



Memorandum

February 23, 2017

To: Dan Berman, Trinidad City Manager Ref. No.: 01063-07-001

From: Josh Wolf, PE Tel: 707.443.8326

cc: Steve Allen, PE

Subject: Storm Damage – Scenic Drive/Parker Creek

1. Introduction

On February 14, 2017, GHD staff conducted an initial site review of storm damage on Scenic Drive near the crossing of Parker Creek. This memorandum summarized the site observations and recommended corrective actions.

2. Site Observations

The following summarizes the primary site observations (see Figure 1 for approximate locations):

Damaged culvert at driveway to Saunders Shopping Center – The ends of the driveway culvert appear to have been damaged/crushed by vehicles. The downstream end appeared to be plugged with sediment and debris. The culvert did not appear to be in a suitable condition to adequately convey stormwater.

Degraded wooden cover to ditch inlet on east side of Scenic Drive – The wooden cover to the concrete ditch inlet appeared to be severely degraded which has allowed vegetation and debris to partially cover the inlet and limit the inlet capacity.

Separated storm drain pipe joint in Scenic Drive shoulder area with moderate surface erosion – The joint of two CMP culverts has failed/separated allowing surface runoff to enter the pipe. Active surface erosion visible in the area of the failed joint and it is likely to continue and get worse if no action is taken. See Photo 1.

Separated pipe joint at top of down-drain to Parker Creek with significant erosion – The joint at CMP culvert and CMP down-drain has failed/separated allowing surface runoff to enter the pipe. Active surface erosion is visible in the area of the failed joint and it is likely to continue and get worse if no action is taken. See Photo 2.

Ground surface scarp on west side of Scenic Drive – An approximately 30' long surface scarp was located just off the west shoulder edge of Scenic Drive. The scarp is likely evidence of active embankment slumping (the road embankment slumping towards Parker Creek). The slumping is likely to continue and get worse if no action is taken. See Photo 3.

Perched down-drain outlet into Parker Creek – The outlet of the down-drain is perched 2-3' above the channel. The outlet pipe appeared to be intact with no visible holes in pipe and no visible signs of piping (drainage flowing on the outside of the pipe). The channel at the outlet is composed of bare ground, rocks, wood, logs, concrete rubble and other material. Only limit erosion was observed at outfall. See Photo 4.

