



SUPPLEMENTAL STORM ANALYSIS

TRILLIUM CREEK

NOVEMBER 2018

Narrative:

This is a preliminary investigation to size the new culvert at the road crossing for the Trillium Creek subdivision. Based on Website data Trillium Creek has a basin of approximately 138 acres. More than 36 acres is in a riparian corridor with the basin extending from the subject site to Rosemont road.

At highway 43 there is a 24-inch concrete culvert that appears would limit the flow downstream to the site if that culvert were undersized.

Using the Rational Method:

$$Q = CIA$$

C= the runoff coefficient

$$C = \frac{(36ac)(0.45) + (102ac)(0.70)}{138ac} = 0.63$$

I_{25} = 25year intensity using time of concentration of 32 minutes = 1.0 using ODOT Zone 7 rainfall intensity curves.

A= Area = 138 acres

$$Q = (0.63)(1.0)(138) = 87 \text{ cfs}$$

The culvert at Highway is upstream from the proposed development with approximately 10 less acres on basin upstream. At this time it is not known what the slope of this culvert is and if during large events the highway acts as a dike. Without additional data it would have a capacity of approximately 50cfs.

The arch culvert at Mapleton was only visually reviewed. It has a large section and appears to have a natural bottom. There isn't any evidence that Trillium Creek has overtopped Mapleton.

The proposed culvert for the Trillium Creek project has a tentative size of 36-inch and a slope of 4.99%. Using the Civil Tools program this culvert has a capacity of 161cfs and is more than adequate.

Downstream of the project an older unmaintained 48-inch CMP with a partial concrete and rock bottom reducing the height to approximately 27-inches. The surveyors find NO slope for this culvert. Using a modest 1% slope and effective diameter of 30-inches the capacity is approximately 44cfs. Based on the calculations above this culvert is undersized. Neighbors report that this driveway has experienced flooding in the recent past.

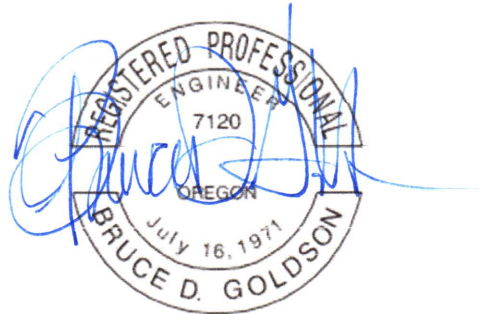
Conclusion:

The existing CMP culvert running through the Trillium Creek project is defective with portions of the bottom rusted out. Removing this old culvert and restoring Trillium Creek to a natural stream corridor, except for the driveway crossing for this project will reduce the concentration of flow at the westerly boundary of the project.

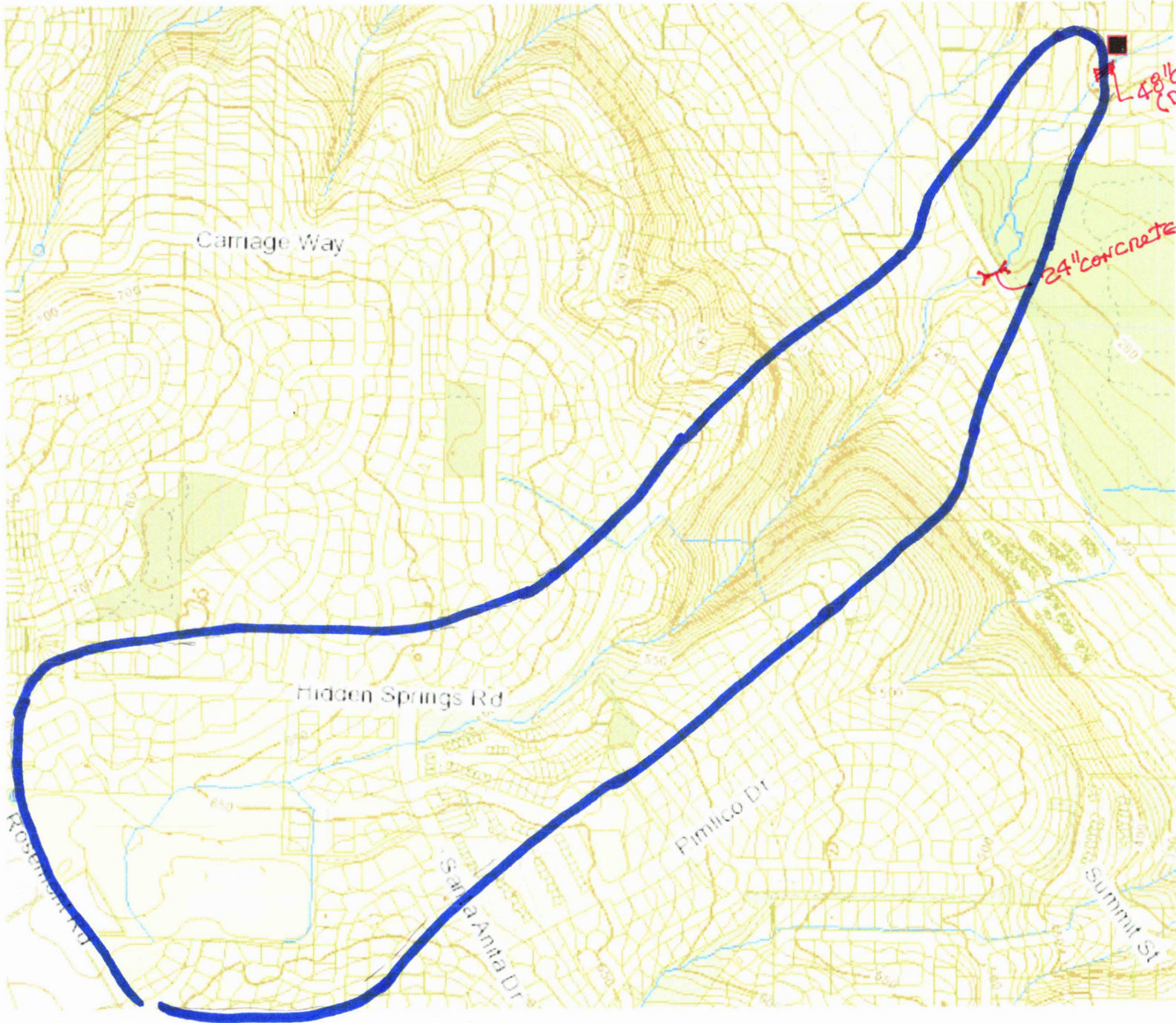
Detention with release at the pre-developed flows for the access drive has been addressed in the preliminary storm report.

Prepared by:

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Theta
November 20, 2018



EXPIRES: 06/30/2019
SIGNATURE DATE: 11/20/18



Carriage Way

Hidden Springs Rd

Pimlico Dr

Santa Anita Dr

Summit St

48" CMP
(DAMAGED)

24" concrete

RAINFALL INTENSITY - DURATION - RECURRENCE INTERVAL CURVES

