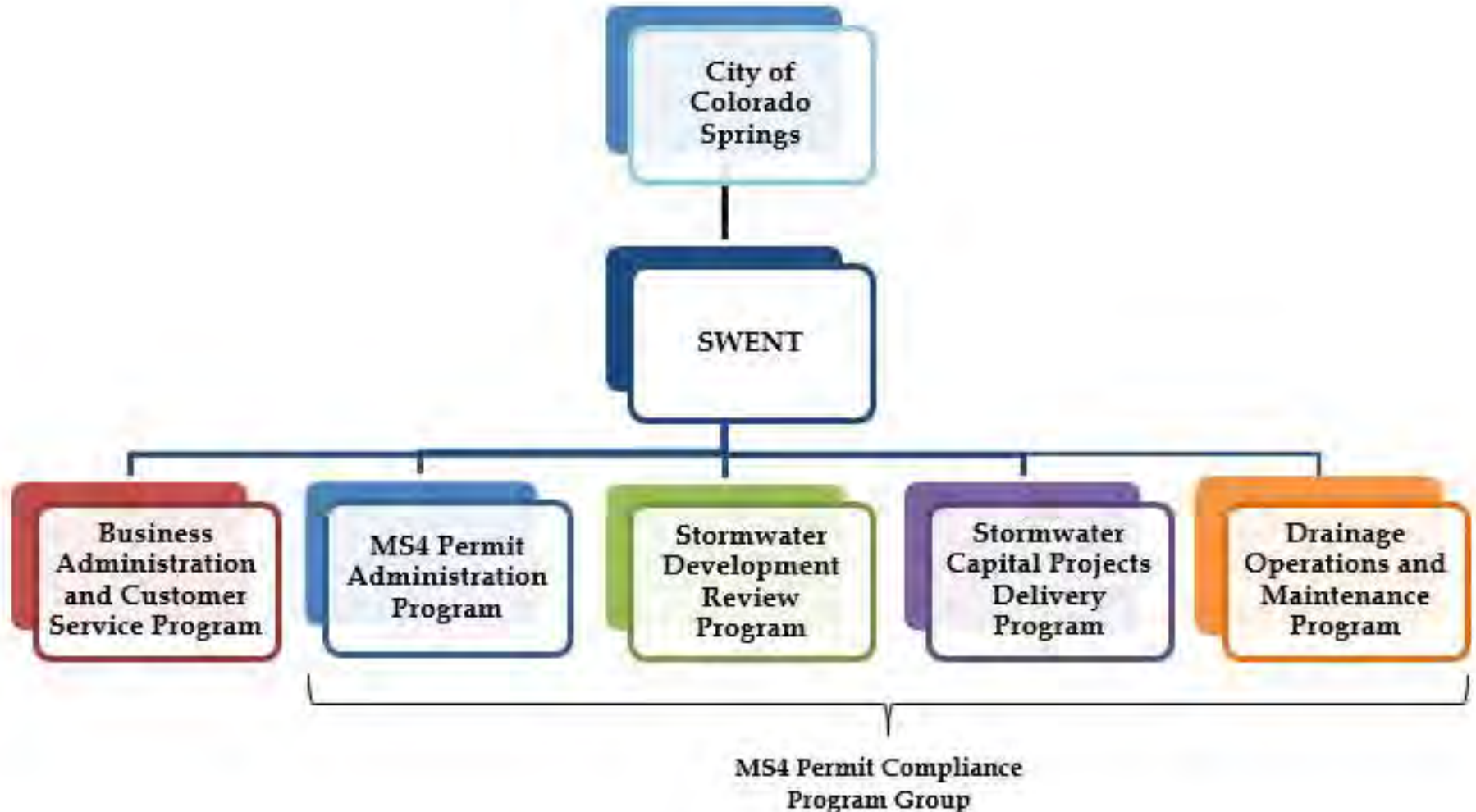


City of Colorado Springs Stormwater Enterprise



SWENT Organization



Stormwater Enterprise

- Approximately 72 FTE
- \$26 Million per year budget/revenue

Below is a summary of actual expended dollars between the 2016 and 2021 calendar years:

Program Dollars Spent	Total (2016-2020)	2021	Subtotal (2021-2025)	Total (2016-2021)
Drainage O&M	\$18,719,097	\$3,427,366	\$3,427,366	\$22,146,463
Stormwater MS4 Program	\$21,010,941	\$6,214,259	\$6,214,259	\$27,225,200
Stormwater Capital Projects	\$50,837,527	\$5,274,796	\$5,274,796	\$56,112,323
Colorado Springs Utilities (SSCC Program)	\$15,846,580	\$3,632,568	\$3,632,568	\$19,479,148
Total	\$106,429,145	\$18,548,989	\$18,548,989	\$124,978,134

