

TABLE I – DISCHARGE POINT INFORMATION & DISCHARGE QUANTITY

Discharge Point	LOCATION	Latitude	Longitude	Class	C (weighted)	I (in/hr)	A (Acres)	Q (cfs)
1	Waipahoehoe Gulch	20.08833D	155.77126D	2	0.48	3.71	2.08	3.70
2	Kilohana Gulch	20.07970D	155.76748D	2	0.53	3.71	1.00	1.96
3	Kilohana Gulch	20.08258D	155.76380D	2	0.62	3.71	0.76	1.75
4	Kilohana Gulch	20.08249D	155.76391D	2	0.49	3.71	0.90	1.63
5	Keawewai Gulch	20.07763D	155.76490D	2	0.54	3.71	1.20	2.40
6	Keawewai Gulch	20.07784D	155.76263D	2	0.51	3.71	0.58	1.09
7	Keawewai Gulch	20.07782D	155.76272D	2	0.51	3.71	0.50	0.95
8	Keawewai Gulch	20.07722D	155.76420D	2	0.47	3.71	0.49	0.85
9	Unnamed Gulch	20.06008D	155.77139D	2	0.46	3.71	7.97	13.60
10	Unnamed Gulch	20.05910D	155.75692D	2	0.53	3.71	1.26	2.48
11	Unnamed Gulch	20.06607D	155.75280D	2	0.57	3.71	0.82	1.73
12	Unnamed Gulch	20.06601D	155.75287D	2	0.43	3.71	0.88	1.40
13	Unnamed Gulch	20.06063D	155.75569D	2	0.50	3.71	1.00	1.86

RUNOFF CALCULATIONS:

Given: C = 0.90 (AC Pavement/Concrete Sidewalk)
C = 0.30 (Grassed/Pervious areas)
i (2-yr, 1-hr event) = 1.65 in./hr.
tc (All Areas) = 10 min. (minimum)
Cf (All Areas) = 2.25

$$\begin{aligned}
 I &= i \times Cf \\
 &= 1.65 \times 2.25 \\
 &= 3.71
 \end{aligned}$$

Since project area is less than 100 acres, the Rational Formula will be used to calculate potential runoff.

Find: Runoff for a 2-yr 1-hr rainfall event (Q).

Solution: $Q = C \times I \times A$

See Table on next page for Calculations.

Area	C (Paved)	C (Unpaved)	C (Weighted)	i (Inches)	CF	A (Paved)	A (Unpaved)	A (Total)	Q (CFS)
1-1	0.90	0.30	0.48	1.65	2.25	0.32	0.76	1.08	1.92
1-2	0.90	0.30	0.48	1.65	2.25	0.30	0.70	1.00	1.78
							Total:	2.08	3.70
2-1	0.90	0.30	0.30	1.65	2.25	0.00	0.30	0.30	0.34
2-2	0.90	0.30	0.62	1.65	2.25	0.38	0.32	0.70	1.62
							Total:	1.00	1.96
3-1	0.90	0.30	0.62	1.65	2.25	0.40	0.36	0.76	1.75
							Total:	0.76	1.75
4-1	0.90	0.30	0.49	1.65	2.25	0.28	0.62	0.90	1.63
							Total:	0.90	1.63
5-1	0.90	0.30	0.51	1.65	2.25	0.12	0.22	0.34	0.65
5-2	0.90	0.30	0.58	1.65	2.25	0.17	0.18	0.35	0.76
5-3	0.90	0.30	0.52	1.65	2.25	0.09	0.15	0.23	0.45
5-4	0.90	0.30	0.52	1.65	2.25	0.10	0.18	0.28	0.54
							Total:	1.20	2.40
6-1	0.90	0.30	0.51	1.65	2.25	0.20	0.38	0.58	1.09
							Total:	0.58	1.09
7-1	0.90	0.30	0.51	1.65	2.25	0.17	0.32	0.50	0.95
							Total:	0.50	0.95
8-1	0.90	0.30	0.50	1.65	2.25	0.07	0.14	0.21	0.38
8-2	0.90	0.30	0.45	1.65	2.25	0.07	0.21	0.28	0.47
							Total:	0.49	0.85
9-1	0.90	0.30	0.50	1.65	2.25	0.06	0.12	0.18	0.32
9-2	0.90	0.30	0.48	1.65	2.25	0.07	0.17	0.24	0.41
9-3	0.90	0.30	0.50	1.65	2.25	0.20	0.40	0.59	1.09
9-4	0.90	0.30	0.45	1.65	2.25	0.18	0.57	0.75	1.23
9-5	0.90	0.30	0.49	1.65	2.25	0.14	0.30	0.44	0.80
9-6	0.90	0.30	0.52	1.65	2.25	0.14	0.25	0.39	0.74
9-7	0.90	0.30	0.57	1.65	2.25	0.25	0.31	0.57	1.19
9-8	0.90	0.30	0.46	1.65	2.25	0.22	0.61	0.83	1.39
9-9	0.90	0.30	0.44	1.65	2.25	0.91	3.05	3.98	6.43
							Total:	7.97	13.60
10-1	0.90	0.30	0.53	1.65	2.25	0.47	0.79	1.26	2.48
							Total:	1.26	2.48
11-1	0.90	0.30	0.57	1.65	2.25	0.36	0.46	0.82	1.73
							Total:	0.82	1.73
12-1	0.90	0.30	0.43	1.65	2.25	0.19	0.69	0.88	1.40
							Total:	0.88	1.40
13-1	0.90	0.30	0.50	1.65	2.25	0.17	0.34	0.50	0.93
13-2	0.90	0.30	0.50	1.65	2.25	0.17	0.34	0.50	0.93
							Total:	1.00	1.86
							TOTAL:	19.44	35.40