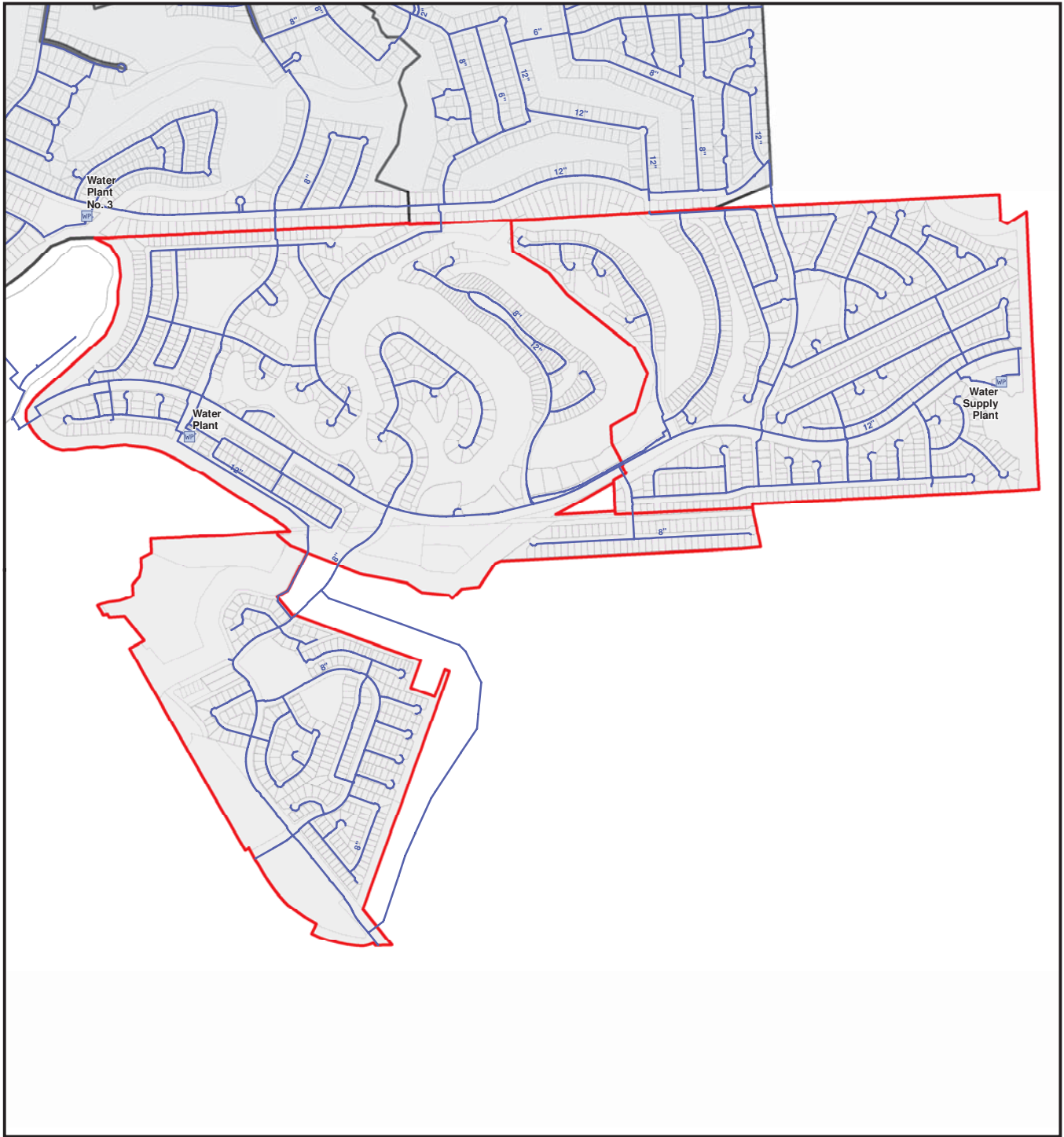
FORT BEND COUNTY MUD 42

**WATER
DISTRIBUTION SYSTEM**




EXHIBIT 5.1c

SCALE: 1" = 1200 FEET





LEGEND

-  WATER PLANT
-  8" WATER MAIN
-  MUD BOUNDARY

**PALMER PLANTATION MUD 01
PALMER PLANTATION MUD 02
FORT BEND COUNTY MUD 49**

**WATER
DISTRIBUTION SYSTEM**




EXHIBIT 5.1d

SCALE: 1" = 1600 FEET





LEGEND

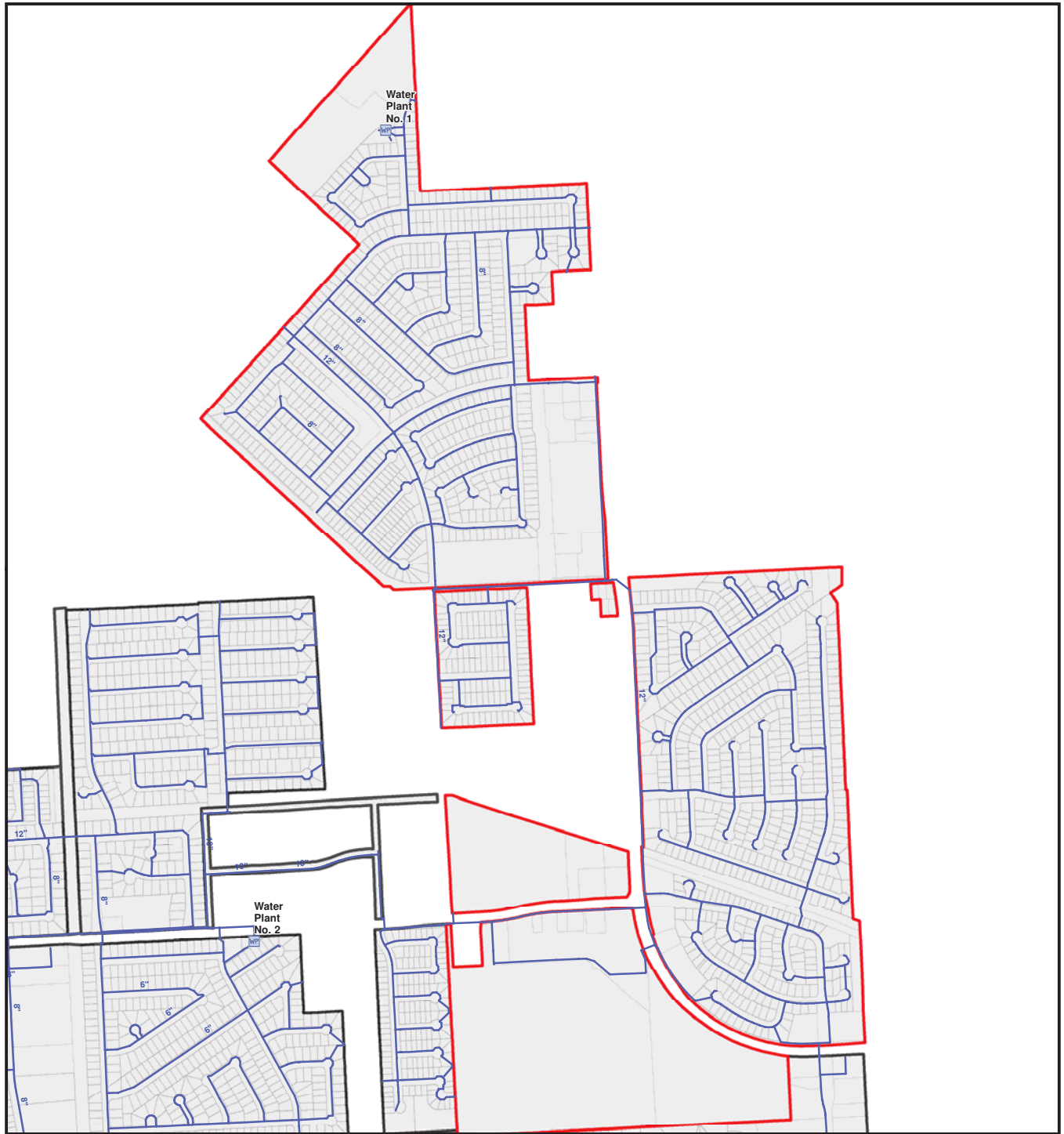
-  WATER PLANT
-  8" WATER MAIN
-  MUD BOUNDARY

MEADOW CREEK MUD
WATER
DISTRIBUTION SYSTEM




EXHIBIT 5.1e

SCALE: 1" = 1000 FEET





LEGEND

-  WATER PLANT
-  8" WATER MAIN
-  MUD BOUNDARY

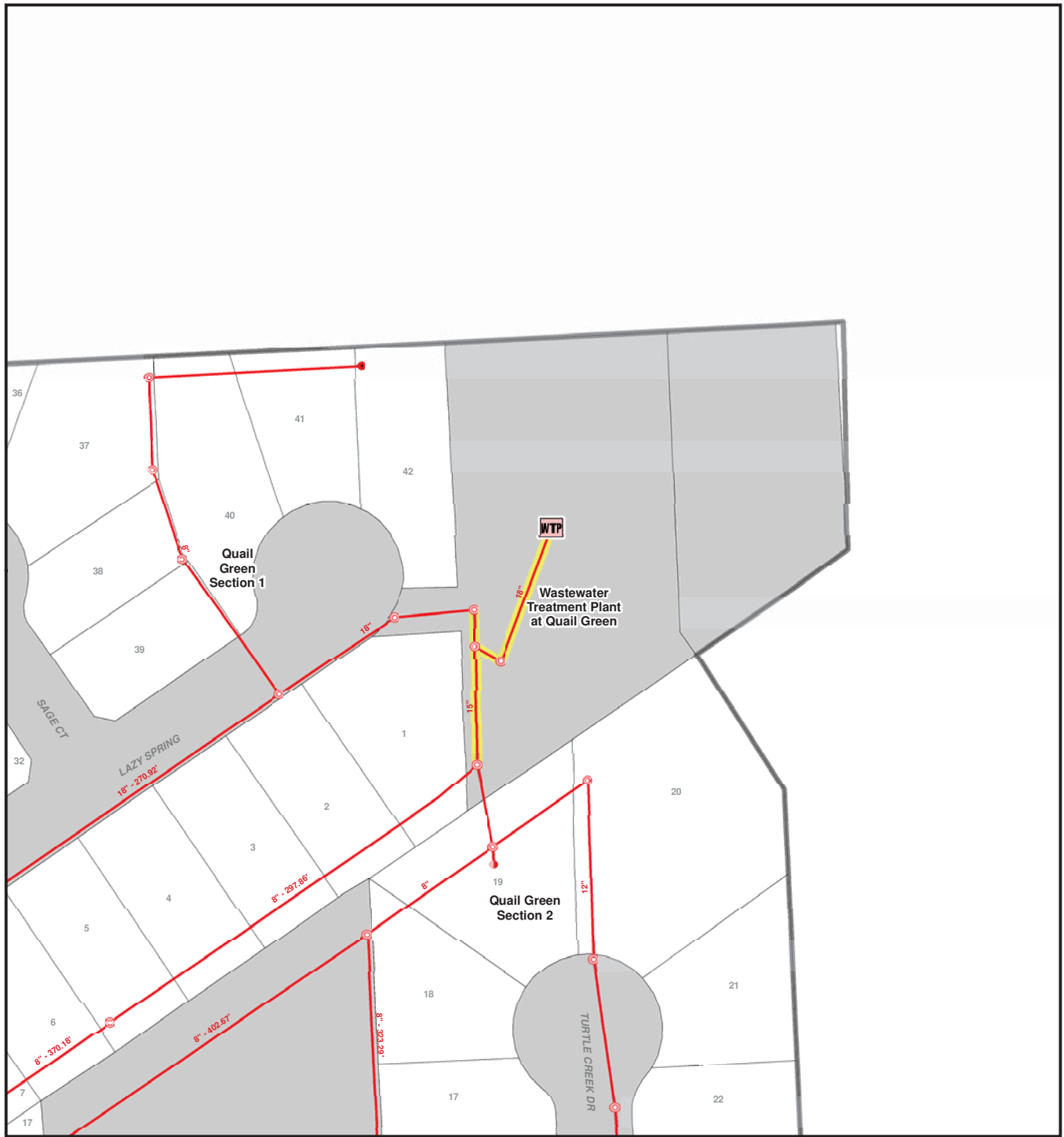
FORT BEND COUNTY MUD 26

**WATER
DISTRIBUTION SYSTEM**







EXHIBIT 5.1f

SCALE: 1" = 1300 FEET





LEGEND

-  AIR RELEASE VALVE
-  PLUG
-  MANHOLE
-  CLEAN OUT
-  8" - 100' SANITARY GRAVITY MAIN
-  8" FM FORCE MAIN
-  UNDERSIZED

SCALE: 1" = 100 FEET










FORT BEND COUNTY MUD 26

SANITARY SEWER SYSTEM

EXHIBIT 5.2a



LEGEND

-  AIR RELEASE VALVE
-  PLUG
-  MANHOLE
-  CLEAN OUT
-  8" - 100' SANITARY GRAVITY MAIN
-  8" FM FORCE MAIN
-  UNDERSIZED