City of Colorado Springs

- Over 195 square miles
- Foothills, eastern plains, large elevation drop
- Approx. 28k stormwater inlets and manholes
- Over 730 miles of publicly owned and maintained stormwater pipe
- Over 300 miles of open channels
- 210 Publicly maintained permanent control measures. FSD, underground facilities, detention, infiltration basins, etc.
- 778 Privately owned and maintained permanent control measures

Impacts from Development

- Development changes hydrologic conditions dramatically!
- Changes Requiring Planning, construction, and maintenance of significant amounts of infrastructure
 - Conveyance pipes
 - Bridges and culverts
 - Detention and water quality facilities
- Water rights considerations and protections are also critical

Pre Development



Post Development



Urban Impacts to Hydrology

Natural watershed



Most rain soaks in



Water quality impairment

Urban watershed



Most rain runs off



Increased flooding

Stream degradation



How do we address flooding, channel erosion, and stormwater quality issues

- Development and redevelopment oversight
 - Criteria
 - Plan Review and approval
 - Permitting and inspections, grading and erosion control program
- Channel stabilization and restoration
- Post development flow attenuation - Full-Spectrum Detention, Water Quality Volume Treatment
 - Extended Detention Basins (EDBs)
 - Rain Garden or Bioretention Basins
 - Infiltration Basins
 - Pass through facilities
- Volume reduction

IGA Project #6 – USAFA Drainage – Monument



IGA Project #26 – Sand Creek Stabilization South of Platte



IGA Project #0 – FEMA/Grant Projects, East Fork Sand Creek Erosion – Site 1



IGA Project #0 – FEMA/Grant Projects, East Fork Sand Creek Erosion – Site 1



South Douglas



West Sand Creek



IGA Project #101 – Scarborough Drive Sub-Regional Detention Facility



Private Extended Detention Basin



Green Infrastructure

- In the City, the term green infrastructure refers to Step 1: *stormwater infrastructure intended to mimic natural infiltration processes and includes the implementation of PIAs in site landscapes to achieve stormwater volume reduction.*
- More broadly, green infrastructure refers to the range of measures that use plant or soil systems or other permeable surfaces or substrates to slow, filter, and infiltrate stormwater and reduce flows to sewer systems or to surface waters.

Green Infrastructure

- In the City, the term green infrastructure refers to Step 1: *stormwater infrastructure intended to mimic natural infiltration processes and includes the implementation of PIAs in site landscapes to achieve stormwater volume reduction.*
- More broadly, green infrastructure refers to the range of measures that use plant or soil systems or other permeable surfaces or substrates to slow, filter, and infiltrate stormwater and reduce flows to sewer systems or to surface waters.

Reducing Urban Impacts

Natural watershed



Most rain soaks in

Urban watershed



Most rain runs off

Green Infrastructure



More rain soaks in

Benefits of Green Infrastructure

1. Feasible to implement – similar to good landscaping practices
2. Promotes water conservation with native vegetation and stormwater
3. Mitigates urban stormwater impacts from **increased volume**, leading to safer and more resilient infrastructure

Benefits of Green Infrastructure

4. Enhances water quality – pollutants are removed through infiltration and filtration

5. Distributed green infrastructure features can lead to smaller water quality facilities

6. Increases groundwater recharge

Site 3 -- Multifamily residential (apartments)		
Total site area, ac		6.25
Total impervious area, ac		3.45
Total site percent impervious		55%
Upstream impervious area (in blue), ac		1.83
PIA (in green), ac		0.47
WQCV, cf		5010
Stormwater volume reduction, cf		2720
Stormwater volume reduction as % of WQCV		54%

Figure 38. Site 3 – Multifamily Residential (Apartments)



Implementation Options



Implementation Options



Parking Lot Island



Infiltration Metrics

- Applicable sites must meet one of the following standards:
 - Minimum volume reduction through infiltration, evaporation, and evapotranspiration
 - For the 2-year rainfall event, a minimum of 4%, or
 - For WQCV event, minimum of 10%
 - At least 20-percent of the imperviousness areas are disconnected and drain through a receiving pervious area comprising of at least 10-percent of the disconnected impervious area

Questions

Stormwater Enterprise Website:

[https://coloradosprings.gov/
stormwater-enterprise](https://coloradosprings.gov/stormwater-enterprise)

Richard Mulledy, PE

Stormwater Enterprise Manager

Richard.Mulledy@coloradosprings.gov

