

September 4, 2014

HYDROPLOT

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Mr. Matthew Rasmussen
2927 Melanie Lane
Ogden, Utah 84403

Re: Drainage Evaluation for Dauphine'-Savoy-Piedmont Subdivision, Lot #2, Ogden, UT

Dear Matt:

HydroPlot has completed the drainage evaluation for Lot #2 of the Dauphine'-Savoy-Piedmont Subdivision in Ogden, Utah. The drainage evaluation was based on the need to determine the flow rates from various return period storms for an ungauged watershed.

The watershed is located in the foothills of the Wasatch Range just southeast of Ogden, Weber County, Utah. The subject property is positioned on the bench of the Bonneville level of the foot hills at about 6500 Bybee Drive in unincorporated Weber County, Utah. Figure 1 shows the location of the watershed on a USGS base map. The watershed is call Broad Hollow.

The Broad Hollow watershed is relatively undisturbed with a heavily vegetated cover consisting of scrub oak, sage brush, and native grasses and weeds. Soils consist of coarse grained sandy gravelly materials with some silts and very little clay. Most of these soils are derived from alluvial fan and debris flow deposits. Based on these soil gradations, the infiltration rate for these soils is expected to be rapid to vary rapid. Together with the vegetative cover, the runoff potential is low.

Runoff flow rates were determined using the methods proposed by Kenney, Wilkowske, and Wright (2007). This study was conducted by the USGS in cooperation with the Utah Department of Transportation and the Utah Division of Water Rights and Water Resources. The method uses regional regression equations to determine the estimate peak flows for ungauged watershed for the 2-, 5-, 10-, 25-, 50-, 100-, 200-, and 500-year recurrence or return period events. The regression equations are based on parameters such as the drainage area, area of herbaceous plants, precipitation type, and elevation of the watershed.

Figure 1 shows the site area and the drainage that flows through the Lot #2 area. Table 1 presents the watershed characteristics. Based on these values, the regression estimates for the runoff peak flows for the various return periods are presented in Table 2.

These flow estimates were compared to flow estimates determined using the NRCS curve number method based on a 24-hour storm. Given the soil information, the hydrologic soil group is either A or B. Based on the vegetative cover of approximately 60%, the curve number from juniper-sage-grass type vegetation community is estimated to be about 50. Precipitation for the 10-year event is estimated to be 3.34 inches. Based on the watershed characteristics, the

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time of concentration was determined to be about 50 minutes. Using the triangular hydrograph calculations based on the NRCS curve number runoff relationship, the peak flow was estimated to be 3.73 cfs for the 10-year event. Therefore, the two methods show estimates of the same order of magnitude.

Based on these calculations, the runoff potential from the watershed is somewhat limited, though the long return period storms will result in runoff that will need to be directed away from the proposed residences.

If you have any questions, please give me a call.

Sincerely,



Thomas J. Suchoski, PG
Hydrologist

Enc.: Table 1 and 2, and Figure 1

Ref:

Kenney, T.A., Wilkowske, C.D., and Wright, S.J., 2007, Methods for estimating magnitude and frequency of peak flows for natural streams in Utah: U.S. Geological Survey Scientific Investigations Report 2007-5158, 28 p.

TABLE 1 – Watershed Characteristics

Parameter	Broad Hollow WS
Mean Basin Elevation (ft)	6010
Drainage Area (sq. mi.)	0.23
Area covered by Herbaceous plants (%)	17.2
Area covered by forest (%)	44.0
Mean Annual Precipitation (in)	26.6
Average Basin Slope (%)	60.4
Slopes greater than 30% (%)	93.9

TABLE 2 – Peak Flow Estimates

Return Period	Broad Hollow WS Peak Flow (cfs)
2-year	1.06
5-year	2.77
10-year	4.43
25-year	6.64
50-year	9.25
100-year	11.7
200-year	14.7
500-year	20.6