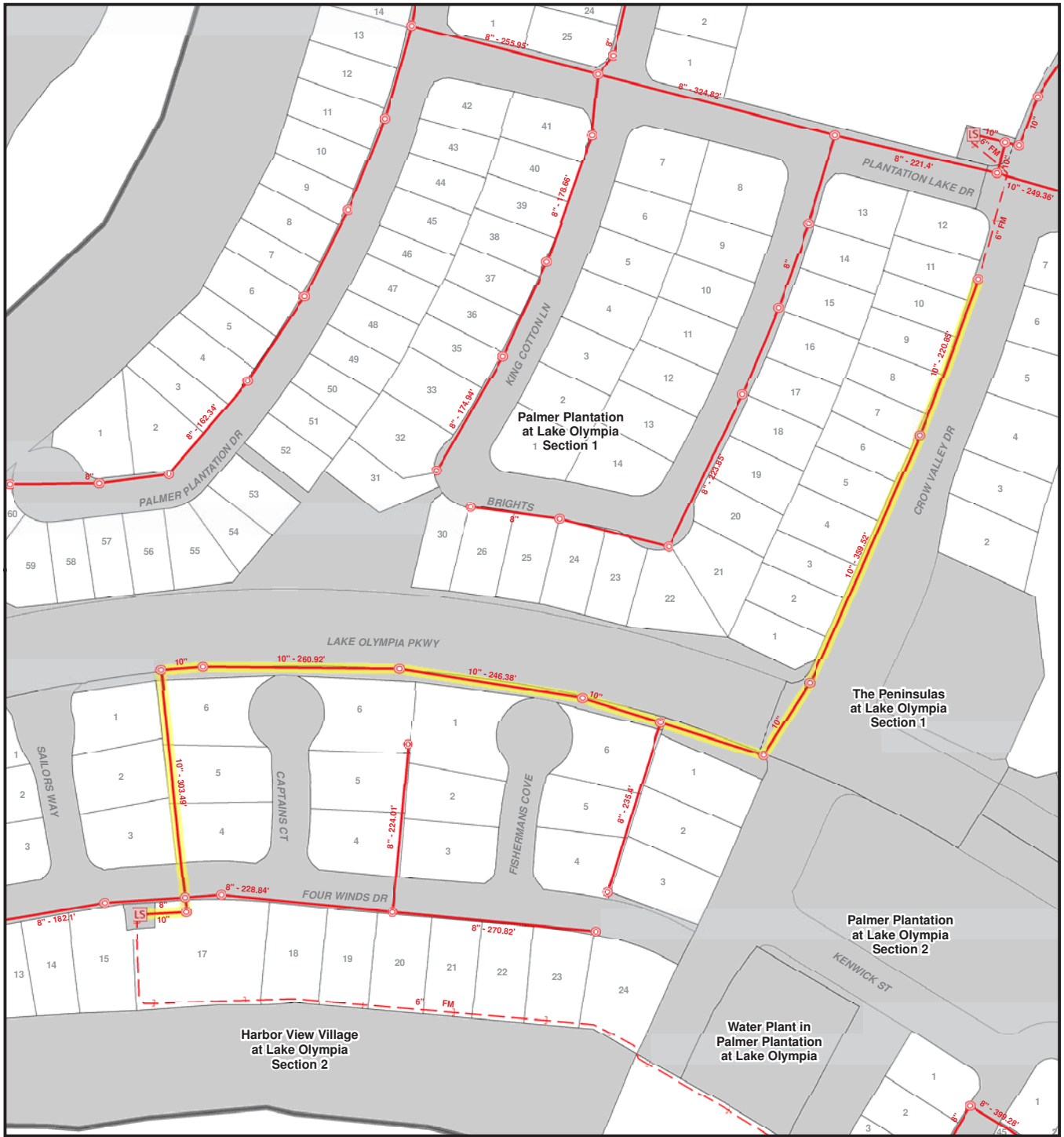
SCALE: 1" = 100 FEET







FORT BEND COUNTY MUD 42

SANITARY SEWER SYSTEM

EXHIBIT 5.2b



LEGEND

-  AIR RELEASE VALVE
-  PLUG
-  MANHOLE
-  CLEAN OUT

8" - 100' SANITARY GRAVITY MAIN

8" FM FORCE MAIN

 UNDERSIZED

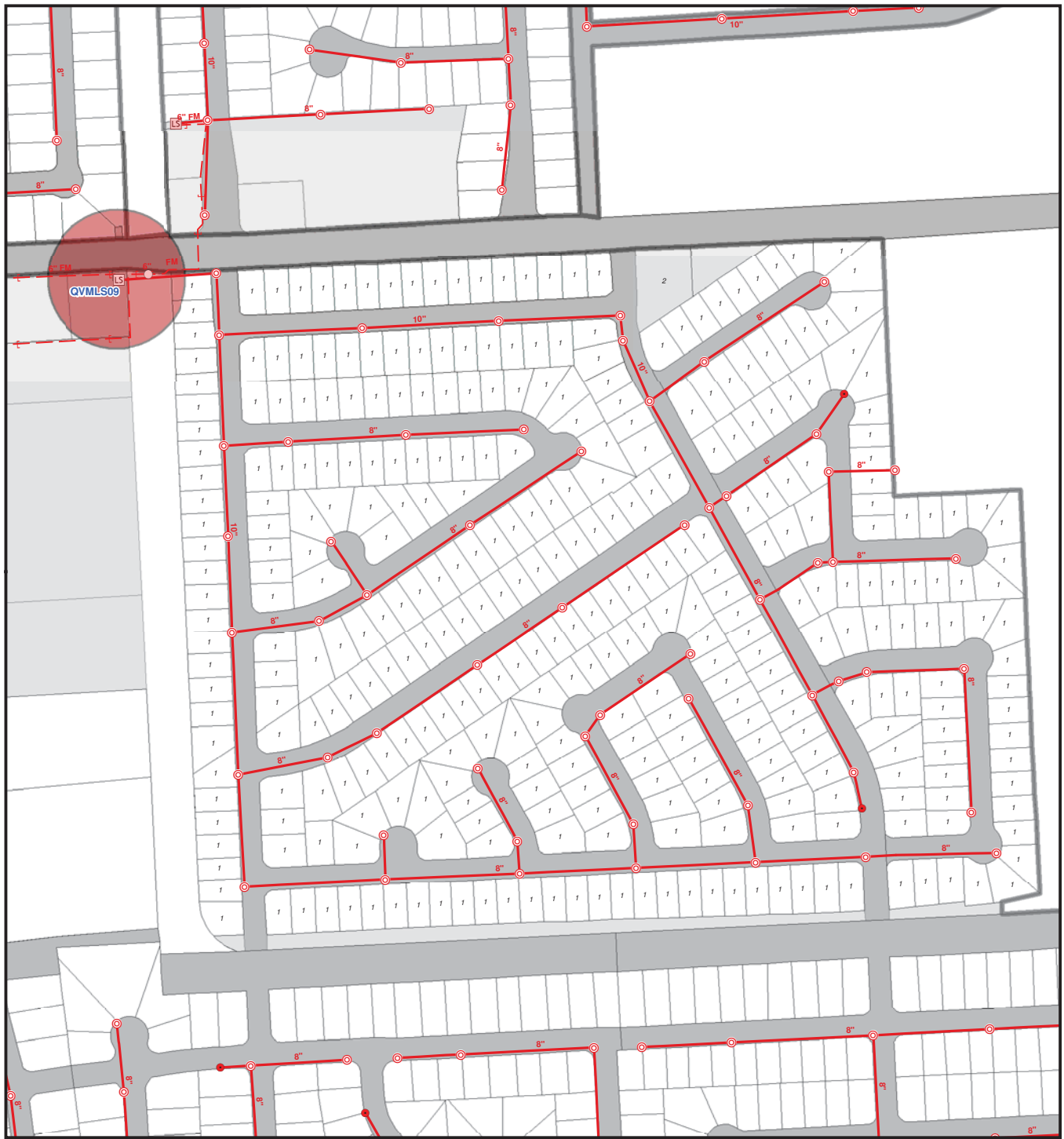
SCALE: 1" = 200 FEET



PALMER PLANTATION MUD 01

SANITARY SEWER SYSTEM

EXHIBIT 5.2c



LEGEND

- | | | | |
|--|-----------------------|--|------------------------------------|
| | AIR RELEASE VALVE | | LIFT STATION AREA OF INTEREST |
| | PLUG | | RESIDENTIAL LOT SFD CONNECTION |
| | MANHOLE | | NON-RESIDENTIAL LOT SFD CONNECTION |
| | CLEAN OUT | | |
| | 8" - 100' | | |
| | SANITARY GRAVITY MAIN | | |
| | 8" FM | | |
| | FORCE MAIN | | |

**SANITARY SEWER SYSTEM
5-YEAR PLAN**

**QUAIL VALLEY MUD
LIFT STATION No.9**

PUMP: 2@200
ESFC DESIGN: 225
ESFC ACTUAL: 355

SCALE: 1" = 400 FEET





LEGEND

- | | | | |
|--|-----------------------|--|------------------------------------|
| | AIR RELEASE VALVE | | LIFT STATION AREA OF INTEREST |
| | PLUG | | RESIDENTIAL LOT SFD CONNECTION |
| | MANHOLE | | NON-RESIDENTIAL LOT SFD CONNECTION |
| | CLEAN OUT | | |
| | SANITARY GRAVITY MAIN | | |
| | FORCE MAIN | | |

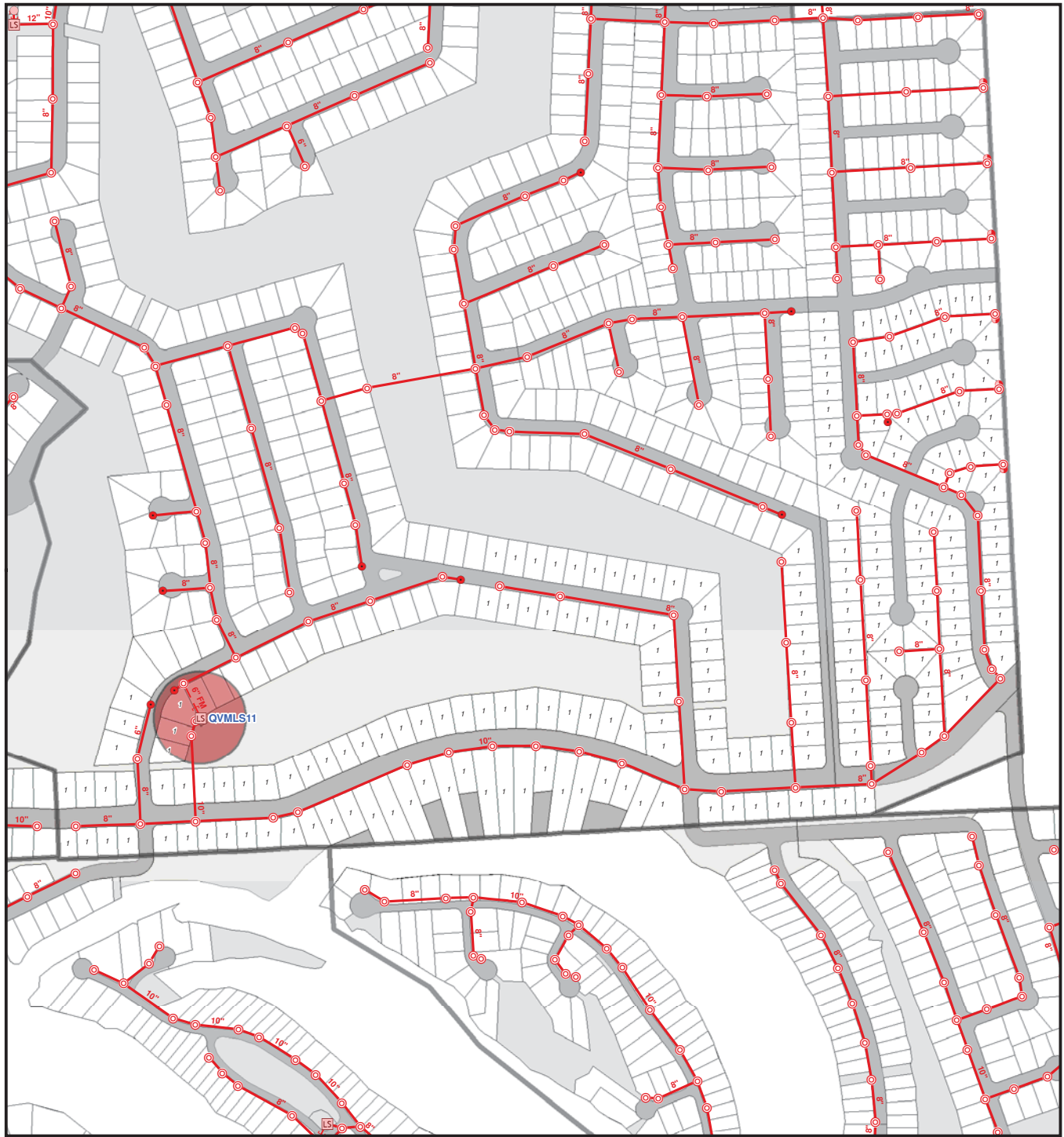
**SANITARY SEWER SYSTEM
5-YEAR PLAN**

**QUAIL VALLEY MUD
LIFT STATION No10**

**PUMP: 2@375
ESFC DESIGN: 421
ESFC ACTUAL: 573**

SCALE: 1" = 550 FEET





LEGEND

- | | | | |
|--|-----------------------|--|------------------------------------|
| | AIR RELEASE VALVE | | LIFT STATION AREA OF INTEREST |
| | PLUG | | RESIDENTIAL LOT SFD CONNECTION |
| | MANHOLE | | NON-RESIDENTIAL LOT SFD CONNECTION |
| | CLEAN OUT | | |
| | SANITARY GRAVITY MAIN | | |
| | FORCE MAIN | | |

**SANITARY SEWER SYSTEM
5-YEAR PLAN**

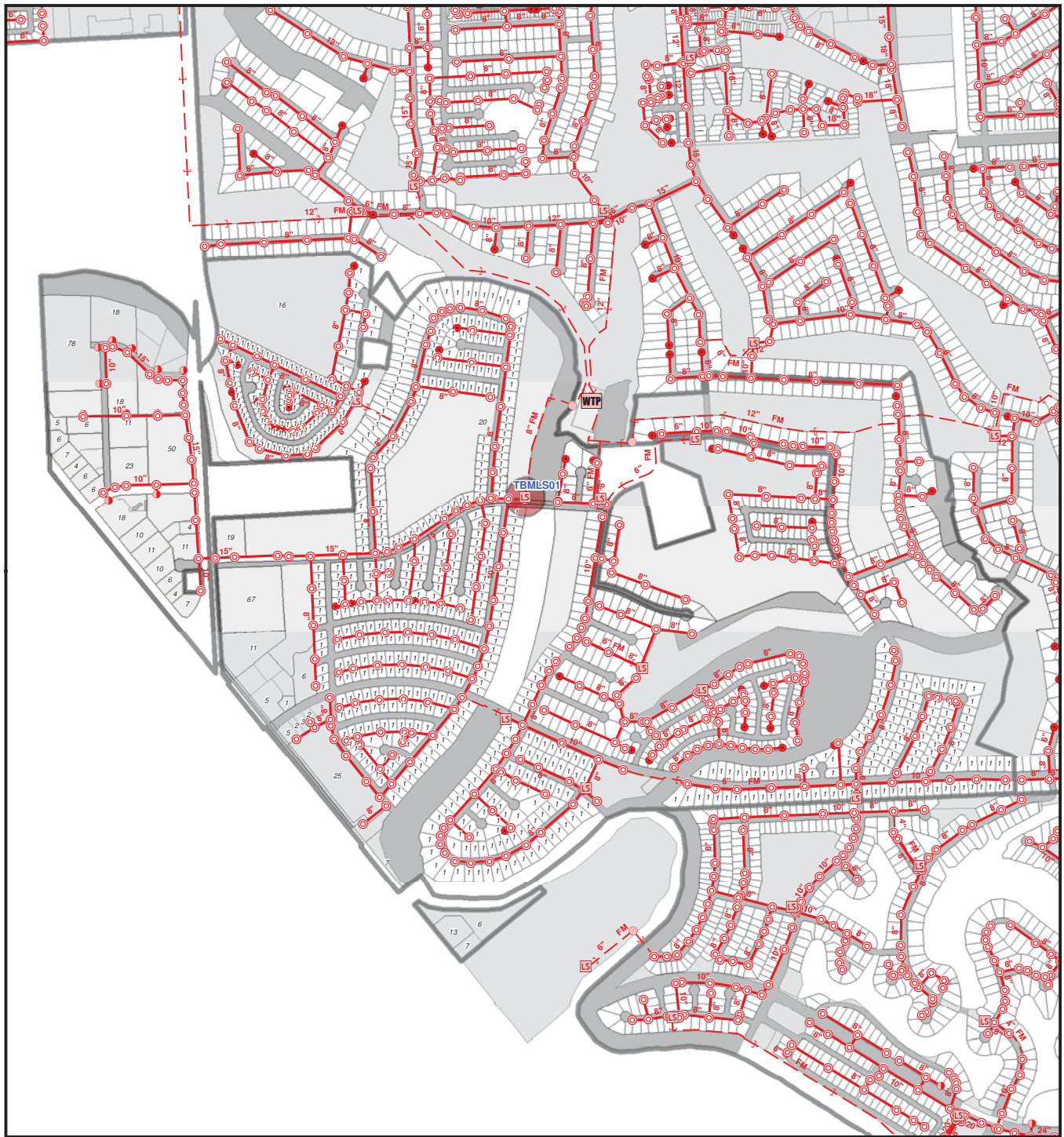
**QUAIL VALLEY MUD
LIFT STATION No11**

**PUMP: 2@160
ESFC DESIGN: 180
ESFC ACTUAL: 235**

EXHIBIT 5.2f

SCALE: 1" = 600 FEET





LEGEND

- AIR RELEASE VALVE
- PLUG
- MANHOLE
- CLEAN OUT
- LIFT STATION AREA OF INTEREST
- RESIDENTIAL LOT SFD CONNECTION
- NON-RESIDENTIAL LOT SFD CONNECTION
- SANITARY GRAVITY MAIN
- FORCE MAIN

