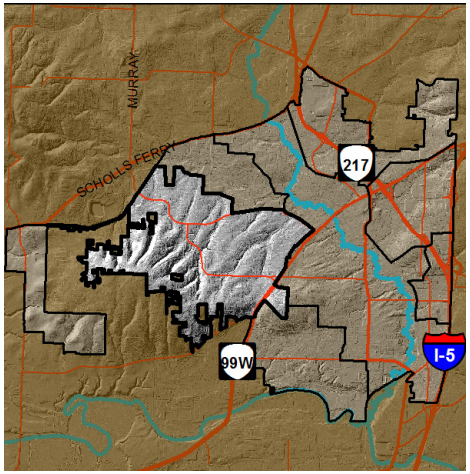
City of Tigard STORMWATER MASTER PLAN

Bull Mountain Study Area



Existing Conditions

Several large tributaries to Summer Creek and Fanno Creek begin on the slopes of Bull Mountain in southwest Tigard. The Bull Mountain study area is 3.1 sq. mi.

Creeks flow quickly down steep and narrow wooded canyons. Headwaters of these streams may drop 300 feet in half a mile.

Residential developments are perched above the canyons, at times only 300 feet across. Very little stormwater detention has been provided here, so increased runoff from urbanization flows very quickly to these geologically unstable headwater streams.

Through an effect of erosion called incision, some streams have developed vertical streambanks up to 35 feet deep. Incised streams can undermine adjacent structures, as is the case at SW Gallin Court, where the City purchased a private property where Kruger Creek is nearly undermining a house.

Sewer lines are also at risk in the canyons and valleys of Bull Mountain creeks.

In the lower reaches of the tributaries, historic development occurred before requirements for stream setbacks were in effect. Homes are located very close to the creek. Eroded soils from steep and

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Issues and Risks

The Stormwater Master Plan assessed the risk of erosion in Tigard's streams. The assessment analyzed the likelihood of erosion based on stream geology and the consequence of erosion based on the stream's proximity to important features such as roads, sewer lines, and buildings.

Throughout the Bull Mountain study area, erosion is the predominant concern.

In almost all cases, the headwater streams on Bull Mountain are highly susceptible to erosion due to geology of the area. Overall risk is highest where bank failures could undermine sanitary sewer lines, homes, or roads. Where streams flow through sufficiently wide greenways, overall risk has been assessed as low, even if the likelihood of erosion is high. Where greenways are narrow, allowing homes and utility lines to approach close to these steep streams, overall risk is assessed as moderately high to high.

Lower reaches are somewhat more likely to have a low overall risk of erosion. In these reaches, maintenance of water quality by reducing upstream erosion is the highest concern.

None of the Bull Mountain streams have threatened or endangered fish; however the non-profit organization Trout Unlimited has worked on fish passage improvements and fish habitat improvements on Derry Dell Creek.

Proposed Strategies and Solutions

Proposed CIPs	
Gallin Court Stream & Culvert Improvements	
Rank: 1	CIP 304
Derry Dell West Stream Protection	
Rank: 2	CIP 305
Derry Dell East Stream & Culvert Improvements	
Rank: 2	CIP 306
Kruger Creek Ann Court Bank Stabilization & Wetland Enhancement	
Rank: 6	CIP 302
Kruger Creek Knickpoint Stabilization & Stream Restoration	
Rank: 7	CIP 308
Gaarde Street Greenway Detention & Sewer Line Protection	
Rank: 10	CIP 310

Proposed CIPs	
Hunter's Glen Pond Rehabilitation	
Rank: 11	CIP 303
Total Cost: $12.9 million	

The strategy for the degraded Bull Mountain streams is to prevent sewer lines and buildings from exposure and collapse and to reduce sedimentation in downstream reaches. Kruger Creek is where the most severe problems have already occurred.

The strategy for less-degraded streams, such as Derry Dell Creek, is to preserve and enhance channels and riparian corridors. These streams can then be used as references to gauge success of investments in degraded streams. Clean Water Services is a key partner.

