

4.0 Existing Facilities

4.1 Introduction

This chapter describes the existing sanitary sewer system facilities and the inventory of facilities created for computer modeling. Figure 4-1 shows the existing facilities.

4.2 Wastewater Treatment Facility

The Wastewater Treatment Facility is located on south Santa Fe Avenue between Fountain Creek and Interstate Highway 25. The current facility was completed and placed into service in July 1998. The scope of this Master Plan does not include evaluation of wastewater treatment beyond defining the projected flows to treatment. Information provided by FSD is included herein for reference.

The hydraulic design of the facility is for a design flow of 2.73 mgd and an ultimate flow of 5.0 mgd. Treatment process facilities were designed for a maximum month average daily flow of 1.56 mgd and an organic loading capacity of 2,928 pounds of 5-day total biochemical oxygen demand. The design annual average daily flow is 1.30 mgd. The influent sewers, channels, and process piping were designed with a hydraulic capacity of 5 mgd to facilitate a future plant expansion.

The treatment facility uses the extended aeration activated sludge process. The facility includes the following components:

- ?? Preliminary Treatment Unit Processes
 - Screening
 - Grit Removal
 - Influent Flow Metering
- ?? Secondary Treatment Unit Processes
 - Activated Sludge Treatment (extended aeration)
 - Sedimentation
 - Return Activated Sludge
 - Waste Activated Sludge
 - Scum Pumping

Figure 4-1 Existing System

?? Post-Secondary Treatment Unit Processes

- Post Aeration
- Disinfection (ultraviolet radiation)
- Effluent Flow Metering

?? Sludge Handling Unit Processes

- Aerobic Digester
- Sludge Dewatering

The facility includes an operations building to house aeration blowers, electrical equipment, office space, control panels, laboratory facilities, rest room and locker room facilities, and space for maintenance activities. The building encloses the screening, grit removal, flow measurement, and disinfection processes as well as the final clarifiers.

4.3 Collection System Facilities

4.3.1 Sanitary Sewer Inventory

The total length of sewers included on FSD's AutoCAD sewer map is approximately 467,000 linear feet, or about 88.5 miles of pipe. The majority of the sewers are 8-inch diameter pipe, which is the minimum diameter allowed by FSD. This length does not include the private service laterals, which are not owned or maintained by FSD.

A total of 98,314 feet of the existing sewers were input to the hydraulic model. The model includes all pipes 10-inches diameter and greater, plus selected smaller pipes. Inventory data for the modeled pipes including manhole number, pipe invert elevations, length, slope, and manhole rim elevations were determined by reference to record drawings. Table 4-1 lists the length of existing modeled sewers by pipe size located in the Fountain Creek and Jimmy Camp Creek drainage basins.

Table 4-1			
Modeled Pipe Length (ft)			
Diameter (in)	Fountain Creek Basin	Jimmy Camp Creek Basin	Total
Gravity Sewers			
8	18,813	8,212	27,025
10	5,018	5,131	10,149
12	24,446	9,675	34,121
15	4,086	8,076	12,162
18	6,150	6,958	13,108
24	1,749		1,749
Total Gravity	60,262	38,052	98,314
Force Mains			
10	0	2,635	2,635
Total Existing	60,262	40,687	100,949

4.3.2 Flow Split Manholes

There is one location in the FSD collection system where the flow entering a manhole is split to two downstream sewers. This location is at the intersection of Calle Entrada and Fountain Mesa Road, at Manhole No. SF-023. Flows are split between a 10-inch sewer on Calle Entrada and a 10-inch sewer on Fountain Mesa Road. No structure was built in this manhole to control the flow split.

4.3.3 Wastewater pumping Stations and Force Mains

The Jimmy Camp Creek Pre-design Study recommended that the Little Ranches Pump Station be replaced with a new station. The Pre-design Study recommended that a 5.0 mgd peak flow capacity be used for the station’s ultimate sizing, and that the initial station capacity be 2.5 mgd. The new station was constructed in 2000. The station is located on Old Pueblo Road west of Link Road at model manhole number LR-PS.

Based on available information, the Little Ranches Pump Station includes three 750-gpm pumping units, for a total capacity of 2,250 gpm (3.2 mgd). The firm capacity with one pump out of service is 1,500 gpm (2.1 mgd). The station discharges to a 10-inch force main that extends 2,635 feet west to connect to the influent sewer for the Wastewater Treatment Facility.

The collection system includes two additional small pumping facilities that are not included in the trunk sewer computer model. These facilities are as follows:

- ?? The Race Street Lift Station is located on Race Street one block south of Indiana Avenue. This station collects flow from only four manholes and about 925 feet of gravity sewers, located on Race Street between Valley Street and Indiana Avenue.
- ?? The Mesa Pump Station is located within Conley subdivision east of Conley Boulevard and south of Maram Way. This small station collects flow from four cul-de-sacs accessed off Conley Boulevard, which include nine manholes.

4.3.4 Colorado Centre Pumping Station and Force Main

FSD has an agreement with Colorado Centre Metropolitan District to treat its wastewater flows. Colorado Centre is located northeast of the Study Area. Presently there are approximately 700 residential units and limited commercial development. Build-out of the development would add approximately 60 residential units.

The Colorado Centre wastewater system includes a pump station on the property and a 6-inch diameter force main that extends to FSD's Jimmy Camp Creek trunk sewer. Flows enter the FSD system at Manhole JC-0031, located on Jimmy Camp Road north of Ohio Road. For year 2002, Colorado Centre delivered 51,601,000 gallons to FSD or an average flow rate of 0.141 mgd.