**SANITARY SEWER SYSTEM
5-YEAR PLAN**

**THUNDERBIRD UD
LIFT STATION No1**

**PUMP: 2@850
ESFC DESIGN: 956
ESFC ACTUAL: 1329**

EXHIBIT 5.2g

SCALE: 1" = 1400 FEET





LEGEND

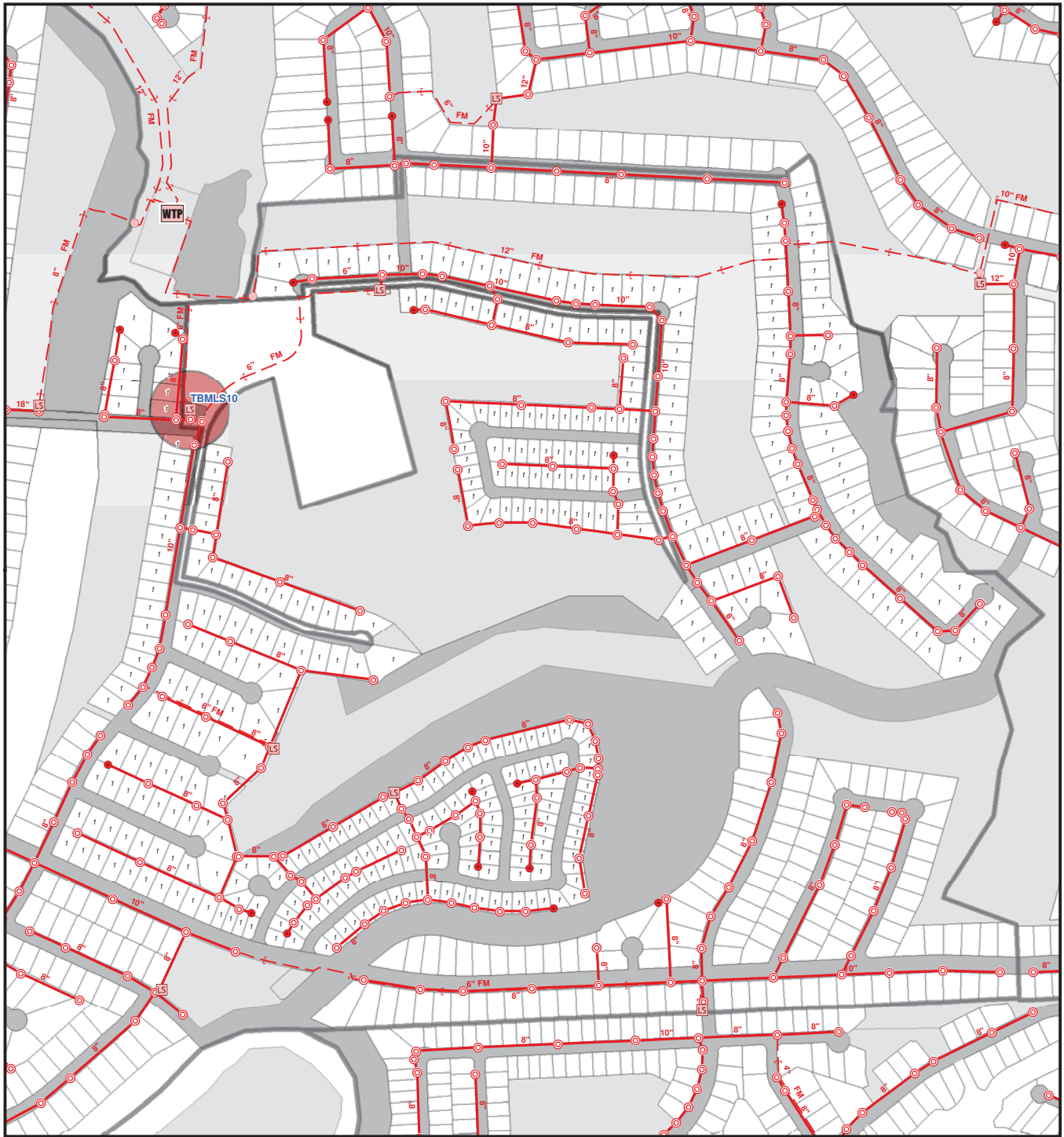
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|--|-----------------------|--|------------------------------------|
| | AIR RELEASE VALVE | | LIFT STATION AREA OF INTEREST |
| | PLUG | | RESIDENTIAL LOT SFD CONNECTION |
| | MANHOLE | | NON-RESIDENTIAL LOT SFD CONNECTION |
| | CLEAN OUT | | |
| | 8" - 100' | | |
| | SANITARY GRAVITY MAIN | | |
| | 8" FM | | |
| | FORCE MAIN | | |

**SANITARY SEWER SYSTEM
5-YEAR PLAN
THUNDERBIRD UD
LIFT STATION No3**

**PUMP: 2@155
 ESFC DESIGN: 174
 ESFC ACTUAL: 207**

SCALE: 1" = 400 FEET





LEGEND

- AIR RELEASE VALVE
- PLUG
- MANHOLE
- CLEAN OUT
- SANITARY GRAVITY MAIN
- FORCE MAIN
- LIFT STATION AREA OF INTEREST
- RESIDENTIAL LOT SFD CONNECTION
- NON-RESIDENTIAL LOT SFD CONNECTION

**SANITARY SEWER SYSTEM
5-YEAR PLAN**

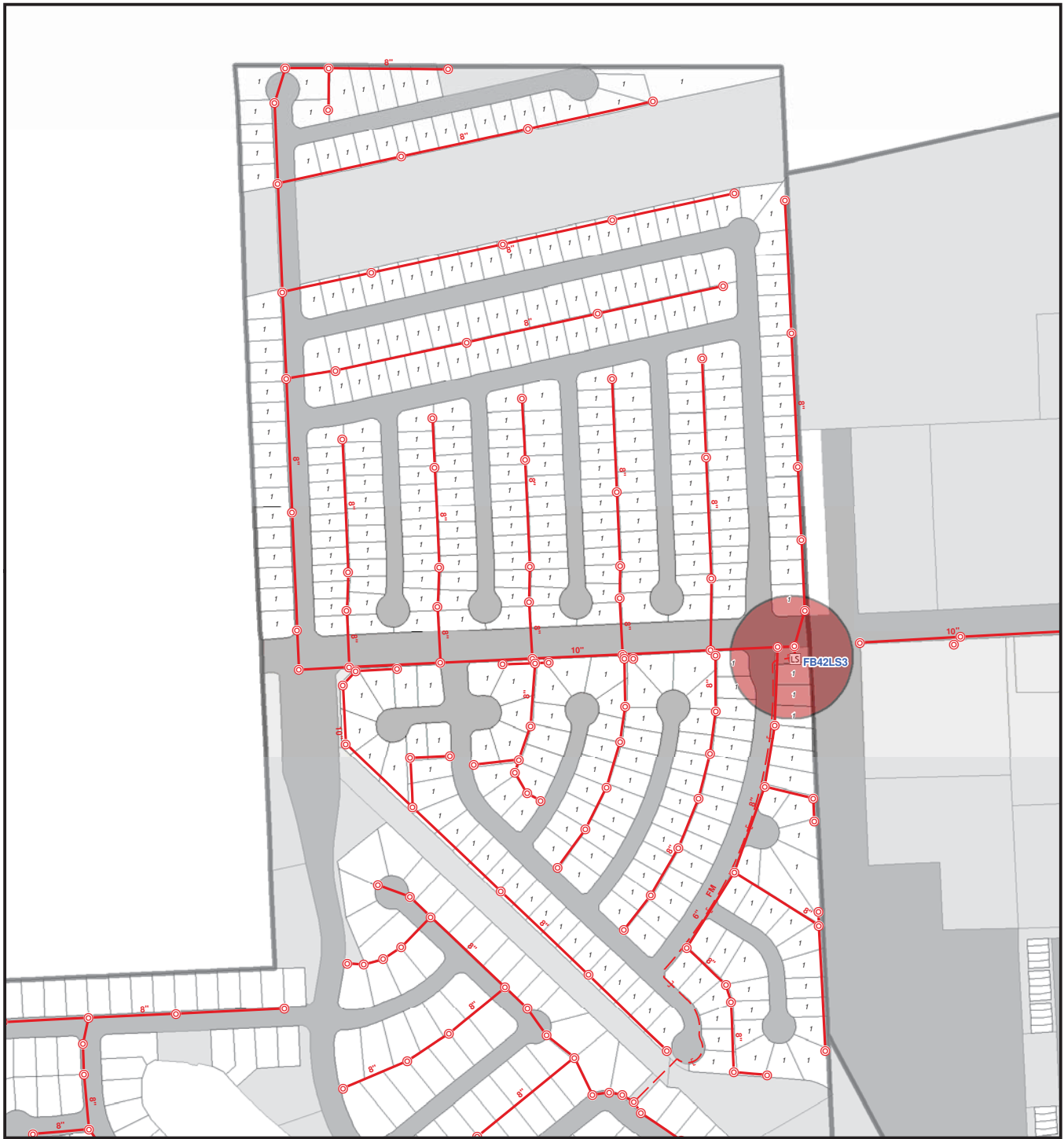
**THUNDERBIRD UD
LIFT STATION No10**

PUMP: 2@300
ESFC DESIGN: 337
ESFC ACTUAL: 440

EXHIBIT 5.2i

SCALE: 1" = 700 FEET





LEGEND

- | | | | |
|--|-----------------------|--|------------------------------------|
| | AIR RELEASE VALVE | | LIFT STATION AREA OF INTEREST |
| | PLUG | | RESIDENTIAL LOT SFD CONNECTION |
| | MANHOLE | | NON-RESIDENTIAL LOT SFD CONNECTION |
| | CLEAN OUT | | |
| | SANITARY GRAVITY MAIN | | |
| | FORCE MAIN | | |

**SANITARY SEWER SYSTEM
5-YEAR PLAN**

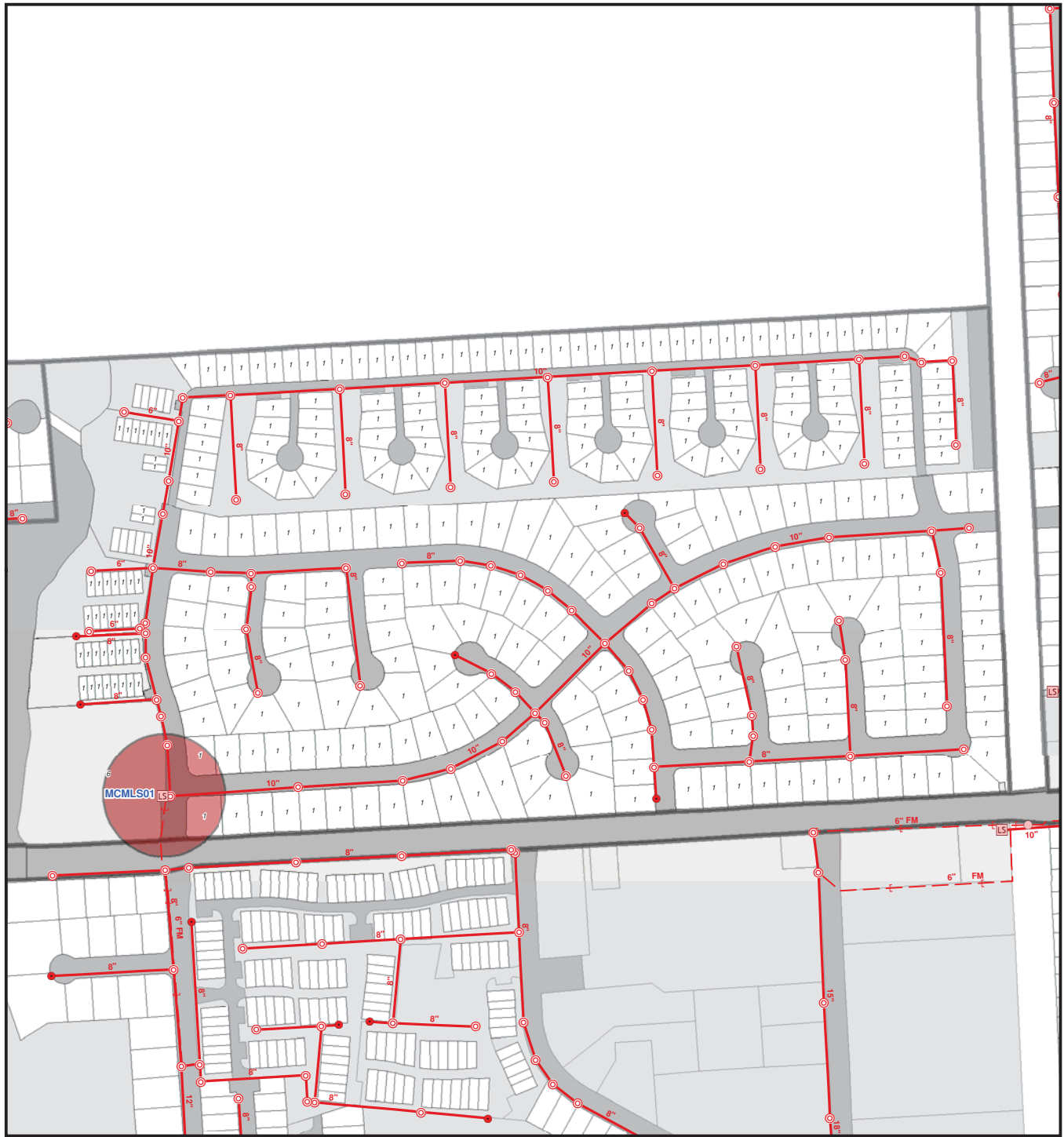
**FORT BEND MUD No42
LIFT STATION No3**

**PUMP: 2@216
ESFC DESIGN: 243
ESFC ACTUAL: 381**

EXHIBIT 5.2j

SCALE: 1" = 450 FEET





LEGEND

- | | | | |
|--|-----------------------|--|------------------------------------|
| | AIR RELEASE VALVE | | LIFT STATION AREA OF INTEREST |
| | PLUG | | RESIDENTIAL LOT SFD CONNECTION |
| | MANHOLE | | NON-RESIDENTIAL LOT SFD CONNECTION |
| | CLEAN OUT | | |
| | 8" - 100' | | |
| | SANITARY GRAVITY MAIN | | |
| | 8" FM | | |
| | FORCE MAIN | | |

**SANITARY SEWER SYSTEM
5-YEAR PLAN**

**MEADOW CREEK MUD
LIFT STATION No1**

**PUMP: 2@299
ESFC DESIGN: 336
ESFC ACTUAL: 354**

EXHIBIT 5.2k

SCALE: 1" = 450 FEET





LEGEND

- AIR RELEASE VALVE
- PLUG
- MANHOLE
- CLEAN OUT
- LIFT STATION AREA OF INTEREST
- RESIDENTIAL LOT SFD CONNECTION
- NON-RESIDENTIAL LOT SFD CONNECTION
- 8" - 100' SANITARY GRAVITY MAIN
- 8" FM FORCE MAIN

**SANITARY SEWER SYSTEM
5-YEAR PLAN**

**MEADOW CREEK MUD
LIFT STATION No2**

**PUMP: 2@430
ESFC DESIGN: 483
ESFC ACTUAL: 553**

EXHIBIT 5.2I

SCALE: 1" = 650 FEET





LEGEND

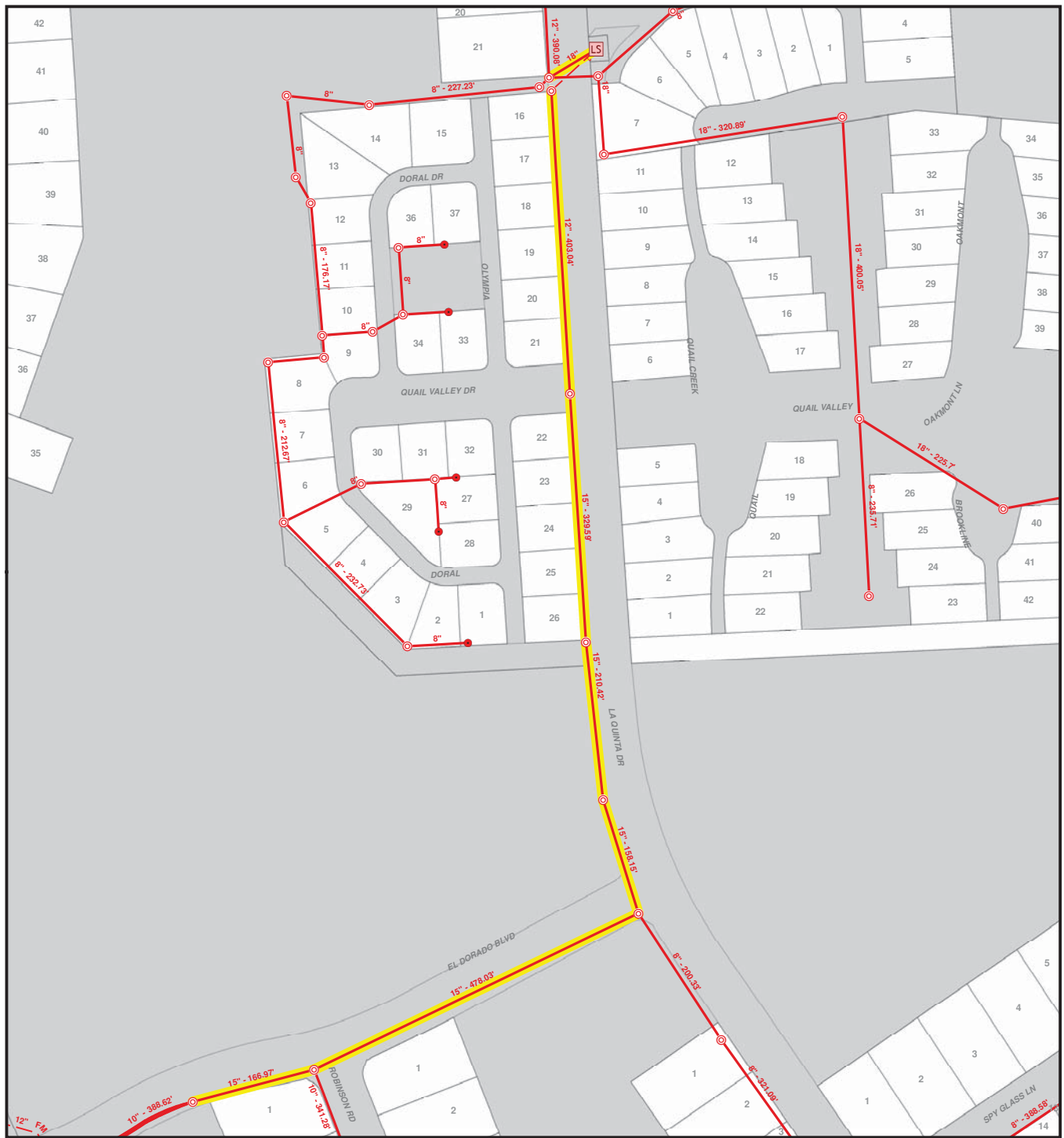
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|--|-----------------------|--|------------------------------------|
| | AIR RELEASE VALVE | | LIFT STATION AREA OF INTEREST |
| | PLUG | | RESIDENTIAL LOT SFD CONNECTION |
| | MANHOLE | | NON-RESIDENTIAL LOT SFD CONNECTION |
| | CLEAN OUT | | |
| | SANITARY GRAVITY MAIN | | |
| | FORCE MAIN | | |

