

**ENGINEERING STUDY  
for  
Springs at Waterview  
WASTEWATER SYSTEM IMPROVEMENTS**

**May 2017**

Prepared For:

**SWV, LLC  
31 North Tejon Street  
Suite 500  
Colorado Springs, CO 80903**

Prepared By:

*Dakota Springs Engineering*  
31 N. Tejon Street, Suite 500  
Colorado Springs, CO 80903  
719.227.7288

**Project No. 02-16-01**

\*\*\*\*\* CONTENTS \*\*\*\*\*

1.0 EXECUTIVE SUMMARY.....	1
2.0 INTRODUCTION.....	2
2.1 Purpose.....	2
2.2 Scope.....	2
3.0 EXISTING CONDITIONS .....	3
3.1 Description of the Service Area .....	3
3.2 Land Use .....	3
3.3 Topography and Floodplains.....	3
3.4 Geology.....	3
3.5 Groundwater .....	3
3.6 Climate.....	3
3.7 Natural Hazards Analysis.....	4
3.8 Organizational Context .....	4
3.9 Wastewater Facilities .....	4
3.10 Relationship to Neighboring Water and Wastewater Facilities .....	4
3.11 Wastewater Demand .....	4
4.0 DEVELOPED CONDITIONS .....	8
4.1 Land Use .....	8
4.2 Population and Employment.....	8
4.3 Wastewater Demand .....	8
4.4 Wastewater Treatment .....	8
5.0 WASTEWATER SYSTEM IMPROVEMENTS .....	12
5.1 General.....	12
5.2 Wastewater Collection and Treatment.....	12
5.3 Rates and Charges.....	12

**\*\*\*\*\* APPENDICES \*\*\*\*\***

Appendix A	Security Sanitation District Report
Appendix B	Security Sanitation District letter of commitment

**\*\*\*\*\* LIST OF FIGURES \*\*\*\*\***

Figure 1	Vicinity Map
Figure 2	Floodplain Map
Figure 3	1-Mile Radius Map

## **1.0 EXECUTIVE SUMMARY**

This report presents the results of the engineering study for wastewater system improvements serving Springs at Waterview, a proposed development located south of Goldfield Drive and east of Grinnell Boulevard in El Paso County, Colorado.

Springs at Waterview consists of approximately 16 acres with a proposed mixture of residential uses and open space. The site lies in Section 7 of Township 15 South, Range 65 West. The proposed Springs at Waterview plat is south of Goldfield Drive, east of Grinnell Boulevard, north of Bradley Road and west of Escanaba Drive. A Sketch Plan Amendment, Preliminary Plan and PUD Zoning are under review in conjunction with the Final Plat. The previous amendment to the Preliminary Plan for Waterview Phase II was in 2012. Planned development for the 15.68-acre parcel includes single family residential and open space. The remaining area will be right-of-way and easements.

Springs at Waterview consists of 77 single family lots on 15.68 acres.

The service area is located within the Windmill Gulch and Big Johnson Drainage Basins. The proposed development is within the Security Water District and Security Sanitation District service area.

The average wastewater to be produced by Springs at Waterview is estimated to be 15,760 gallons per day; this wastewater will be treated by the Security Sanitation District.

The Security Sanitation District operates under a permit issued by the Colorado Water Quality Control Division, providing for discharge to Fountain Creek.

## **2.0 INTRODUCTION**

### **2.1 Purpose**

The purpose of this report is to present wastewater system improvements recommended to serve the Springs at Waterview Phase, a land development project located in El Paso County. It is also intended to serve as a guideline for the ensuing design of recommended improvements.

### **2.2 Scope**

The scope of this report includes:

1. The definition of the service area as well as identification of significant physical and environmental characteristics and constraints;
2. An analysis of available data to determine existing and to project future wastewater demands; and,
3. A description of legal, institutional and managerial arrangements that ensure adequate control of the proposed improvements.

## **3.0 EXISTING CONDITIONS**

### **3.1 Description of the Service Area**

Springs at Waterview consists of 77 lots on 15.68 acres. The site lies in Section 7 of Township 15 South, Range 65 West. The proposed Springs at Waterview plat is south of Goldfield Drive, east of Grinnell Boulevard, north of Bradley Road and west of Escanaba Drive.

### **3.2 Land Use**

The Springs at Waterview is adjacent to and similar to Painted Sky at Waterview.

### **3.3 Topography and Floodplains**

The topography of the site and surrounding area is typical of a high desert; short prairie grass and weeds with slopes generally ranging from 1% to 9%. The area generally drains to the south and west.

All of the storm flow from the residential lots will be conveyed to the Windmill Gulch Basin.

The Flood Insurance Rate Map indicates that there is no floodplain adjacent to or on the site.