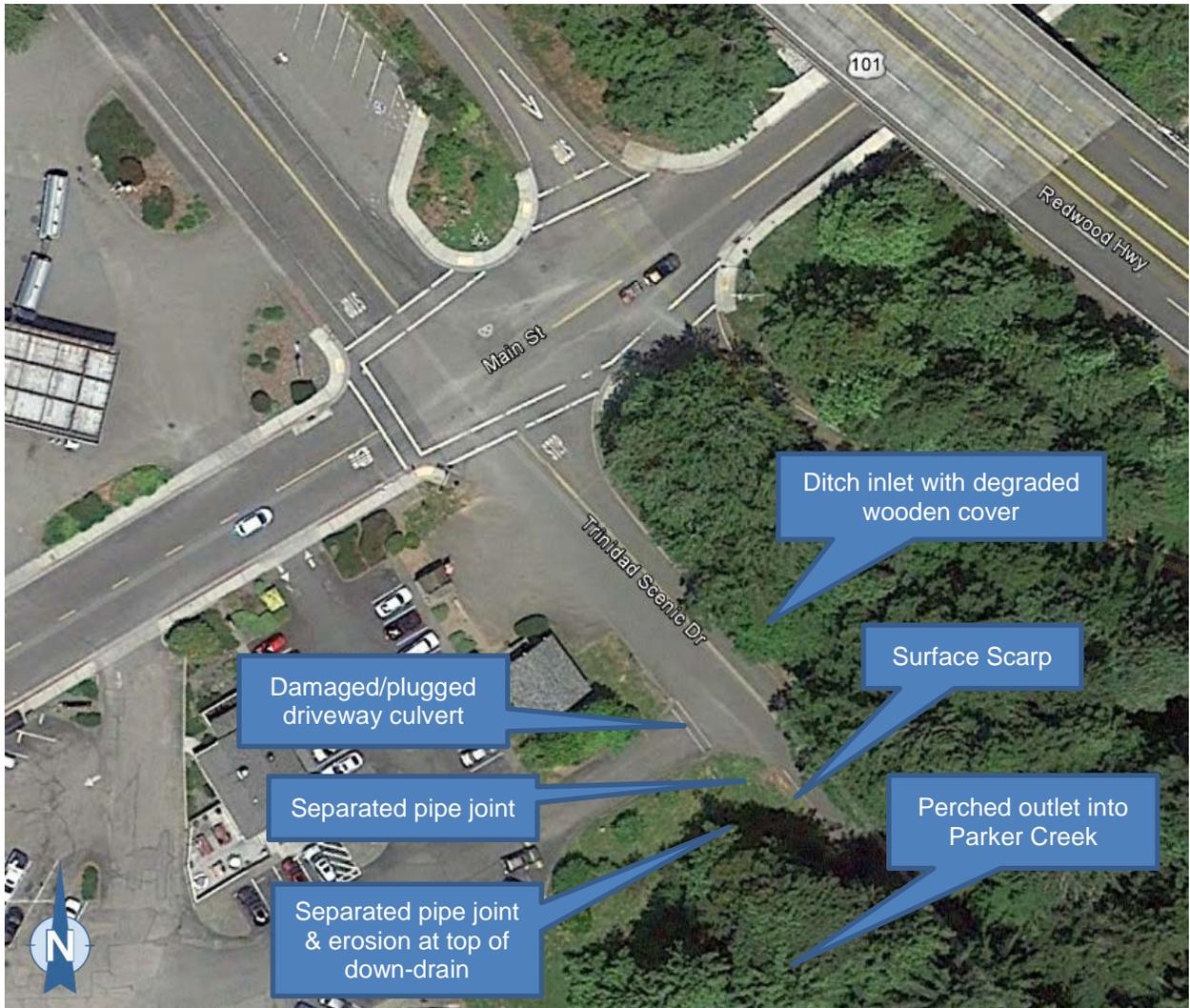


Figure 1 – Approximate locations of site observations



Photo 1 – Separated joint in road shoulder with surface erosion visible.



Photo 2 – Separated joint at top of down-drain with visible surface erosion visible.



Photo 3 – Visible scarp above Parker Creek embankment just off edge of road shoulder.



Photo 4 – Perched down-drain outfall into Parker Creek.



3. Recommendations

The condition of the storm drain inlet, pipes, down-drain, joints and embankment pose an immediate and serious risk to the integrity of entire drainage system and Scenic Drive. Ongoing degradation of the storm drainage facilities could lead to a failure of the down-drain and roadway embankment at Parker Creek, which could lead to damage (potentially severe) to Scenic Drive.

In order to reduce the risk of failure and protect the roadway, we recommend the City immediately secure a licensed contractor to make the following emergency repairs:

- Install new concrete inlet (type G1 or similar) at the upstream joint separation (in road shoulder). Connect separated sections of pipe with chain or cable to prevent/limit further separation.
- Repair downstream joint separation (CMP or rubber collar). Connect separated sections of pipe with chain or cable to prevent/limit further separation.
- Construct AC dike (extruded or hand-formed) to divert all surface runoff (to the extent practical) into new inlet and pave area between new AC dike and roadway (4" AB and 2" AC).
- Repair or replace driveway culvert at Saunders Shopping Center (this work may be the responsibility of the property owner and not the City).
- If Sanders driveway cross-culvert is too deep to surface drain to new inlet, then it should be connected with a new storm drain pipe (12" min.).
- Replace wooden lid on ditch inlet (east side of Scenic Drive) and regrade ditch as required.

If the City is unable to secure a contractor quickly, then we suggest the following temporary improvements be made to prevent further erosion and degradation of existing drainage facilities:

- Install 6" HDPE down-drain over embankment – secure in place with rope and T-posts (two 6" down-drains preferred for additional capacity).
- Construct a temporarily inlet using plastic/visqueen and sandbags to divert surface water into new 6" down-drain inlet(s) and prevent water from entering the separated storm drain joints or from flowing over the hillside.

We also suggest that a representative from GHD be present during repairs to help guide the work. It's possible that additional or different improvements will be necessary based on the current condition of the facilities at the time work is completed or unforeseen circumstances.

Following the completion of the work above, and following the winter wet season, the City should consider conducting a site analysis to identify any additional repairs or improvements necessary to Scenic Drive within the City Limits.