**SANITARY SEWER SYSTEM
5-YEAR PLAN
MEADOW CREEK MUD
LIFT STATION No3**








**PUMP: 2@128
 ESFC DESIGN: 144
 ESFC ACTUAL: 293**

SCALE: 1" = 650 FEET





LEGEND

-  AIR RELEASE VALVE
-  PLUG
-  MANHOLE
-  CLEAN OUT
-  8" - 100' SANITARY GRAVITY MAIN
-  8" FM FORCE MAIN
-  UNDERSIZED

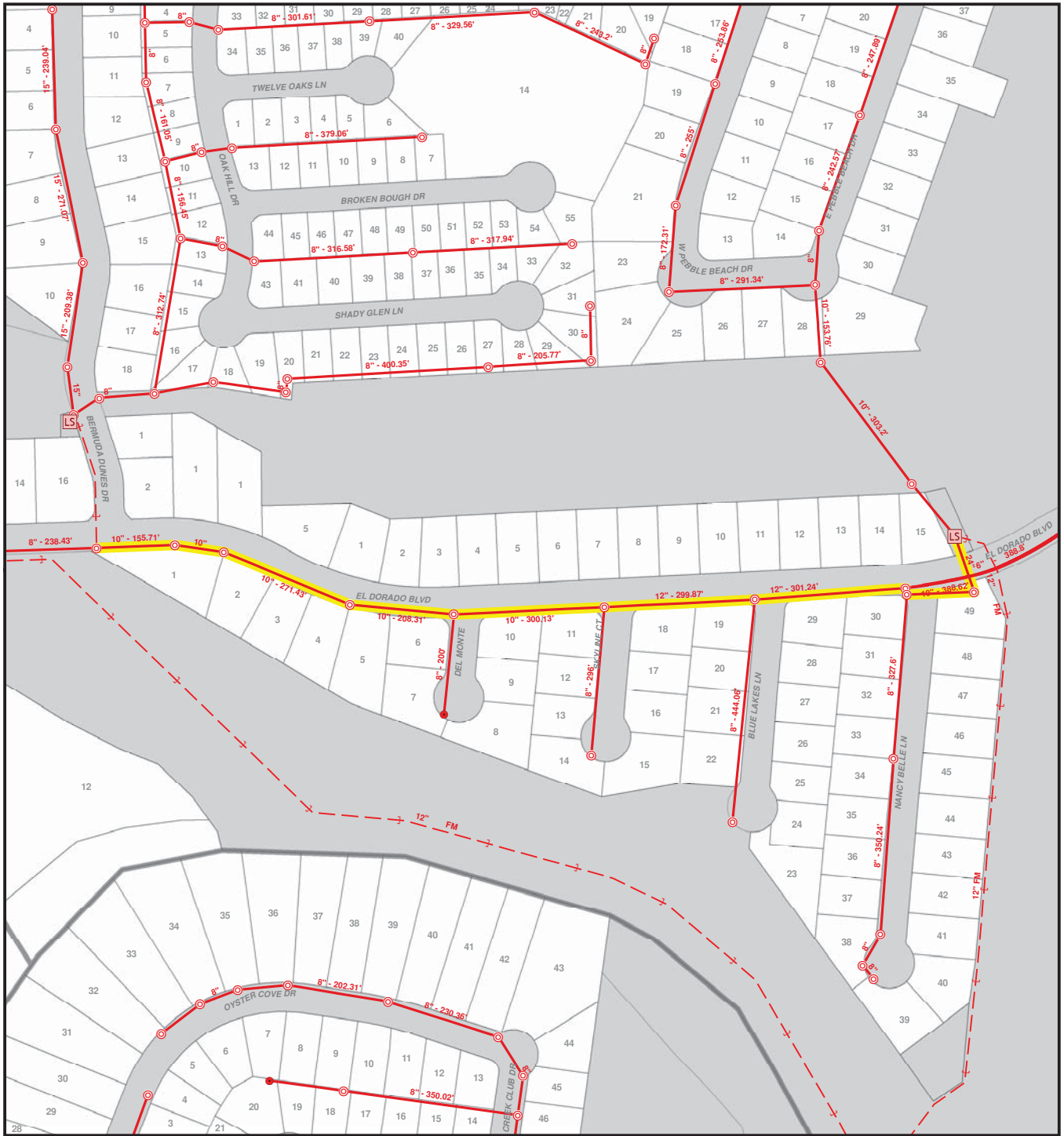
SCALE: 1" = 200 FEET










QUAIL VALLEY MUD

SANITARY SEWER SYSTEM

EXHIBIT 5.3b



LEGEND

-  AIR RELEASE VALVE
-  PLUG
-  MANHOLE
-  CLEAN OUT
-  8" - 100' SANITARY GRAVITY MAIN
-  8" FM FORCE MAIN
-  UNDERSIZED

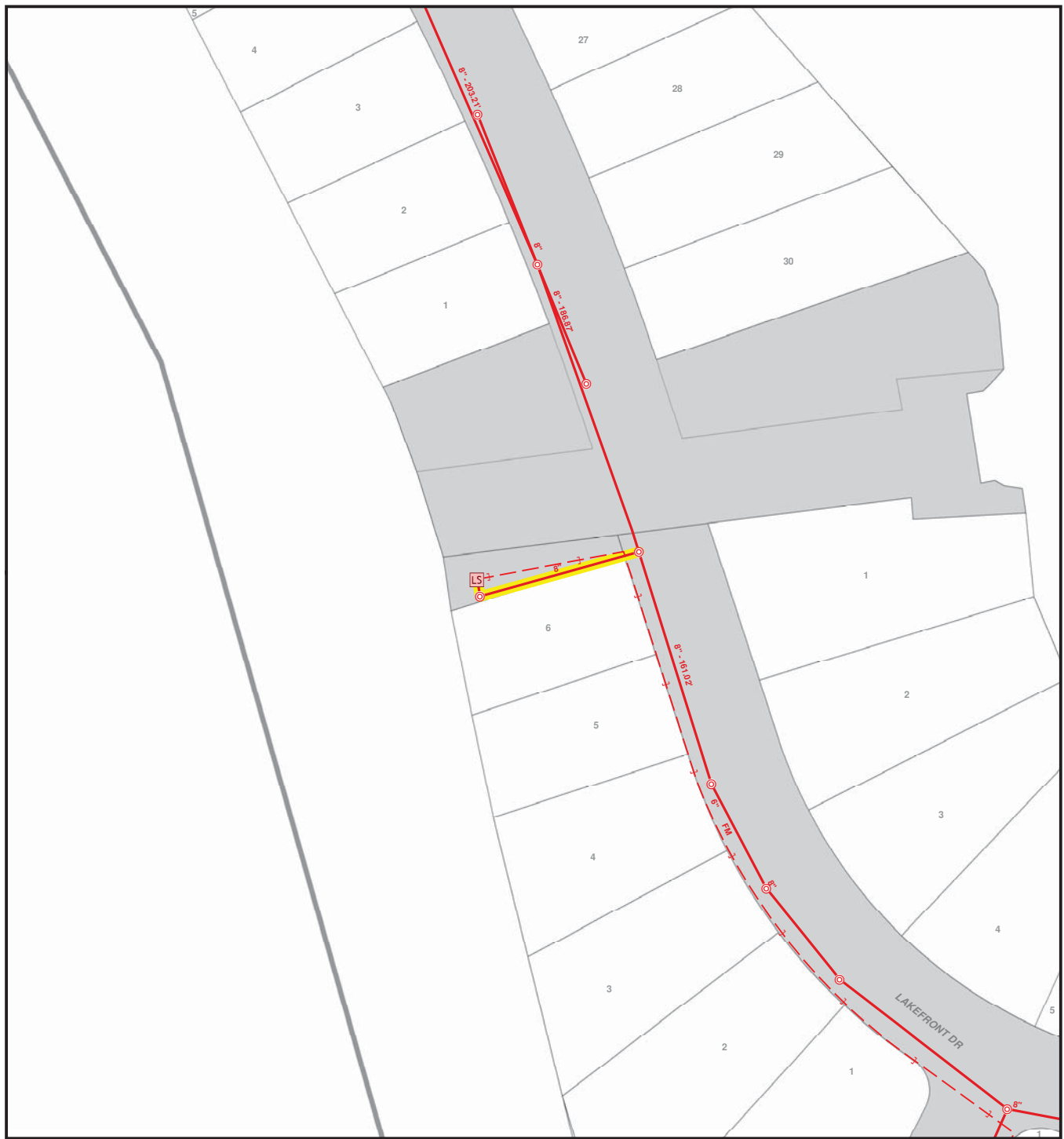
SCALE: 1" = 200 FEET










QUAIL VALLEY MUD

SANITARY SEWER SYSTEM

EXHIBIT 5.3c



LEGEND

-  AIR RELEASE VALVE
-  PLUG
-  MANHOLE
-  CLEAN OUT
-  8" - 100' SANITARY GRAVITY MAIN
-  8" FM FORCE MAIN
-  UNDERSIZED

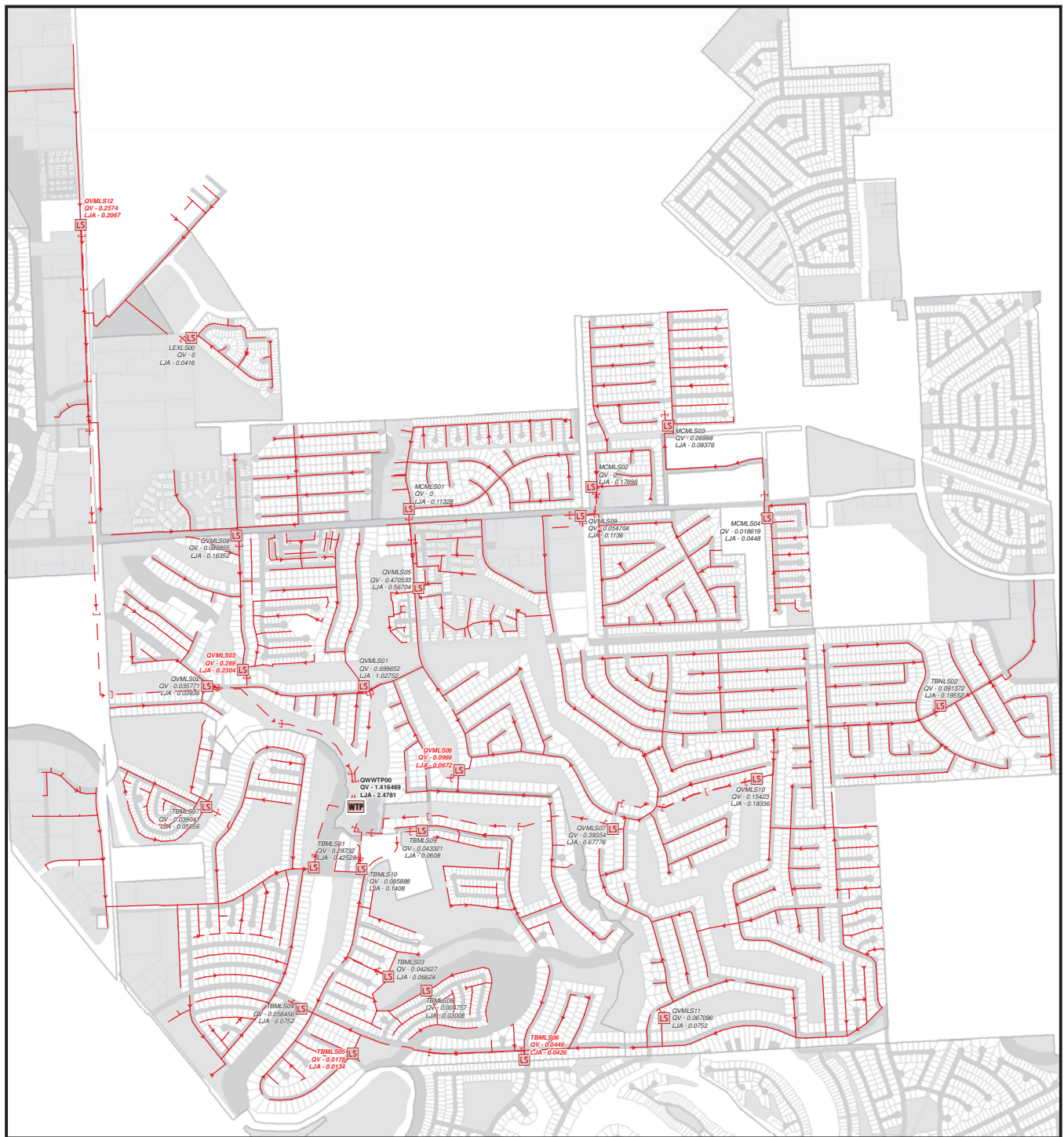
SCALE: 1" = 100 FEET







FORT BEND COUNTY MUD 42

SANITARY SEWER SYSTEM

EXHIBIT 5.3d



LEGEND

-  TREATMENT PLANT
-  LIFT STATION
-  SANITARY GRAVITY MAIN
-  FORCE MAIN

WASTEWATER FLOW RECORDS

**QUAIL VALLEY, THUNDERBIRD,
& MEADOW CREEK MUD**

EXHIBIT 5.4

SCALE: 1" = 2200 FEET



Table 5.5a

2008 LIFT STATIONS ACTUAL FLOWS
(Based on run hours and design capacity)

QV #1 Lift Station

<i>Month</i>	<i>Daily Avg. MGD</i>	<i>ESFC</i>
Jan, 07		-
Feb	0.856800	2,677
Mar	0.713837	2,231
Apr	0.667080	2,085
May	0.723955	2,262
Jun	0.656696	2,052
Jul	0.953496	2,980
Aug	0.753372	2,354
Sep	0.659854	2,062
Oct	0.592268	1,851
Nov	0.640397	2,001
Dec	0.657012	2,053
Jan, 08	0.749562	2,342
Feb, 08	0.647578	2,024
Mar, 08	0.624908	1,953
Apr, 08	0.597965	1,869
TOTAL AVG	0.699652	2,186

QV #2 Lift Station

<i>Month</i>	<i>Daily Avg. MGD</i>	<i>ESFC</i>
Jan, 07		-
Feb	0.033712	105
Mar	0.032760	102
Apr	0.029400	92
May	0.032592	102
Jun	0.030397	95
Jul	0.081928	256
Aug	0.037849	118
Sep	0.031620	99
Oct	0.025556	80
Nov	0.028885	90
Dec	0.028784	90
Jan, 08	0.027552	86
Feb, 08	0.026460	83
Mar, 08	0.026992	84
Apr, 08	0.025424	79
TOTAL AVG	0.035771	112

