Water Quality Improvements Resulting from Santa Rita Water Reclamation Facility Upgrades

March 2022

Background

In 2014, the city of Durango received funds to improve Santa Rita Water Reclamation Facility (SRWRF). The improvements allow for population growth, meet future regulatory requirements, improve infrastructure resilience, and protect the quality of the Animas River. For example, a new Johannesburg secondary process was installed to meet state water quality requirements including Regulation 85, which sets limits for nutrients discharged from Wastewater Treatment Plants. To evaluate the effectiveness of the SRWRF upgrades, City of Durango staff partnered with Mountain Studies Institute and Colorado Department of Public Health & Environment's (CDPHE) Measurable Results Program (MRP) to determine whether facility treatment upgrades resulted in measurable improvements to downstream water quality in the Animas River.

Updated Facility Footprint

Effluent Outfall

Methods

Water samples were collected from the wastewater effluent (the outflowing of water from the SRWRF) and the Animas River before improvements (2017-2018) and after improvements were complete (2020). Water samples from the Animas River were collected upstream of, and downstream of, SRWRF to quantify the net change in surface water quality and pollutant concentration that could be attributed to the improved treatment process. Although climatic variability and events such as the recent 416-Fire can impact these concentrations, sampling water directly above and below SRWRF helps ensure that the measured changes are due to the facility upgrade, instead of other factors.

Results

The water quality of the effluent samples showed large reductions: 93% reduction of Phosphorus; 59% reduction of Nitrogen; and 90% reduction of *E.coli* bacteria. Prior to SRWRF improvements, there was a large increase in the concentration of Phosphorus, Nitrogen, and *E.coli* in the Animas River downstream of the SRWRF. Following SRWRF improvements, downstream nutrient and bacteria concentrations were more similar to upstream ambient conditions.

Why does it matter?

The SRWRF improvements were successful at meeting water quality regulation requirements. In addition, the improved treatment of excess nutrients and harmful bacteria improve the downstream water quality of the Animas River by protecting aquatic life and maintaining safe water quality for human recreation, domestic water supply, irrigation, and other uses.

Follow this link to view the CDPHE Measurable Result Program report: https://tinyurl.com/2v5hvttp.

The Animas River is Cleaner Due to Santa Rita Water Reclamation Facility Upgrades

Mountain Studies Institute
SAN JUAN MOUNTAINS COLORADO

CDPHE

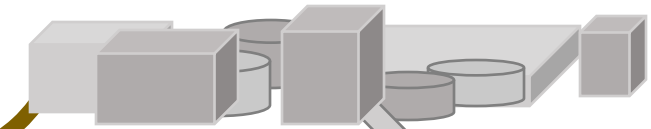
CITY of DURANGO

1. Follow your flush to the Animas River

Sewer System

2. The Water Reclamation Facility at Santa Rita was improved

☑ Facility capacity increased from 3.0 to 3.28 million gallons per day



Effluent

3. Less Nutrients and Bacteria Discharged into the Animas

☑ Nutrient levels below regulatory requirements

Effluent Post-upgrades

- 93% Phosphorous
- 90% E. coli
- 59% Nitrogen

Upstream

Animas River

Downstream

4. Improved condition of the Animas River

☑ Less nutrients and bacteria downstream of the facility

- 90% Phosphorous
- 58% Nitrogen
- 67% E. coli

5. Why does it matter what's in the river?

Bacteria can cause gastrointestinal illnesses.
Excess nutrients can cause:

- algal blooms
- reduced dissolved oxygen
- harm to aquatic life
- impaired drinking water