### **3.4 Geology**

The site is comprised of several different soil types. From the Soil Survey of El Paso County, the site falls into the following soil types:

1. "11" Bresser sandy loam, 0 to 3 percent slopes.
2. "12" Bresser sandy loam, 3 to 5 percent slopes.
3. "30" Fort Collins loam, 0 to 3 percent slopes.
4. "39" Keith silt loam, 0 to 3 percent slopes.

All the soils are classified as Hydrological Group B. Note: "#" indicates Soil Conservation Survey soil classification number.

### **3.5 Groundwater**

Groundwater is limited in the site area. Security Water District provides alluvial well water for from off-site for distribution after treatment and storage.

### **3.6 Climate**

Mild summers and winter, light precipitation; high evaporation and moderately high wind velocities characterize the climate of the study area.

The average annual monthly temperature is 48.4 F with an average monthly low of 30.3 F in the winter and an average monthly high of 68.1 F in the summer. Two years in ten will have a maximum temperature higher than 98 F and a minimum temperature lower than -16 F. Precipitation averages 15.73 inches annually, with 80% of this occurring during the months of April through September. The average annual Class A pan evaporation is 45 inches.

### **3.7 Natural Hazards Analysis**

Natural hazards on site are minimal. High ground water is not present, no floodplains are in the area, wetlands do not exist; the soils have some limitations.

Soils in this area are cohesionless, sloughing of steep banks during drilling and/or excavation could occur. By siting improvements in a manner that provides an opportunity to lay the banks of excavations back at a 1:1 slope during construction, the problems associated with sloughing soils can be minimized.

### **3.8 Organizational Context**

Springs at Waterview is located in El Paso County and lies within the service area of the Security Water District and Security Sanitation District.

### **3.9 Wastewater Facilities**

Primary Wastewater Facilities are located outside of the boundaries of the Waterview development. Security Sanitation District facilities include:

- Wastewater Treatment Facility
- Wastewater Collection and pumping facilities

### **3.10 Relationship to Neighboring Water and Wastewater Facilities**

The location of other major water and wastewater facilities, relative to Springs at Waterview are shown on Figure 3.

Figure 3 identifies adjacent wastewater treatment providers including the City of Colorado Springs, Widefield Water and Sanitation District, Fountain Sanitation District and Colorado Center Metropolitan District, water wells and habitable buildings within a 1-mile radius of the center of Waterview.

### **3.11 Wastewater Demand**

Springs at Waterview will be serviced by the Security Sanitation District and is assumed to have the same unit wastewater demands as the rest of the Security Sanitation District. Residential Demand within the District is estimated to be 178 gallons per day per unit.

(( insert Figure 1))



(( insert Figure 2))

(( insert Figure 3 ))

## **4.0 DEVELOPED CONDITIONS**

### **4.1 Land Use**

The Waterview Sketch Plan is being amended and PUD Zoning and a Preliminary Plan are being submitted in conjunction with review of Springs at Waterview. Springs at Waterview consists of a total of 15.68 acres; 77 lots will be constructed, the remaining land will be designated open space, and r.o.w.

### **4.2 Population and Employment**

Application of a standard unit density of 2.9 persons per dwelling for single family residential uses yields an estimated population for Springs at Waterview of 223 persons.

### **4.3 Wastewater Demand**

By applying Security Water District unit water demand of 178 gallons per day per single family residential units, the estimated wastewater demand is 13,706 gallons per day.

### **4.4 Wastewater Treatment**

The Security Sanitation District has treatment facilities to meet Colorado department of Health and Environment standards.

This treatment process is outlined in the report in Appendix A.

## **5.0 WASTEWATER SYSTEM IMPROVEMENTS**

### **5.1 General**

The wastewater system operated by Security Sanitation District meets the applicable requirements of the Colorado Department of Health and Environment (CDHE).

The wastewater treatment facility is located in the southern part of the service area and processes wastewater to CDHE and U.S. EPA standards prior to discharging to Fountain Creek.

### **5.2 Wastewater Collection and Treatment**

The wastewater is collected and conveyed to the Wastewater Treatment Facility via a series of underground pipe systems. All pipe and appurtenances will be designed to meet or exceed AWWA standards.

The Wastewater Treatment Facility operates under a permit issued by the Colorado Water Quality Control division, providing for discharge to Fountain Creek. Water quality testing indicates that the treated wastewater exceeds CDHE and U.S. EPA standards prior to discharge back to Fountain Creek. Specifics concerning treatment are provided in the District report in Appendix A.

### **5.3 Rates and Charges**

The Security Sanitation District will impose one-time charges to recoup the cost of constructing water system improvements as well as regular periodic billings to recoup continuing costs for operations, maintenance and equipment replacement. This system of rates and charts is outlined in the "Service Plan for the Security Sanitation District".

## **Appendix A**

### **Security Sanitation District Report**

## **Appendix B**

### **Security Sanitation District letter of commitment**