QV #3 Lift Station

<i>Month</i>	<i>Daily Avg. MGD</i>	<i>ESFC</i>
Jan, 07	0.303094	947
Feb	0.248357	776
Mar	0.292434	914
Apr	0.258396	807
May	0.272792	852
Jun	0.271869	850
Jul	0.293654	918
Aug	0.284619	889
Sep	0.264174	826
Oct	0.245553	767
Nov	0.252068	788
Dec	0.240462	751
Jan, 08	0.269498	842
Feb, 08	0.257229	804
Mar, 08	0.253272	791
Apr, 08	0.236436	739
TOTAL AVG	0.268956	840

QV #5 Lift Station

<i>Month</i>	<i>Daily Avg. MGD</i>	<i>ESFC</i>
Jan, 07	0.452812	1,415
Feb	0.338143	1,057
Mar	0.475500	1,486
Apr	0.360600	1,127
May	0.386850	1,209
Jun	1.211226	3,785
Jul	0.430594	1,346
Aug	0.452177	1,413
Sep	0.384677	1,202
Oct	0.332182	1,038
Nov	0.441310	1,379
Dec	0.380318	1,188
Jan, 08	0.382359	1,195
Feb, 08	0.335953	1,050
Mar, 08	0.886909	2,772
Apr, 08	0.316650	990
TOTAL AVG	0.470533	1,470

QV #6 Lift Station

<i>Month</i>	<i>Daily Avg. MGD</i>	<i>ESFC</i>
Jan, 07	0.214950	672
Feb	0.249440	780
Mar	0.053625	168
Apr	0.055875	175
May	0.061440	192
Jun	0.065850	206
Jul	0.107733	337
Aug	0.058376	182
Sep	0.076714	240
Oct	0.065018	203
Nov	0.074710	233
Dec	0.075040	235
Jan, 08	0.087840	275
Feb, 08	0.072150	225
Mar, 08	0.076800	240
Apr, 08	0.072320	226
TOTAL AVG	0.096564	302

QV #7 Lift Station

<i>Month</i>	<i>Daily Avg. MGD</i>	<i>ESFC</i>
Jan, 07	0.436493	1,364
Feb	0.346605	1,083
Mar	0.413043	1,291
Apr	0.375601	1,174
May	0.385717	1,205
Jun	0.358628	1,121
Jul	0.487533	1,524
Aug	0.426246	1,332
Sep	0.396057	1,238
Oct	0.368189	1,151
Nov	0.380969	1,191
Dec	0.347403	1,086
Jan, 08	0.391366	1,223
Feb, 08	0.335597	1,049
Mar, 08	0.361735	1,130
Apr, 08	0.328543	1,027
TOTAL AVG	0.393540	1,230

QV #8 Lift Station

<i>Month</i>	<i>Daily Avg.</i>	
	<i>MGD</i>	<i>ESFC</i>
Jan, 07	0.103575	324
Feb	0.043800	137
Mar	0.074080	232
Apr	0.090640	283
May	0.090880	284
Jun	0.092250	288
Jul	0.102640	321
Aug	0.098824	309
Sep	0.086400	270
Oct	0.084582	264
Nov	0.087871	275
Dec	0.086720	271
Jan, 08	0.104240	326
Feb, 08	0.083475	261
Mar, 08	0.076000	238
Apr, 08	0.083840	262
TOTAL AVG	0.086855	271

QV #9 Lift Station

<i>Month</i>	<i>Daily Avg.</i>	
	<i>MGD</i>	<i>ESFC</i>
Jan, 07	0.067236	210
Feb	0.049243	154
Mar	0.054880	172
Apr	0.049040	153
May	0.065960	206
Jun	0.052725	165
Jul	0.068200	213
Aug	0.056153	175
Sep	0.049329	154
Oct	0.045091	141
Nov	0.049587	155
Dec	0.049000	153
Jan, 08	0.060429	189
Feb, 08	0.052463	164
Mar, 08	0.047880	150
Apr, 08	0.046280	145
TOTAL AVG	0.054704	171

QV #10 Lift Station

<i>Month</i>	<i>Daily Avg.</i>	
	<i>MGD</i>	<i>ESFC</i>
Jan, 07	0.283364	886
Feb	0.173175	541
Mar	0.207525	649
Apr	0.156075	488
May	0.072075	225
Jun	0.069609	218
Jul	0.083850	262
Aug	0.068096	213
Sep	0.049410	154
Oct	0.112568	352
Nov	0.200613	627
Dec	0.374400	1,170
Jan, 08	0.249225	779
Feb, 08	0.159188	497
Mar, 08	0.160950	503
Apr, 08	0.182175	569
TOTAL AVG	0.154230	482

QV #11 Lift Station

<i>Month</i>	<i>Daily Avg.</i>	
	<i>MGD</i>	<i>ESFC</i>
Jan, 07	0.068253	213
Feb	0.057017	178
Mar	0.065504	205
Apr	0.057600	180
May	0.070528	220
Jun	0.107010	334
Jul	0.069536	217
Aug	0.071147	222
Sep	0.065520	205
Oct	0.054749	171
Nov	0.060883	190
Dec	0.057408	179
Jan, 08	0.063488	198
Feb, 08	0.063840	200
Mar, 08	0.057888	181
Apr, 08	0.056864	178
TOTAL AVG	0.067096	210

QV #12 Lift Station

<i>Month</i>	<i>Daily Avg.</i>	
	<i>MGD</i>	<i>ESFC</i>
Jan, 07	0.229974	719
Feb	0.206623	646
Mar	0.258076	806
Apr	0.247016	772
May	0.259919	812
Jun	0.283423	886
Jul	0.302885	947
Aug	0.313865	981
Sep	0.243576	761
Oct	0.247763	774
Nov	0.243301	760
Dec	0.252487	789
Jan, 08	0.279297	873
Feb, 08	0.275314	860
Mar, 08	0.285869	893
Apr, 08	0.296929	928
TOTAL AVG	0.257409	804

TB #1 Lift Station

<i>Month</i>	<i>Daily Avg.</i>	
	<i>MGD</i>	<i>ESFC</i>
Jan, 07	0.308473	964
Feb	0.294343	920
Mar	0.316552	989
Apr	0.297281	929
May	0.302430	945
Jun	0.295959	925
Jul	0.323053	1,010
Aug	0.311100	972
Sep	0.275729	862
Oct	0.273097	853
Nov	0.294745	921
Dec	0.275081	860
Jan, 08	0.279066	872
Feb, 08	0.270300	845
Mar, 08	0.275400	861
Apr, 08	0.286655	896
TOTAL AVG	0.297320	929

TB #2 Lift Station

<i>Month</i>	<i>Daily Avg.</i>	
	<i>MGD</i>	<i>ESFC</i>
Jan, 07	0.101150	316
Feb	0.077520	242
Mar	0.093312	292
Apr	0.082686	258
May	0.084609	264
Jun	0.086947	272
Jul	0.098956	309
Aug	0.100295	313
Sep	0.093972	294
Oct	0.095123	297
Nov	0.096772	302
Dec	0.085122	266
Jan, 08	0.100295	313
Feb, 08	0.088655	277
Mar, 08	0.088385	276
Apr, 08	0.082479	258
TOTAL AVG	0.091372	286

TB #3 Lift Station

<i>Month</i>	<i>Daily Avg.</i>	
	<i>MGD</i>	<i>ESFC</i>
Jan, 07	0.041230	129
Feb	0.044640	140
Mar	0.047366	148
Apr	0.044268	138
May	0.047213	148
Jun	0.073179	229
Jul	0.047141	147
Aug	0.043884	137
Sep	0.049934	156
Oct	0.023850	75
Nov	0.025320	79
Dec	0.023498	73
Jan, 08	0.024893	78
Feb, 08	0.024800	78
Mar, 08	0.013516	42
Apr, 08	0.022737	71
TOTAL AVG	0.042627	133

TB #4 Lift Station

<i>Month</i>	<i>Daily Avg.</i>	
	<i>MGD</i>	<i>ESFC</i>
Jan, 07	0.039927	125
Feb	0.051557	161
Mar	0.049717	155
Apr	0.108180	338
May	0.044269	138
Jun	0.059456	186
Jul	0.064986	203
Aug	0.096677	302
Sep	0.044164	138
Oct	0.059052	185
Nov	0.045523	142
Dec	0.037969	119
Jan, 08	0.045240	141
Feb, 08	0.086220	269
Mar, 08	0.060240	188
Apr, 08	0.051269	160
TOTAL AVG	0.058456	183

TB #5 Lift Station

<i>Month</i>	<i>Daily Avg.</i>	
	<i>MGD</i>	<i>ESFC</i>
Jan, 07	0.015992	50
Feb	0.016432	51
Mar	0.023723	74
Apr	0.017199	54
May	0.016262	51
Jun	0.018053	56
Jul	0.020529	64
Aug	0.018788	59
Sep	0.016380	51
Oct	0.016455	51
Nov	0.017403	54
Dec	0.016268	51
Jan, 08	0.017346	54
Feb, 08	0.017787	56
Mar, 08	0.015288	48
Apr, 08	0.016271	51
TOTAL AVG	0.017790	56

TB #6 Lift Station

<i>Month</i>	<i>Daily Avg.</i>	
	<i>MGD</i>	<i>ESFC</i>
Jan, 07	0.079500	248
Feb	0.087171	272
Mar	0.039693	124
Apr	0.032700	102
May	0.033690	105
Jun	0.033806	106
Jul	0.037955	119
Aug	0.041091	128
Sep	0.035807	112
Oct	0.034691	108
Nov	0.038671	121
Dec	0.040200	126
Jan, 08	0.041460	130
Feb, 08	0.038468	120
Mar, 08	0.041730	130
Apr, 08	0.065793	206
TOTAL AVG	0.044581	139

TB #7 Lift Station

Month	Daily Avg.	
	MGD	ESFC
Jan, 07	0.036909	115
Feb	0.033086	103
Mar	0.041793	131
Apr	0.036880	115
May	0.038720	121
Jun	0.035250	110
Jul	0.040593	127
Aug	0.076463	239
Sep	0.040114	125
Oct	0.031382	98
Nov	0.030503	95
Dec	0.026800	84
Jan, 08	0.031040	97
Feb, 08	0.029497	92
Mar, 08	0.057600	180
Apr, 08	0.049034	153
TOTAL AVG	0.039041	122

TB #8 Lift Station

Month	Daily Avg.	
	MGD	ESFC
Jan, 07	0.004136	13
Feb	0.003771	12
Mar	0.004748	15
Apr	0.004220	13
May	0.004270	13
Jun	0.011859	37
Jul	0.004552	14
Aug	0.004434	14
Sep	0.004039	13
Oct	0.003464	11
Nov	0.004035	13
Dec	0.003550	11
Jan, 08	0.036020	113
Feb, 08	0.003484	11
Mar, 08	0.003370	11
Apr, 08	0.003279	10
TOTAL AVG	0.004757	15

TB #9 Lift Station

Month	Daily Avg.	
	MGD	ESFC
Jan, 07	0.039868	125
Feb	0.037432	117
Mar	0.045367	142
Apr	0.041454	130
May	0.039901	125
Jun	0.040058	125
Jul	0.044506	139
Aug	0.054104	169
Sep	0.050885	159
Oct	0.044412	139
Nov	0.041539	130
Dec	0.040327	126
Jan, 08	0.039543	124
Feb, 08	0.041445	130
Mar, 08	0.041748	130
Apr, 08	0.038727	121
TOTAL AVG	0.043321	135

TB #10 Lift Station

Month	Daily Avg.	
	MGD	ESFC
Jan, 07	0.085636	268
Feb	0.076821	240
Mar	0.091738	287
Apr	0.082380	257
May	0.083940	262
Jun	0.086681	271
Jul	0.089317	279
Aug	0.103669	324
Sep	0.092700	290
Oct	0.079691	249
Nov	0.081465	255
Dec	0.076620	239
Jan, 08	0.076740	240
Feb, 08	0.077806	243
Mar, 08	0.078300	245
Apr, 08	0.076841	240
TOTAL AVG	0.085888	268

MC #1 Lift Station

Month	Daily Avg.	
	MGD	ESFC
Jan, 07	-	-
Feb	-	-
Mar	-	-
Apr	-	-
May	-	-
Jun	-	-
Jul	-	-
Aug	-	-
Sep	-	-
Oct	-	-
Nov	-	-
Dec	-	-
Jan, 08	-	-
Feb, 08	-	-
Mar, 08	-	-
Apr, 08	-	-
TOTAL AVG	#DIV/0!	#DIV/0!

MC #2 Lift Station

Month	Daily Avg.	
	MGD	ESFC
Jan, 07	-	-
Feb	-	-
Mar	-	-
Apr	-	-
May	-	-
Jun	-	-
Jul	-	-
Aug	-	-
Sep	-	-
Oct	-	-
Nov	-	-
Dec	-	-
Jan, 08	-	-
Feb, 08	-	-
Mar, 08	-	-
Apr, 08	-	-
TOTAL AVG	#DIV/0!	#DIV/0!

MC #3 Lift Station

Month	Daily Avg.	
	MGD	ESFC
Jan, 07	0.090120	282
Feb	0.069723	218
Mar	0.083217	260
Apr	0.066944	209
May	0.065690	205
Jun	0.062640	196
Jul	0.113715	355
Aug	0.110400	345
Sep	0.055849	175
Oct	0.008745	27
Nov	0.054144	169
Dec	0.058573	183
Jan, 08	0.071450	223
Feb, 08	0.058839	184
Mar, 08	0.058474	183
Apr, 08	0.049766	156
TOTAL AVG	0.069980	219

MC #4 Lift Station

Month	Daily Avg.	
	MGD	ESFC
Jan, 07	0.016851	53
Feb	0.012581	39
Mar	0.014710	46
Apr	0.013908	43
May	0.013832	43
Jun	0.012398	39
Jul	0.015276	48
Aug	0.014788	46
Sep	0.012935	40
Oct	0.068106	213
Nov	0.014214	44
Dec	0.013832	43
Jan, 08	0.014034	44
Feb, 08	0.014085	44
Mar, 08	0.012540	39
Apr, 08	0.011438	36
TOTAL AVG	0.018619	58

PP1 #1 Lift Station

Month	Daily Avg.	
	MGD	ESFC
Jan, 07	-	-
Feb	-	-
Mar	-	-
Apr	-	-
May	-	-
Jun	-	-
Jul	-	-
Aug	-	-
Sep	-	-
Oct	-	-
Nov	-	-
Dec	-	-
Jan, 08	-	-
Feb, 08	-	-
Mar, 08	-	-
Apr, 08	-	-
TOTAL AVG	#DIV/0!	#DIV/0!

PP1 #2 Lift Station

Month	Daily Avg.	
	MGD	ESFC
Jan, 07	-	-
Feb	-	-
Mar	-	-
Apr	-	-
May	-	-
Jun	-	-
Jul	-	-
Aug	-	-
Sep	-	-
Oct	-	-
Nov	-	-
Dec	-	-
Jan, 08	-	-
Feb, 08	-	-
Mar, 08	-	-
Apr, 08	-	-
TOTAL AVG	#DIV/0!	#DIV/0!

PP1 #3 Lift Station

Month	Daily Avg.	
	MGD	ESFC
Jan, 07	-	-
Feb	-	-
Mar	-	-
Apr	-	-
May	-	-
Jun	-	-
Jul	-	-
Aug	-	-
Sep	-	-
Oct	-	-
Nov	-	-
Dec	-	-
Jan, 08	-	-
Feb, 08	-	-
Mar, 08	-	-
Apr, 08	-	-
TOTAL AVG	#DIV/0!	#DIV/0!

PP1 #4 Lift Station

Month	Daily Avg.	
	MGD	ESFC
Jan, 07	-	-
Feb	-	-
Mar	-	-
Apr	-	-
May	-	-
Jun	-	-
Jul	-	-
Aug	-	-
Sep	-	-
Oct	-	-
Nov	-	-
Dec	-	-
Jan, 08	-	-
Feb, 08	-	-
Mar, 08	-	-
Apr, 08	-	-
TOTAL AVG	#DIV/0!	#DIV/0!

PP1 #5 Lift Station

<i>Month</i>	<i>Daily Avg.</i> MGD	<i>ESFC</i>
Jan, 07		-
Feb		-
Mar		-
Apr		-
May		-
Jun		-
Jul		-
Aug		-
Sep		-
Oct		-
Nov		-
Dec		-
Jan, 08		-
Feb, 08		-
Mar, 08		-
Apr, 08		-
TOTAL AVG	#DIV/0!	#DIV/0!

