



MEMORANDUM

To: Kevin Fong, City of Davis

From: Brian Foster, P.E., Cunningham Engineering Corporation (CEC)
Niki Crucillo, P.E., CEC

Date: December 9, 2020

Subject: Bretton Woods – Preliminary Storm Water Quality Design

The purpose of this memo is to summarize the proposed storm water quality design for the Bretton Woods project. The design is based on the *City of Davis Stormwater Phase II General Permit Design Standard Guidance Document – July 2015* and City comments on the Mass Grading Improvement Plans, dated October 12, 2020.

As shown on the attached exhibit, runoff from the Bretton Wood project generally flows via piped storm drain conveyance to a proposed perimeter channel located along the west edge of the site. The perimeter channel flows towards the northern edge of the site and then flows east into a detention basin. The portion of the perimeter channel which flows east to west is considered to be the project's Vegetated Swale BMP.

The Vegetated Swale has been designed in accordance with the "Flow Hydraulic Design Basis" in the *City Guidance Document* as shown on the attached calculation spreadsheet, the project generates a Water Quality Flow of 7.05 CFS. In order to meet the required 10-minute contact time, a swale of at least 312 ft in length is required. The designed swale length is 1,510 ft.

The City has also requested volumetric data be provided for the 2-year, 24-hour and 85th percentile storms.

The 2-year, 24-hour post-development runoff volume was calculated to be 5.4 ac-ft using an HEC-HMS model with the following inputs:

Precipitation:	Frequency Storm, 2.26 in.
Loss Method:	SCS Curve Number, CN 81.58
Transform Method:	SCS Unit Hydrograph, Lag Time 45 min

The 85th Percentile rainfall depth was calculated to be 0.6 inches using NOAA historical rainfall data from January 1, 1960 through August 28, 2020 at monitoring station Davis 2 WSW Experimental Farm. This equates to a total rainfall volume of 3.8 ac-ft.

The bottom 2' feet of the downstream basin at the northeast corner of the project site has a capacity of 7.6 ac-ft. This is more than adequate to contain either the 2-year, 24-hour runoff or the 85th percentile storm.