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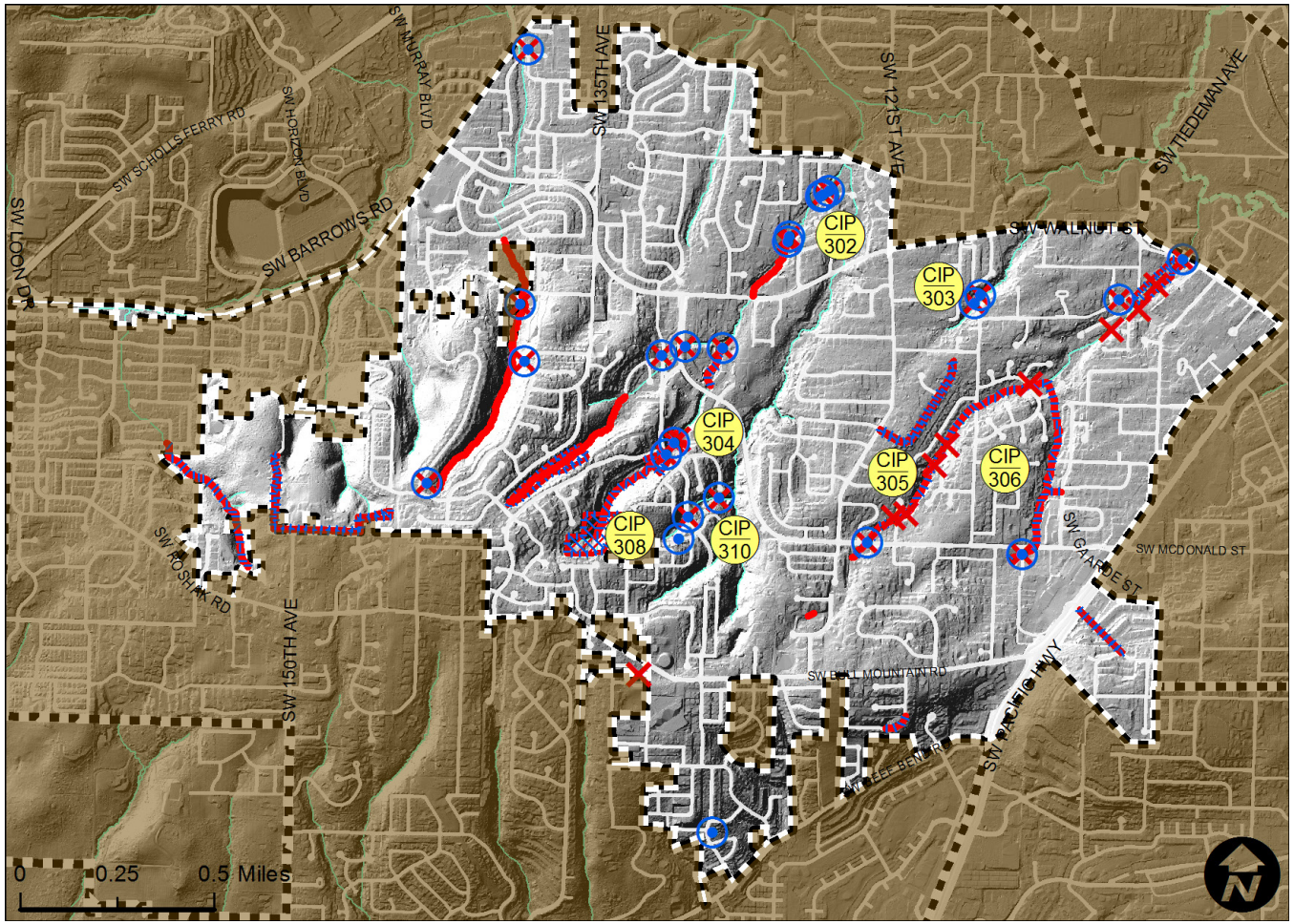

Legend

Known Issues

- Point
- Line
- Area

Potential Projects

- Point
- Line
- Area

CIP no. Capital Improvement Project

Study Area

incised upper reaches travel downstream and block inlets and culverts.

Because development on Bull Mountain began in the east and moved west, the eastern tributaries have been more greatly impacted by development and are more degraded than the western tributaries. Kruger Creek is the most impacted. Later developments preserved more riparian buffers, such as in Derry Dell Creek, reducing impacts on streams.

In an effort to protect sanitary sewer lines, Clean Water Services has been focusing on riparian restoration projects in Derry Dell Creek for more than ten years. Although the riparian vegetation on the creek is in good condition in these areas, the stream channel continues to erode.