PP1 #7 Lift Station

<i>Month</i>	<i>Daily Avg.</i> MGD	<i>ESFC</i>
Jan, 07		-
Feb		-
Mar		-
Apr		-
May		-
Jun		-
Jul		-
Aug		-
Sep		-
Oct		-
Nov		-
Dec		-
Jan, 08		-
Feb, 08		-
Mar, 08		-
Apr, 08		-
TOTAL AVG	#DIV/0!	#DIV/0!

PP2 #1 Lift Station

<i>Month</i>	<i>Daily Avg.</i> MGD	<i>ESFC</i>
Jan, 07		-
Feb		-
Mar		-
Apr		-
May		-
Jun		-
Jul		-
Aug		-
Sep		-
Oct		-
Nov		-
Dec		-
Jan, 08		-
Feb, 08		-
Mar, 08		-
Apr, 08		-
TOTAL AVG	#DIV/0!	#DIV/0!

PP2 #2 Lift Station

<i>Month</i>	<i>Daily Avg.</i> MGD	<i>ESFC</i>
Jan, 07		-
Feb		-
Mar		-
Apr		-
May		-
Jun		-
Jul		-
Aug		-
Sep		-
Oct		-
Nov		-
Dec		-
Jan, 08		-
Feb, 08		-
Mar, 08		-
Apr, 08		-
TOTAL AVG	#DIV/0!	#DIV/0!

49 #1 Lift Station

<i>Month</i>	<i>Daily Avg.</i> MGD	<i>ESFC</i>
Jan, 07		-
Feb		-
Mar		-
Apr		-
May		-
Jun		-
Jul		-
Aug		-
Sep		-
Oct		-
Nov		-
Dec		-
Jan, 08		-
Feb, 08		-
Mar, 08		-
Apr, 08		-
TOTAL AVG	#DIV/0!	#DIV/0!

42 #1 Lift Station

<i>Month</i>	<i>Daily Avg. MGD</i>	<i>ESFC</i>
Jan, 07		-
Feb		-
Mar		-
Apr		-
May		-
Jun	0.288058	900
Jul		-
Aug		-
Sep		-
Oct		-
Nov		-
Dec		-
Jan, 08		-
Feb, 08		-
Mar, 08		-
Apr, 08		-
TOTAL AVG	0.288058	900

42 #2 Lift Station

<i>Month</i>	<i>Daily Avg. MGD</i>	<i>ESFC</i>
Jan, 07		-
Feb		-
Mar		-
Apr		-
May		-
Jun	0.096074	300
Jul		-
Aug		-
Sep		-
Oct		-
Nov		-
Dec		-
Jan, 08		-
Feb, 08		-
Mar, 08		-
Apr, 08		-
TOTAL AVG	0.096074	300

42 #3 Lift Station

<i>Month</i>	<i>Daily Avg. MGD</i>	<i>ESFC</i>
Jan, 07		-
Feb		-
Mar		-
Apr		-
May		-
Jun	0.035410	111
Jul		-
Aug		-
Sep		-
Oct		-
Nov		-
Dec		-
Jan, 08		-
Feb, 08		-
Mar, 08		-
Apr, 08		-
TOTAL AVG	0.035410	111

42 #4 Lift Station

<i>Month</i>	<i>Daily Avg. MGD</i>	<i>ESFC</i>
Jan, 07		-
Feb		-
Mar		-
Apr		-
May		-
Jun		-
Jul		-
Aug		-
Sep		-
Oct		-
Nov		-
Dec		-
Jan, 08		-
Feb, 08		-
Mar, 08		-
Apr, 08		-
TOTAL AVG	#DIV/0!	#DIV/0!

Table 5.5b

5/22/2008
 QUAIL VALLEY U. D.
 WASTEWATER TREATMENT PLANT

UPDATED FLOWS

Day	Monthlyyear NOVEMBER, 07		Monthlyyear DECEMBER, 07		Monthlyyear JANUARY, 08		Monthlyyear FEBRUARY, 08		Monthlyyear MARCH, 08		Monthlyyear APRIL, 08		6-MONTH AVERAGE	
	Rainfall (inches)	Flow (MG)	Rainfall (inches)	Flow (MG)	Rainfall (inches)	Flow (MG)	Rainfall (inches)	Flow (MG)	Rainfall (inches)	Flow (MG)	Rainfall (inches)	Flow (MG)	Rainfall (inches)	Flow (MG)
1	0.00	1.270	0.00	1.447	0.00	1.149	0.00	1.140	0.00	1.367	0.00	1.309	0.00	1.280
2	0.00	1.194	0.04	1.793	0.00	1.404	0.00	1.368	0.05	1.633	0.00	1.303	0.02	1.449
3	0.00	1.418	0.00	1.044	0.00	1.324	0.00	1.624	0.34	1.472	0.00	1.308	0.06	1.365
4	0.00	1.488	0.00	1.136	0.02	1.120	0.02	1.346	0.00	1.233	0.22	1.208	0.04	1.255
5	0.00	1.325	0.00	1.256	0.01	1.412	0.00	1.352	0.01	1.275	0.00	1.345	0.00	1.328
6	0.00	1.292	0.00	1.224	0.01	1.611	0.00	1.200	1.00	1.935	0.02	1.481	0.17	1.457
7	0.00	1.285	0.00	1.210	0.01	1.432	0.00	1.228	0.00	1.272	0.00	1.381	0.00	1.301
8	0.00	1.213	0.00	1.445	0.05	1.300	0.00	1.186	0.00	1.336	0.00	1.334	0.01	1.302
9	0.00	1.220	0.03	1.552	0.02	1.225	0.00	1.376	0.01	1.522	0.00	1.349	0.01	1.374
10	0.00	1.440	0.02	1.387	0.00	1.315	0.00	1.585	0.65	1.900	0.01	1.363	0.11	1.498
11	0.00	1.553	0.02	1.329	0.00	1.075	0.10	1.365	0.00	1.160	0.00	1.150	0.02	1.272
12	0.05	1.339	0.48	1.416	0.00	1.186	0.25	1.485	0.00	1.515	0.00	1.269	0.13	1.368
13	0.00	1.287	0.03	1.319	0.00	1.535	0.00	1.465	0.01	1.230	0.00	1.452	0.01	1.381
14	0.00	1.298	0.95	1.487	0.00	1.179	0.00	1.119	0.00	1.280	0.00	1.198	0.16	1.260
15	0.00	1.209	0.35	1.881	2.10	2.501	0.25	1.163	0.00	1.350	0.00	1.250	0.45	1.559
16	0.00	1.109	0.00	1.519	0.01	1.688	0.85	2.185	0.00	1.470	0.00	1.173	0.14	1.524
17	0.00	2.492	0.00	1.330	0.05	1.326	0.01	1.653	0.00	1.340	1.00	1.435	0.18	1.596
18	2.30	1.956	0.00	1.355	2.60	3.127	0.00	1.399	0.30	1.465	0.03	1.256	0.87	1.760
19	0.15	1.407	0.06	1.395	0.00	1.715	0.00	1.346	0.00	1.245	0.00	1.287	0.04	1.399
20	0.00	1.401	0.01	1.332	0.02	1.483	1.50	2.540	0.00	1.143	0.00	1.539	0.26	1.573
21	0.00	1.484	0.02	1.276	0.25	1.678	0.11	1.698	0.00	1.297	0.00	1.388	0.06	1.470
22	0.18	1.385	0.05	1.467	0.70	1.888	0.00	1.279	0.00	1.369	0.00	1.300	0.16	1.448
23	0.02	1.353	0.00	1.290	0.25	1.924	0.00	1.157	0.00	1.356	0.00	1.294	0.05	1.396
24	0.25	2.192	0.00	1.135	0.30	1.613	0.00	1.747	0.00	1.410	0.00	1.305	0.09	1.567
25	1.00	1.823	0.05	1.774	0.16	1.475	0.00	1.374	0.00	1.242	0.75	1.385	0.33	1.512
26	0.10	1.308	0.20	1.309	0.00	1.536	0.00	1.298	0.00	1.295	0.02	1.413	0.05	1.360
27	0.00	1.276	0.60	1.580	0.00	1.639	0.00	1.212	0.00	1.245	0.02	1.483	0.10	1.406
28	0.00	1.327	0.00	1.335	0.01	1.420	0.00	1.190	0.00	1.323	0.00	1.239	0.00	1.306
29	0.00	1.241	0.00	1.455	0.00	1.400	0.00	1.180	0.00	1.380	0.00	1.184	0.00	1.307
30	0.00	1.145	0.00	1.376	0.01	1.272	0.00	0.10	1.593	0.00	1.245	0.02	1.326	
31			0.00	1.594	0.25	1.560		0.03	1.377			0.09	1.510	
Total	4.05	42.730	2.91	43.448	6.83	47.512	3.09	41.260	2.50	43.030	2.07	39.626	3.63	43.911
Average	0.14	1.424	0.09	1.402	0.22	1.533	0.11	1.423	0.08	1.388	0.07	1.321	0.12	1.416
Max	2.30	2.492	0.95	1.881	2.60	3.127	1.50	2.540	1.00	1.935	1.00	1.539	0.87	1.760
Min	0.00	1.109	0.00	1.044	0.00	1.075	0.00	1.119	0.00	1.143	0.00	1.150	0.00	1.255

5/28/2008
 PALMER PLANTATION MUD 1
 WASTEWATER TREATMENT PLANT

UPDATED FLOWS

	Monthlyyear NOVEMBER, 07		Monthlyyear DECEMBER, 07		Monthlyyear JANUARY, 08		Monthlyyear FEBRUARY, 08		Monthlyyear MARCH, 08		Monthlyyear APRIL, 08		6-MONTH AVERAGE	
	Rainfall (inches)	Flow (MG)	Rainfall (inches)	Flow (MG)	Rainfall (inches)	Flow (MG)	Rainfall (inches)	Flow (MG)	Rainfall (inches)	Flow (MG)	Rainfall (inches)	Flow (MG)	Rainfall (inches)	Flow (MG)
Total		8.856		9.937		9.769		8.650		8.729		8.277		9.036
Average		0.295		0.321		0.315		0.298		0.282		0.276		0.298
Max														
Min														

5/28/2008
 FORT BEND CO. MUD 26
 WASTEWATER TREATMENT PLANT

UPDATED FLOWS

Day	Monthlyyear NOVEMBER, 07		Monthlyyear DECEMBER, 07		Monthlyyear JANUARY, 08		Monthlyyear FEBRUARY, 08		Monthlyyear MARCH, 08		Monthlyyear APRIL, 08		6-MONTH AVERAGE	
	Rainfall (inches)	Flow (MG)	Rainfall (inches)	Flow (MG)	Rainfall (inches)	Flow (MG)	Rainfall (inches)	Flow (MG)	Rainfall (inches)	Flow (MG)	Rainfall (inches)	Flow (MG)	Rainfall (inches)	Flow (MG)
Total		10.604		10.771		12.124		10.339		10.701		9.671		10.702
Average		0.353		0.347		0.391		0.357		0.345		0.322		0.353
Max														
Min														

Table 5.5c

GIS ID	MUD	Name	LJA Projected MGD	QV MGD	QV-LJA Diff
FB42LS1	FBMUD42	Lift Station No. 1	0.46432	0	-0.46432
FB42LS2	FBMUD42	Lift Station No. 2	0.21184	0	-0.21184
FB42LS3	FBMUD42	Lift Station No. 3	0.12192	0	-0.12192
FB42LS4	FBMUD42	Lift Station No. 4	0.13568	0	-0.13568
FB49LS0	FBMUD49	Lift Station	0.09664	0	-0.09664
MCMLS01	MCMUD	Lift Station No. 1	0.11328	0	-0.11328
MCMLS02	MCMUD	Lift Station No. 2	0.17696	0	-0.17696
MCMLS03	MCMUD	Lift Station No. 3	0.09376	0.069980	-0.02378
MCMLS04	MCMUD	Lift Station No. 4	0.04480	0.018619	-0.02618
PP1LS01	PPMUD01	Lift Station No. 1	0.10112	0	-0.10112
PP1LS02	PPMUD01	Lift Station No. 2	0.02336	0	-0.02336
PP1LS03	PPMUD01	Lift Station No. 3	0.03328	0	-0.03328
PP1LS04	PPMUD01	Lift Station No. 4	0.12096	0	-0.12096
PP1LS05	PPMUD01	Lift Station No. 5	0.02432	0	-0.02432
PP1LS06	PPMUD01	Lift Station No. 6	0.03904	0	-0.03904
FBISD08	PPMUD01	Private Lift Station	0.00640	0	-0.00640
PP2LS01	PPMUD02	Lift Station No. 1	0.20224	0	-0.20224
PP2LS02	PPMUD02	Lift Station No. 2	0.02528	0	-0.02528
LEXLS00	QVMUD	Lift Station	0.04160	0	-0.04160
QVMLS01	QVMUD	Lift Station No. 1	1.02752	0.699652	-0.32787
QVMLS10	QVMUD	Lift Station No. 10	0.18336	0.154230	-0.02913
QVMLS11	QVMUD	Lift Station No. 11	0.07520	0.067096	-0.00810
QVMLS12	QVMUD	Lift Station No. 12	0.20672	0.257409	0.05069
QVMLS02	QVMUD	Lift Station No. 2	0.03936	0.035771	-0.00359
QVMLS03	QVMUD	Lift Station No. 3	0.23040	0.268956	0.03856
QVMLS05	QVMUD	Lift Station No. 5	0.56704	0.470533	-0.09651
QVMLS06	QVMUD	Lift Station No. 6	0.06720	0.096564	0.02936
QVMLS07	QVMUD	Lift Station No. 7	0.67776	0.393540	-0.28422
QVMLS08	QVMUD	Lift Station No. 8	0.16352	0.086855	-0.07666
QVMLS09	QVMUD	Lift Station No. 9	0.11360	0.054704	-0.05890
QVWTP00	QVMUD	Treatment Plant	2.47808	1.416469	-1.06161
TBMLS01	TBMUD	Lift Station No. 1	0.42528	0.297320	-0.12796
TBMLS10	TBMUD	Lift Station No. 10	0.14080	0.085888	-0.05491
TBMLS02	TBMUD	Lift Station No. 2	0.19552	0.091372	-0.10415
TBMLS03	TBMUD	Lift Station No. 3	0.06624	0.042627	-0.02361
TBMLS04	TBMUD	Lift Station No. 4	0.07520	0.058456	-0.01674
TBMLS05	TBMUD	Lift Station No. 5	0.01344	0.017790	0.00435
TBMLS06	TBMUD	Lift Station No. 6	0.04256	0.044581	0.00202
TBMLS07	TBMUD	Lift Station No. 7	0.05056	0.039041	-0.01152
TBMLS08	TBMUD	Lift Station No. 8	0.03008	0.004757	-0.02532
TBMLS09	TBMUD	Lift Station No. 9	0.06080	0.043321	-0.01748