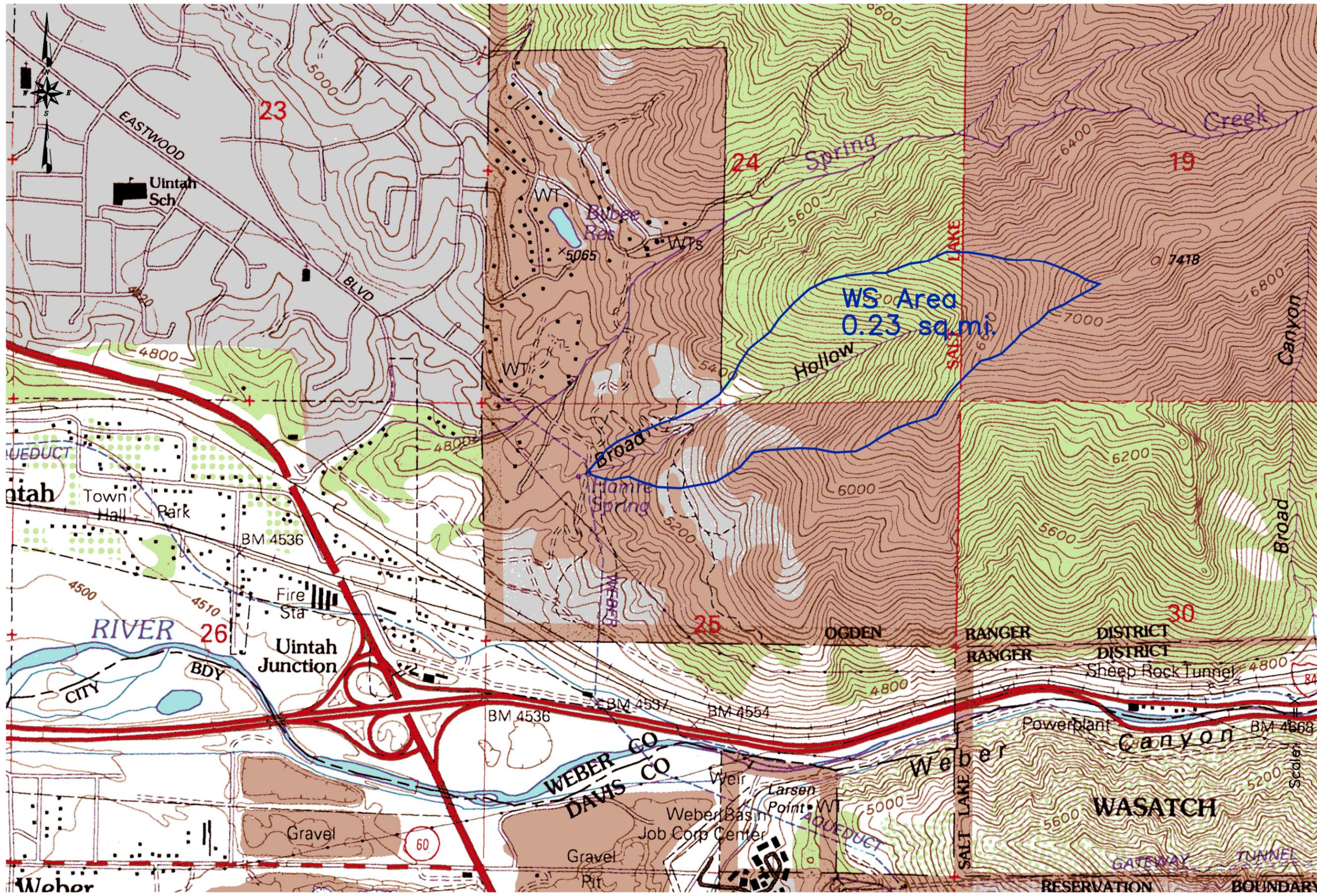


FIGURE 1. Broad Hollow Drainage Location & Topography

Matthew Rasmussen
Ogden, Utah

Broad Hollow
Drainage
Weber County, Utah