

ID: CIP 308

Name: Kruger Creek Knickpoint Stabilization & Stream Restoration

Study Area: Bull Mountain

Location: Morningstar Greenway West of SW Greenfield Drive

Problem Summary

Kruger Creek flows down from Bull Mountain through a steep canyon in Bull Mountain Park and the Morningstar Greenway.

The area is prone to erosion. The creek has formed deep channels with vertical walls, a process called incision. Incision is severe in this location. Several sharp knickpoints, have formed in this reach.

Eroded soils from these processes travel

downstream, threatening to block the culvert under SW Greenfield Drive. Erosion and bank instability threaten to undermine a sanitary sewer main.

Fast high flows through this reach during storms exacerbate erosion problems downstream. The highest ranking project in the Stormwater Master Plan is located just downstream at Gallin Court, where erosion is threatening to undermine a house and sanitary sewer pipe.



Project Description

This project uses the same techniques as CIP 304 at SW Gallin Court to protect the stream channel, banks, and adjacent infrastructure from further severe erosion.

The project will bury a new pipe beneath the stream and route existing upstream piped flows into it. The channel and valley will be raised and regraded to allow surface runoff from the vicinity to flow to the creek.

An alternating series of structural grade controls and light touch grade controls will be constructed through the reach. The grade controls will form a series of

step pools that receive only overland flows. Overflows from each pool will flow into the stormwater pipe via beehive inlets in new flow control structures.

Scour protection will be added to four storm sewer system outfalls in the reach to further protect the stream channel from erosion.

The benefits of this project include:

- Protect sanitary sewer main
- Reduce erosion and downstream sedimentation
- Reduce downstream impacts of high flows and velocities

Cost Estimate

Design & Permitting

Design (@ 15% of Construction)	\$430,000
Permitting, Basic + Enhanced	\$65,000
Project Administration (@ 10% Construction)	\$285,000
Total Design & Permitting	\$780,000

Construction

Tool Kit	Qty	Unit	Unit Price	Amount
Aboveground Storage	99,673	CF	\$3.50	\$349,000
Light Touch Grade Control	4,437	FT	\$55	\$245,000
Modify Flow Control, Debris Grate	5	EA	\$5,000	\$25,000
Outfall Scour Protection	4	EA	\$5,100	\$21,000
Storm Sewer Pipe, 36-in Diameter	1,755	FT	\$185	\$325,000
Structural Grade Control	1,336	FT	\$270	\$361,000
Subtotal				\$1,326,000

Construction Administration

Mobilization (@ 10% of Construction)	\$290,000
Erosion & Sediment Control (@ 2% of Construction)	\$57,000
Temporary Water Management, Large	\$50,000
Construction Contingency (@ 40% of Construction)	\$1,150,000
Subtotal	\$1,547,000

Total Construction \$2,873,000

Other Implementation

Easement or Property Acquisition	\$10,000
Environmental Mitigation	\$205,000

Total Other Implementation \$215,000

Total Project Cost (Rounded) \$3,875,000

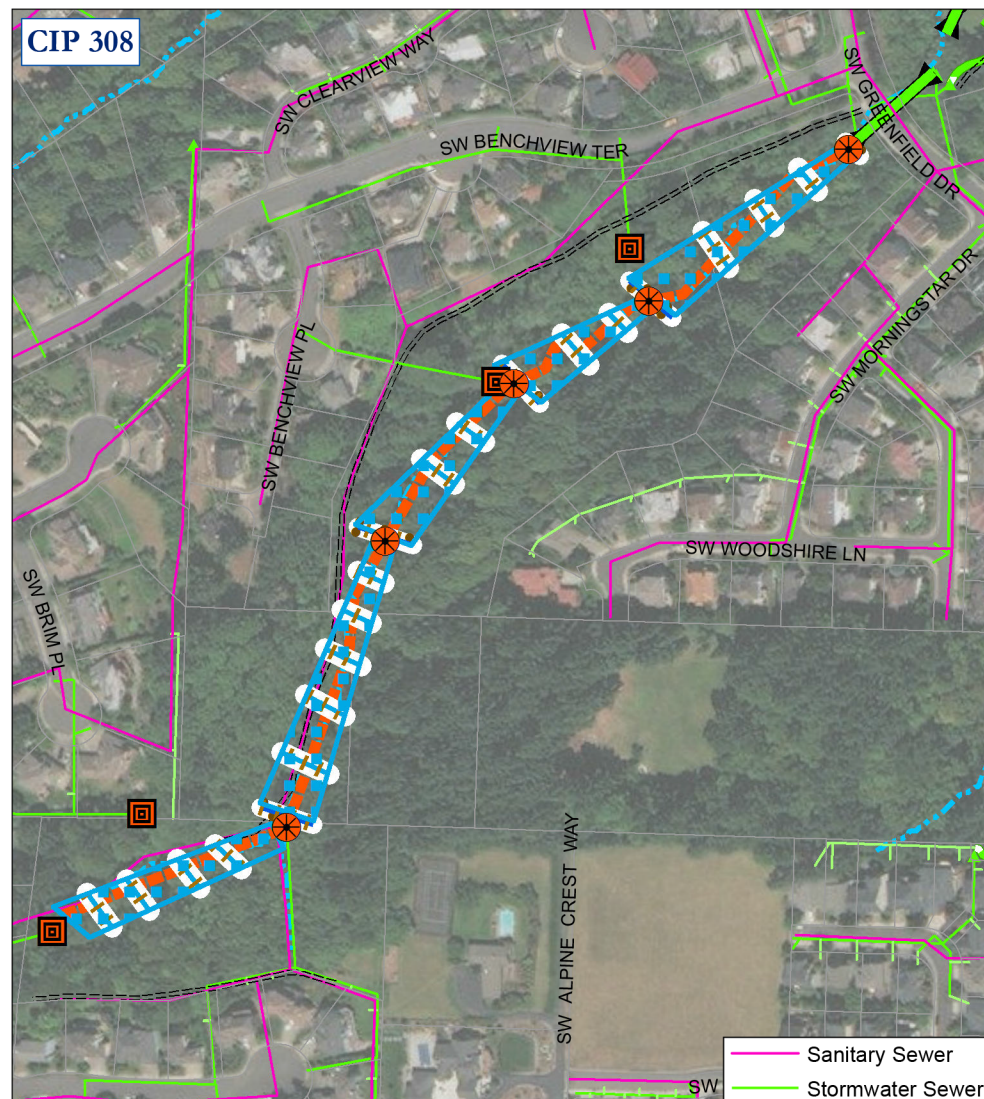
Funding Source







50% Stormwater Fund; 50% Sanitary Sewer Fund

Annual Operation & Maintenance

Operation and maintenance costs will be budgeted within the following programs:

- Ongoing routine stormwater facility maintenance program
- Proposed culvert assessment and maintenance program
- Proposed greenway O&M program



-  1, Above Ground Storage
-  5, Light Touch Grade Control
-  6, Modify Flow Control
-  8, Outfall Scour Protection
-  13, Storm Sewer Pipe
-  15, Structural Grade Control