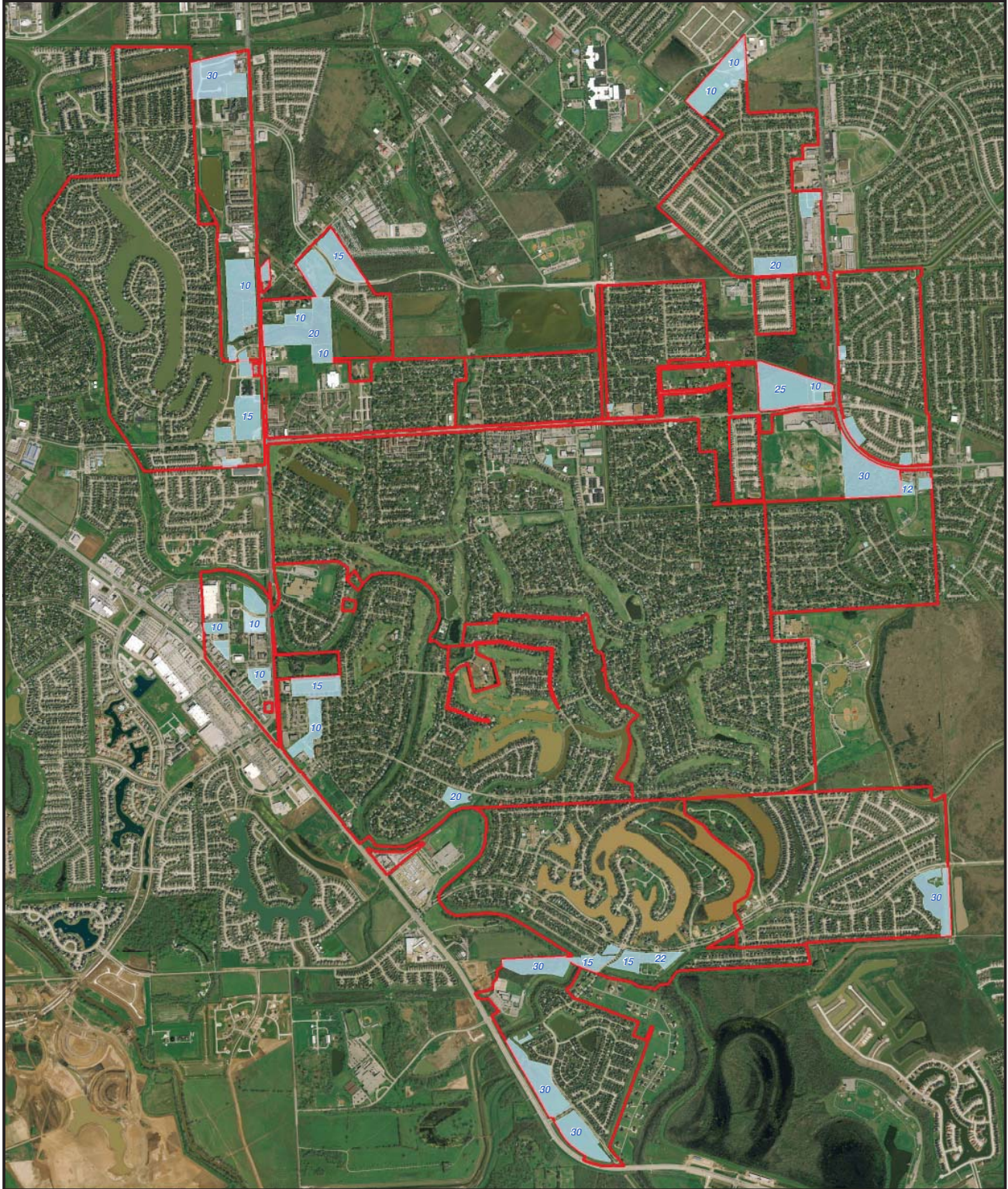
6.1 - Proposed Development Analysis

A majority of the Districts within the Quail Valley service area are close to maximum build out. The remaining acreage is mainly dedicated to drainage detention and or park/golf course/recreation areas. The below table (table 6.1) details the remaining acreage and the potential for additional needed connections based on ESFCs. In addition Exhibit 6.1 illustrates the locations of these undeveloped developable areas and their assigned connection values.

Table 6.1

PROJECTED CONNECTION VALUES			
Tract ID	ESFC	Acreage	Usage Type
1	5	0.726	Commercial/Retail Space
2	10	2.349	Commercial/Retail Space
3	30	11.952	Commercial/Retail Space
4	8	1.311	Commercial/Retail Space
5	30	12.046	Commercial/Retail Space
6	30	10.118	Commercial/Retail Space
7	22	4.489	Commercial/Retail Space
8	8	1.231	Commercial/Retail Space
9	7	0.928	Commercial/Retail Space
10	15	4.261	Commercial/Retail Space
11	2	0.291	Commercial/Retail Space
12	15	3.616	Commercial/Retail Space
13	8	2.957	Commercial/Retail Space
14	10	3.560	Commercial/Retail Space
15	10	5.928	Commercial/Retail Space
16	5	1.405	Commercial/Retail Space
17	5	1.044	Commercial/Retail Space
18	5	0.721	Commercial/Retail Space
19	5	1.176	Commercial/Retail Space
20	2	0.457	Commercial/Retail Space
21	10	3.151	Commercial/Retail Space
22	5	1.007	Commercial/Retail Space
23	5	0.685	Commercial/Retail Space
24	2	0.095	Commercial/Retail Space
25	15	9.422	Commercial/Retail Space
26	6	0.855	Commercial/Retail Space
27	20	3.444	Commercial/Retail Space
28	12	1.749	Commercial/Retail Space

29	8	1.092	Commercial/Retail Space
30	9	1.409	Commercial/Retail Space
31	5	0.744	Commercial/Retail Space
32	10	2.662	Commercial/Retail Space
33	2	0.372	Commercial/Retail Space
34	15	10.285	Commercial/Retail Space
35	8	2.368	Commercial/Retail Space
36	8	1.532	Commercial/Retail Space
37	5	0.755	Commercial/Retail Space
38	7	1.949	Commercial/Retail Space
39	30	13.305	Residential
40	5	0.798	Commercial/Retail Space
41	8	1.316	Commercial/Retail Space
42	3	0.518	Commercial/Retail Space
43	10	2.551	Commercial/Retail Space
44	5	0.800	Commercial/Retail Space
45	3	0.521	Commercial/Retail Space
46	25	18.922	Commercial/Retail Space
47	3	0.536	Commercial/Retail Space
48	5	1.638	Commercial/Retail Space
49	20	7.506	Commercial/Retail Space
50	8	1.361	Commercial/Retail Space
51	3	0.523	Commercial/Retail Space
52	3	0.523	Commercial/Retail Space
53	3	0.598	Commercial/Retail Space
54	10	10.949	Commercial/Retail Space
55	10	7.894	Commercial/Retail Space
56	10	2.081	Commercial/Retail Space
57	30	22.534	Commercial/Retail Space
58	10	4.059	Commercial/Retail Space
59	5	0.919	Commercial/Retail Space
60	5	0.905	Commercial/Retail Space
61	8	2.312	Commercial/Retail Space
62	5	1.395	Commercial/Retail Space
63	5	1.436	Commercial/Retail Space
64	10	15.822	Commercial/Retail Space
65	8	2.976	Commercial/Retail Space
66	30	17.279	Residential
67	15	16.892	Commercial/Retail Space
68	20	18.453	Commercial/Retail Space
69	10	4.173	Commercial/Retail Space
70	3	1.267	Commercial/Retail Space
71	4	0.659	Commercial/Retail Space



LEGEND

10 NON-RESIDENTIAL

MUD BOUNDARY

SCALE: 1" = 3000 FEET



**NON-RESIDENTIAL
LOTS**

EXHIBIT 6.1



6.2 - Waste Water (Sanitary) Analysis with Projections

“Existing Analysis” is the analysis and result information based on existing development. These numbers and approach are addressed in Section 5.0 “Water and Wastewater Facility Recommended Needs and Costs”.

“Projected Development Analysis” is the analysis and result information based on the accumulation of existing development and the anticipated build-out of currently undeveloped acreage.

Maintaining the same analysis procedures discussed in section 3.0 “Analysis Methodology”, the currently undeveloped acreage was assigned a value of

demand based on an accumulative average of the currently built-out sections. It is our assumption that similar demand will be placed on future developed acreage as is placed on existing acreage.

Table 6.2 compares the “Existing Analysis” (capacity of current sanitary infrastructure) to the “Projected Development Analysis” (anticipated demand if the areas of open acreage were developed). The analysis shows no more performance issues outside of the “Existing Analysis”. The 5-Year maintenance and Rehabilitation plan accounts for all lift stations that would be deemed under designed (as accounted for in the existing analysis).



Table 6.2

Existing Data								Proposed Data							
LIFT STATION ID	ACTUAL NAME	PUMP INFO	ESFC DESIGN*	ESFC ACTUAL	FM SIZE	FM VELOCITY	5 YEAR PLAN	LIFT STATION ID	ACTUAL NAME	PUMP INFO	ESFC DESIGN*	ESFC ACTUAL	FM SIZE	FM VELOCITY	5 YEAR PLAN
1 QVMLS01	QUAIL VALLEY MUD LIFT STATION No1	3@ 1632	3672	3211	12	9.3		1 QVMLS01	QUAIL VALLEY MUD LIFT STATION No1	3@ 1632	3672	3227	12	9.3	
2 QVMLS02	QUAIL VALLEY MUD LIFT STATION No2	2@ 280	315	123	6	3.2		2 QVMLS02	QUAIL VALLEY MUD LIFT STATION No2	2@ 280	315	123	6	3.2	
3 QVMLS03	QUAIL VALLEY MUD LIFT STATION No3	2@ 610	686	720	6	6.9	YES	3 QVMLS03	QUAIL VALLEY MUD LIFT STATION No3	2@ 610	686	730	6	6.9	YES
4 QVMLS05	QUAIL VALLEY MUD LIFT STATION No5	3@ 750	1687	1772	8	9.6	YES	4 QVMLS05	QUAIL VALLEY MUD LIFT STATION No5	3@ 750	1687	1778	8	9.6	YES
5 QVMLS06	QUAIL VALLEY MUD LIFT STATION No6	2@ 400	450	210	6	4.5		5 QVMLS06	QUAIL VALLEY MUD LIFT STATION No6	2@ 400	450	210	6	4.5	
6 QVMLS07	QUAIL VALLEY MUD LIFT STATION No7	3@ 1051	2364	2118	12	6.0		6 QVMLS07	QUAIL VALLEY MUD LIFT STATION No7	3@ 1051	2364	2139	12	6.0	
7 QVMLS08	QUAIL VALLEY MUD LIFT STATION No8	2@ 400	450	511	10	1.6	YES	7 QVMLS08	QUAIL VALLEY MUD LIFT STATION No8	2@ 400	450	521	10	1.6	YES
8 QVMLS09	QUAIL VALLEY MUD LIFT STATION No9	2@ 200	225	355	6	2.3	YES	8 QVMLS09	QUAIL VALLEY MUD LIFT STATION No9	2@ 200	225	355	6	2.3	YES
9 QVMLS10	QUAIL VALLEY MUD LIFT STATION No10	2@ 375	421	573	8	2.4	YES	9 QVMLS10	QUAIL VALLEY MUD LIFT STATION No10	2@ 375	421	573	8	2.4	YES
10 QVMLS11	QUAIL VALLEY MUD LIFT STATION No11	2@ 160	180	235	6	1.8	YES	10 QVMLS11	QUAIL VALLEY MUD LIFT STATION No11	2@ 160	180	235	6	1.8	YES
11 QVMLS12	QUAIL VALLEY MUD LIFT STATION No12	2@ 709	797	646	12	2.0		11 QVMLS12	QUAIL VALLEY MUD LIFT STATION No12	2@ 709	797	792	12	2.0	
12 TBMLS01	THUNDERBIRD UD LIFT STATION No1	2@ 850	956	1329	8	5.4	YES	12 TBMLS01	THUNDERBIRD UD LIFT STATION No1	2@ 850	956	1457	8	5.4	YES
13 TBNLS02	THUNDERBIRD NORTH UD LIFT STATION No2	2@ 595	669	611	10	2.4		13 TBNLS02	THUNDERBIRD NORTH UD LIFT STATION No2	2@ 595	669	632	10	2.4	
14 TBMLS03	THUNDERBIRD UD LIFT STATION No3	2@ 155	174	207	6	1.8	YES	14 TBMLS03	THUNDERBIRD UD LIFT STATION No3	2@ 155	174	207	6	1.8	YES
15 TBMLS04	THUNDERBIRD UD LIFT STATION No4	2@ 300	337	235	6	3.4		15 TBMLS04	THUNDERBIRD UD LIFT STATION No4	2@ 300	337	255	6	3.4	
16 TBMLS05	THUNDERBIRD UD LIFT STATION No5	2@ 245	275	42	4	6.3		16 TBMLS05	THUNDERBIRD UD LIFT STATION No5	2@ 245	275	42	4	6.3	
17 TBMLS06	THUNDERBIRD UD LIFT STATION No6	2@ 150	168	133	6	1.7		17 TBMLS06	THUNDERBIRD UD LIFT STATION No6	2@ 150	168	133	6	1.7	
18 TBMLS07	THUNDERBIRD UD LIFT STATION No7	2@ 200	225	158	8	1.3		18 TBMLS07	THUNDERBIRD UD LIFT STATION No7	2@ 200	225	158	8	1.3	
19 TBMLS08	THUNDERBIRD UD LIFT STATION No8	2@ 150	168	94	4	3.8		19 TBMLS08	THUNDERBIRD UD LIFT STATION No8	2@ 150	168	94	4	3.8	
20 TBMLS09	THUNDERBIRD UD LIFT STATION No9	2@ 245	275	190	6	2.8		20 TBMLS09	THUNDERBIRD UD LIFT STATION No9	2@ 245	275	190	6	2.8	
21 TBMLS10	THUNDERBIRD UD LIFT STATION No10	2@ 300	337	440	6	3.4	YES	21 TBMLS10	THUNDERBIRD UD LIFT STATION No10	2@ 300	337	440	6	3.4	YES
22 FB42LS1	FORT BEND MUD No42 LIFT STATION No1	3@ 1100	2475	1451	12	6.2		22 FB42LS1	FORT BEND MUD No42 LIFT STATION No1	3@ 1100	2475	1494	12	6.2	
23 FB42LS2	FORT BEND MUD No42 LIFT STATION No2	2@ 656	738	662	8	4.2		23 FB42LS2	FORT BEND MUD No42 LIFT STATION No2	2@ 656	738	662	8	4.2	
24 FB42LS3	FORT BEND MUD No42 LIFT STATION No3	2@ 216	243	381	6	2.5	YES	24 FB42LS3	FORT BEND MUD No42 LIFT STATION No3	2@ 216	243	381	6	2.5	YES
25 FB42LS4	FORT BEND MUD No42 LIFT STATION No4	2@ 450	506	424	8	2.9		25 FB42LS4	FORT BEND MUD No42 LIFT STATION No4	2@ 450	506	424	8	2.9	
26 PP1LS01	PALMER PLANTATION MUD No1 LIFT STATION No1	2@ 300	337	316	6	3.4		26 PP1LS01	PALMER PLANTATION MUD No1 LIFT STATION No1	2@ 300	337	316	6	3.4	
27 PP1LS02	PALMER PLANTATION MUD No1 LIFT STATION No2	2@ 100	112	73	4	2.6		27 PP1LS02	PALMER PLANTATION MUD No1 LIFT STATION No2	2@ 100	112	73	4	2.6	
28 PP1LS03	PALMER PLANTATION MUD No1 LIFT STATION No3	2@ 350	393	104	6	4.0		28 PP1LS03	PALMER PLANTATION MUD No1 LIFT STATION No3	2@ 350	393	104	6	4.0	
29 PP1LS04	PALMER PLANTATION MUD No1 LIFT STATION No4	3@ 300	675	378	6	6.8		29 PP1LS04	PALMER PLANTATION MUD No1 LIFT STATION No4	3@ 300	675	378	6	6.8	
30 PP1LS05	PALMER PLANTATION MUD No1 LIFT STATION No5	2@ 100	112	76	4	2.6		30 PP1LS05	PALMER PLANTATION MUD No1 LIFT STATION No5	2@ 100	112	76	4	2.6	
31 PP1LS06	PALMER PLANTATION MUD No1 LIFT STATION No6	2@ 138	155	122	4	3.5		31 PP1LS06	PALMER PLANTATION MUD No1 LIFT STATION No6	2@ 138	155	122	4	3.5	
32 PP2LS01	PALMER PLANTATION MUD No2 LIFT STATION No1	2@ 600	675	632	10	2.5		32 PP2LS01	PALMER PLANTATION MUD No2 LIFT STATION No1	2@ 600	675	662	10	2.5	
33 PP2LS02	PALMER PLANTATION MUD No2 LIFT STATION No2	2@ 95	106	79	4	2.4		33 PP2LS02	PALMER PLANTATION MUD No2 LIFT STATION No2	2@ 95	106	79	4	2.4	
34 MCMLS01	MEADOW CREEK MUD LIFT STATION No1	2@ 299	336	354	6	3.4	YES	34 MCMLS01	MEADOW CREEK MUD LIFT STATION No1	2@ 299	336	354	6	3.4	YES
35 MCMLS02	MEADOW CREEK MUD LIFT STATION No2	2@ 430	483	553	6	4.9	YES	35 MCMLS02	MEADOW CREEK MUD LIFT STATION No2	2@ 430	483	555	6	4.9	YES
36 MCMLS03	MEADOW CREEK MUD LIFT STATION No3	2@ 128	144	293	4	3.3	YES	36 MCMLS03	MEADOW CREEK MUD LIFT STATION No3	2@ 128	144	293	4	3.3	YES
37 MCMLS04	MEADOW CREEK MUD LIFT STATION No4	2@ 190	213	140	6	2.2		37 MCMLS04	MEADOW CREEK MUD LIFT STATION No4	2@ 190	213	140	6	2.2	
38 FB49LS0	FORT BEND MUD No49 OYSTER CREEK PLACE LIFT STATION	3@ 180	404	302	4	4.6		38 FB49LS0	FORT BEND MUD No49 OYSTER CREEK PLACE LIFT STATION	3@ 180	404	385	4	4.6	
39 LEXLS00	LEXINGTON PLACE LIFT STATION	2@ 321	361	130	6	3.6		39 LEXLS00	LEXINGTON PLACE LIFT STATION	2@ 321	361	130	6	3.6	

* Design ESFC value based on pumping rate @ 320 gpd/ESFC w/ Peaking Factor=4

* Design ESFC value based on pumping rate @ 320 gpd/ESFC w/ Peaking Factor=4



6.3 - Water Analysis with Projections

The “Ky Pipe” Model (outlined in section 5.1) addressed the undeveloped acreage by assigning a projected ESFC based on acreage and parcel type. This model was created as a full development model taking into consideration the developed acreage inclusion with undeveloped.

Table 6.1 addresses the average ESFC valued placed on the undeveloped acreage.

The results of the water model have shown that there is no current need for any improvements at the water plants. At this time no water lines appear to be undersized.

6.4 - Summary of Proposed Developments

Based on the fact that a majority of the districts are built-out, the recommendations identified to address existing infrastructure items (mapped within pages 5-21 thru 5-37) will adequately serve the remaining potential residents and customers. The identified items within the 5-Year Rehabilitation plan will adequately serve the needs of existing and potential build out.

The below district descriptions details the remaining acreage per district.

District	Total Acreage	Platted Acreage	Non-Platted Acreage
Fort Bend County MUD #26	517.17	446.77	70.40
Fort Bend County MUD #42	536.02	536.02	0.00
Fort Bend County MUD #49	131.47	120.51	10.96
Meadow Creek MUD	254.21	240.27	13.94
Palmer Plantation MUD #1	432.29	414.41	17.88
Palmer Plantation MUD #2	341.69	325.63	16.06
Quail Valley Utility District	1,731.23	1,651.07	80.16
Thunderbird Utility District	964.03	930.35	33.68

Information derived from the Joint Groundwater Reduction Plan. Numbers are consistent with study finding.

6.5 - Consolidation of Facilities

The eight participating MUDs were planed and constructed as stand alone service areas. Although the Districts are interconnected for emergency purposes, the consolidation of water plants would be quite difficult and not cost effective. Consolidating water plants would be extremely expensive and not realistically feasible, because existing water distribution lines were sized to convey only the volume of water needed to serve the customers of each District, and not to convey water though the District to neighboring Districts.

The same is true about the sanitary sewer collection systems and treatment plants for the eight participating MUDs. Each district was planed and constructed as a stand alone service area, with the collection systems of each District flowing towards a single location in each District. To minimize treatment plants, numerous additional lift stations would be needed as well as, land and easement acquisition needed for the lift stations and force mains. In addition to this, a site would have to be obtained for a regional treatment plant, as each of the existing district’s plant sites were not sized to be expanded to serve substantial out of District flows.





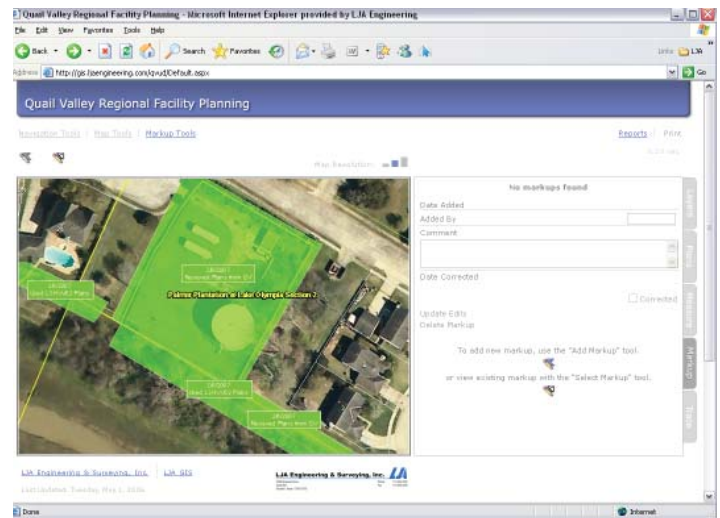
7.1 Data Dissemination

Utilizing a centralized data repository (ArcSDE) in which ArcGIS desktop suites and ArcServer web services reference, the created data is distributed to all project participants. As the GIS data is being created, authorized users are allowed access to view the progress. The project devoted website (<http://gis.ljaengineering.com/qvud>), displays project specific data such as the aerial base map, parcels, section and MUD boundaries, and all GIS infrastructure directly as it is being created.

By utilizing the functionality of ArcServer (a web based GIS product) the data is disseminated via the web to all authorized users. The created website references the ArcSDE databases whether they exist as base information or newly created data. This approach gives all project participants (Quail Valley, engineer or TWDB) the ability to stay in touch with the GIS data and project progress.

In addition to viewing the mapped data, all project specific information and reports are posted and can be retrieved from the website. All reports are available in .pdf formats throughout the project timeline.

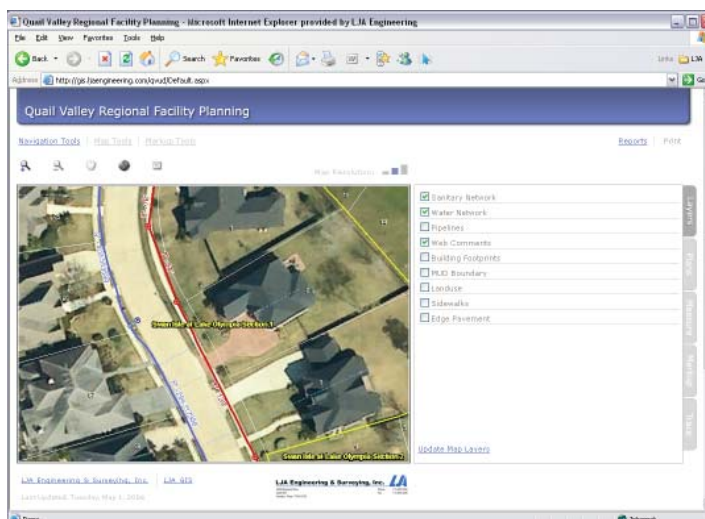
data structure allowing multiple editing versions, numerous users can review and comment on the created data. This gives the operators at Quail Valley the opportunity to document their knowledge of the working system.



As stated earlier in the report, all GIS data is created from designed construction plans with limited input from as-builts. There are several occasions where the designed construction plans did not include later improvements or, a line was abandoned and another placed in service. By providing web tools to the operator allowing them to review and comment on the data, a more complete and exhaustive data set can be created.

This process worked with a “web comment” data layer that both the engineer and the operator had authorization to access and modify. The engineering office accessed the “web comment” layer using ArcInfo desktop and the operator accessed the layer using the ArcServer GIS website. This allowed a live communication layer between the two parties isolating areas in question and exchanging corrected the information.

Please see Web Comment Table at the end of this section for list of interactions.



7.2 Data Review

In addition to viewing the created GIS data, comment and editing functionality was developed to help assist and streamline the data review process. With the GIS data created in an ArcSDE



7.3 GIS Assimilation

In addition to reviewing and distributing project data, the website served as a learning ground for the operators to become familiar with GIS. At the conclusion of the project the QVUD will be operating in an ArcGIS desktop environment. The website was built in a fashion that emulates many of the essential tasks that they would encounter with the GIS desktop (ArcView) interface.

By introducing the operators to web GIS during the data creation process, they will have a better understanding of GIS and its uses when their internal and in-field software is operational.

Web Content Table

OBJECTID	adby	adddate	addcomment	correctby	correctdate	correctcom	Corrected	Type	SHAPE_area	SHAPE_len
15	MAP	6/5/2006	Construction Plans don't match. Is this Oyster Creek Place Section 5 A-1 or Oyster Creek Village Section 4?	MAP	1/24/2007		1	ws	154825.059	1681.471
816	816 - MAP	10/5/2006	Tee location on overall different from plan and profile	MAP	2/6/2007	On Section Plans	1	wa	4608.635	271.697
1733	1733 - MAP	1/15/2007	On WATPT03 CPs shows this connection / is this correct?	QVUD	2/1/2007	Used SHCWR01 CPs	1	wa	1520.252	155.992
1734	1734 - MAP	1/15/2007	Need plans to 5th Street	QVUD	2/7/2007	Used FSRB00 Plans	1	wa	16099.859	549.489
1735	1735 - MAP	1/15/2007	Need plans to 5th Street	QVUD	2/7/2007	Used FSRB00 Plans	1	wa	31866.423	724.964
1736	1736 - MAP	1/15/2007	Need to locate Existing 12" WL plans	QVUD	2/5/2007	Used Oak Valley Subdivision Plans	1	wa	30402.990	898.198
1745	1745 - MAP	1/22/2007	Need to locate plans for 10" WL	QVUD	2/5/2007	Used EFBC00 CPs	1	wa	45454.924	973.210
1732	1732 - MAP	1/15/2007	Are Flushing valves installed here	Hector	1/30/2007	Yes, 16" water line runs from OV Water Plant 3 to Cartwright Rd. See CD QVUD set 3(QV WATER PL NO 3	1	wa	74311.789	1098.713
1746	gc	1/24/2007	Fire line maintained by QVUD	Hector	1/30/2007	WATER LINE TO FLUSHING VALVES WITHIN OJAIL VILLAGE PROJECT ARE OWN AND MAINTAIN BY THE DISTRICT. SEE CD: QVUD SET 3(QV PONDEROSA WSD FOR MAIN LINES (NOTE THAT PROJECT WAS ONLY PARTIALLY COMPLETED)	1	wa	38712.857	1573.194
1323	gc	1/24/2007	fire line maint. by QVUD	MAP	2/5/2007	Used QVUD Overall Utility Schematics Book	1	wa	249941.485	3350.919
1258	1258 - MAP	12/8/2006	FL elevation changed on MH B-6 on CP LESPT01 / Which FL do I use?	QVUD	2/7/2007		1	ss	3423.998	234.375
1267	1267 - MAP	12/12/2006	FL changed on 18" Line at MH TL1-14A and TL1-13A. What are the new FLs for the 18" Line?	QVUD	2/7/2007	Used FL given from OV(ref: 1267 - Map web comments)	1	ss	44358.815	1390.582
1280	1280 - MAP	12/20/2006	QVLEL00 - LS01 and 12" FM to be deleted on change order #6 / Is this correct	QVUD	2/7/2007	FM not located here/Removed and replaced	1	ss	13520.852	1236.509
1284	1284 - MAP	1/4/2007	Does QVUD have any set of plans for this location	QVUD	2/8/2007	Used LSHV02 Plans	1	ss	56969.657	3618.512
1638	1638 - MAP	12/19/2006	CPs need to be located for LS and FM	QVUD	2/8/2007	Used LSHV02 Plans	1	ss	25748.767	1834.299
1285	1285 - MAP	1/4/2007	Does QVUD have any set of plans for this 8" FM	QVUD	2/8/2007	Used LSHV02 Plans	1	ss	64979.285	3531.319
1637	1637 - MAP	12/19/2006	CPs need to be located for LS and 10" FM	QVUD	2/8/2007	Used OCP00 Plans	1	ss	57706.132	2634.817
1286	1286 - MAP	1/4/2007	QVTC00 WS layout (Lat A-5-B) has two CO is this correct	QVUD	2/7/2007	Cleanout to 6" Only	1	ss	12736.419	457.133
1288	1288 - MAP	1/4/2007	OLGRM03 (Lat C) is this correct / There are lots here instead of a reserve	QVUD	2/7/2007	This line was abandoned/Removed SS Line from Network	1	ss	9697.141	474.317
1289	1289 - MAP	1/4/2007	Does the 12" FM and WWTP exist	QVUD	2/12/2007	Line does not exist. Force Main Realignment Phase 2	1	ss	62607.580	4471.932
1290	1290 - MAP	1/4/2007	Proposed 12" FM / Does LS01 and FM run in this direction	QVUD	2/12/2007	Proposed 12" Force Main - emergency force main	1	ss	30646.708	4261.978
1291	1291 - MAP	1/4/2007	If the Prop 12" FM from LS01 runs in this direction then plans are needed for the 8" SS and 12" FM that all ready exist	QVUD	2/12/2007	Used OAKVS00 Plans	1	ss	30296.164	816.588
1292	1292 - MAP	1/4/2007	Need plans for area (Rothwell St) so that LEXPL00 sanitary can be included with the infrastructure	QVUD	2/13/2007	Used FSRB00 Plans	1	ss	84167.830	1190.819
1293	1293 - MAP	1/4/2007	Need plans for 10" and 15" SS that run along FM 1092	QVUD	2/9/2007	Used OAKVS00 Plans	1	ss	24416.020	687.428
1300	1300 - MAP	1/5/2007	Does this 12" WL belong to Sec OLGRM01 or does it belong to Sec OL-GRS01 w/ an 8" WL tying into Acorn St.	Hector	2/1/2007	Used OLGRS01 CPs	1	wa	72012.878	2487.640
1302	1302 - MAP	1/5/2007	Need plans for existing 10" WL	QVUD	2/2/2007	Used RANQV00 CPs	1	wa	47818.056	890.049
1281	1281 - MAP	12/20/2006	Need to locate plans for 12" AC main	QVUD	2/6/2007	Received Plans from QV	1	wa	31194.961	1865.186
1303	1303 - MAP	1/8/2007	Need CPs for Water Plant	QVUD	2/6/2007	Received Plans from QV	1	wa	38468.613	786.240
1304	1304 - MAP	1/8/2007	Need to locate plans for 12" WL	QVUD	2/6/2007	Received Plans from QV	1	wa	40829.590	3586.945
1305	1305 - MAP	1/8/2007	Need to locate plans for 12" WL	QVUD	2/1/2007	Used TBWAT02 CPs	1	wa	9683.120	997.147
1306	1306 - MAP	1/8/2007	8" WL in correct location	QVUD	2/1/2007	Verified by QVUD	1	wa	54651.937	1424.875
1307	1307 - MAP	1/8/2007	Need to locate plans for existing 10" WL	QVUD	2/5/2007	Used TWNSP00 CPs	1	wa	25206.725	1776.648

1748	Hector	2/1/2007	The force main for MC LS #4 was relocated during the Cartwright Rd expansion. Old Force main along Carrwright Rd was abandoned. New force main crosses Cartwright rd at Hawkes and discharges to gravity SS line MH on the north side of pipeline.	MAP	2/1/2007	Changed when section SHCWR00 was added	1	ss	21705.517	670.720
1639	1639 - MAP	12/19/2006	CPs need to be located for LS and FM	OVUD	2/7/2007	Used LSPPT01 Plans	1	ss	9888.070	600.675
1640	1640 - MAP	12/19/2006	CPs need to be located for LS and 10" FM	OVUD	2/7/2007	Used LLSLFO1 Plans	1	ss	82785.430	5215.526
1641	1641 - MAP	12/19/2006	Is this the correct location for LS06 Yes	OVUD	2/7/2007		1	ss	5590.059	307.546
1643	1643 - MAP	12/19/2006	Is this the correct location for the LS03 and 8" FM	OVUD	2/7/2007	Used OVTBW02 Plans	1	ss	61624.543	1186.602
1644	1644 - MAP	12/19/2006	Need plans to connect SS from OLVLG03 to OLVEA05	OVUD	2/8/2007	Unable to locate plans / used sketch	1	ss	58593.766	1000.000
1645	1645 - MAP	12/19/2006	Need assistance on connectivity from LS04, 12", 15" and 21" SS	OVUD	2/13/2007	Used Nancy Bell Lane	1	ss	121367.326	1422.870
1646	1646 - MAP	12/19/2006	Not clear on how the SS line from BERDV00 connects to existing SS	OVUD	2/12/2007	Used SHCWR01 Plans	1	ss	14785.358	494.798
1647	1647 - MAP	12/19/2006	Look at OVMLS05 to correct SS features	MAP	1/2/2007	Used OVMLS05 CPs	1	ss	11136.049	422.124