TABLE I – DISCHARGE POINT INFORMATION & DISCHARGE QUANTITY

Discharge Point	LOCATION	Latitude	Longitude	Class	C (weighted)	I (in/hr)	A (Acres)	Q (cfs)
1	Kapalama Canal	21^19’08.6”	157^52’27.6”	2	0.78	4.50	0.35	1.21
2	Nuuanu Stream	21^18’55.0”	157^51’39.3”	2	0.92	4.50	1.72	7.07
3	Nuuanu Stream	21^18’59.8”	157^51’34.9”	2	0.95	4.50	1.90	8.14
4	Nuuanu Stream	21^19’05.6”	157^51’28.0”	2	0.68	4.50	1.60	4.92

RUNOFF CALCULATIONS

Given:

Area Disturbed 1-1 = 0.25 Acres
Area Disturbed 1-1A = 0.09 Acres

Area Disturbed 2-1 = 0.34 Acres
Area Disturbed 2-2 = 0.20 Acres
Area Disturbed 2-3 = 0.25 Acres
Area Disturbed 2-4 = 0.21 Acres
Area Disturbed 2-4A = 0.09 Acres
Area Disturbed 2-5 = 0.23 Acres
Area Disturbed 2-6 = 0.17 Acres
Area Disturbed 2-7 = 0.23 Acres

Area Disturbed 3-1 = 0.40 Acres
Area Disturbed 3-2 = 0.25 Acres
Area Disturbed 3-3 = 0.38 Acres
Area Disturbed 3-4 = 0.15 Acres
Area Disturbed 3-5 = 0.18 Acres
Area Disturbed 3-6 = 0.30 Acres
Area Disturbed 3-7 = 0.09 Acres
Area Disturbed 3-8 = 0.17 Acres

Area Disturbed 4-1 = 0.15 Acres
Area Disturbed 4-2 = 0.19 Acres
Area Disturbed 4-3 = 0.56 Acres
Area Disturbed 4-4 = 0.05 Acres
Area Disturbed 4-5 = 0.27 Acres
Area Disturbed 4-6 = 0.14 Acres
Area Disturbed 4-7 = 0.25 Acres

C = 0.95 (AC Pavement/Concrete Sidewalk/Concrete Driveways)
C=0.3 (Grassed/Pervious areas)

I = (2-yr, 1-hr event) = 2.00 in./hr.

tc_{1-1} = 10 min. (minimum)
tc_{1-1A} = 10 min. (minimum)

tc_{2-1} = 10 min. (minimum)
tc_{2-2} = 10 min. (minimum)
tc_{2-3} = 10 min. (minimum)
tc_{2-4} = 10 min. (minimum)
tc_{2-4A} = 10 min. (minimum)
tc_{2-5} = 10 min. (minimum)
tc_{2-6} = 10 min. (minimum)
tc_{2-7} = 10 min. (minimum)

tc_{3-1} = 10 min. (minimum)
tc_{3-2} = 10 min. (minimum)
tc_{3-3} = 10 min. (minimum)
tc_{3-4} = 10 min. (minimum)
tc_{3-5} = 10 min. (minimum)
tc_{3-6} = 10 min. (minimum)
tc_{3-7} = 10 min. (minimum)

tc_{4-1} = 10 min. (minimum)
tc_{4-2} = 10 min. (minimum)
tc_{4-3} = 10 min. (minimum)
tc_{4-4} = 10 min. (minimum)
tc_{4-5} = 10 min. (minimum)
tc_{4-6} = 10 min. (minimum)
tc_{4-7} = 10 min. (minimum)

Cf_{1-1} = 2.25
Cf_{1-1A} = 2.25

Cf_{2-1} = 2.25
Cf_{2-2} = 2.25
Cf_{2-3} = 2.25
Cf_{2-4} = 2.25
Cf_{2-4A} = 2.25
Cf_{2-5} = 2.25
Cf_{2-6} = 2.25
Cf_{2-7} = 2.25

Cf_{3-1} = 2.25
Cf_{3-2} = 2.25
Cf_{3-3} = 2.25
Cf_{3-4} = 2.25
Cf_{3-5} = 2.25
Cf_{3-6} = 2.25
Cf_{3-7} = 2.25
Cf_{3-8} = 2.25

Cf_{4-1} = 2.25
Cf_{4-2} = 2.25
Cf_{4-3} = 2.25
Cf_{4-4} = 2.25
Cf_{4-5} = 2.25
Cf_{4-6} = 2.25
Cf_{4-7} = 2.25

I = i X Cf

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 x I x A

Q_{1-1} = (0.95) x (4.50 in/hr) x (0.25 Acs)
Q_{1-1} = 1.08 cfs

Q_{1-1A}= (0.30) x (4.50 in/hr) x (0.09 Acs)
Q_{1-1A} = 0.12 cfs

Q_{2-1} = (0.95) x (4.50 in/hr) x (0.34 Acs)
Q_{2-1} = 1.44 cfs

Q_{2-2} = (0.95) x (4.50 in/hr) x (0.20 Acs)
Q_{2-2} = 0.84 cfs

Q_{2-3} = (0.95) x (4.50 in/hr) x (0.25 Acs)
Q_{2-3} = 1.08 cfs

Q_{2-4} = (0.95) x (4.50 in/hr) x (0.21 Acs)
Q_{2-4} = 0.89 cfs

$Q_{2\text{-}4A}$ = (0.30) x (4.50 in/hr) x (0.09 Acs)
$Q_{2\text{-}4A}$ = 0.12 cfs

$Q_{2\text{-}5}$ = (0.95) x (4.50 in/hr) x (0.23 Acs)
$Q_{2\text{-}5}$ = 1.00 cfs

$Q_{2\text{-}6}$ = (0.95) x (4.50 in/hr) x (0.17 Acs)
$Q_{2\text{-}6}$ = 0.72 cfs

$Q_{2\text{-}7}$ = (0.95) x (4.50 in/hr) x (0.23 Acs)
$Q_{2\text{-}7}$ = 0.98 cfs

$Q_{3\text{-}1}$ = (0.95) x (4.50 in/hr) x (0.40 Acs)
$Q_{3\text{-}1}$ = 1.70 cfs

$Q_{3\text{-}2}$ = (0.95) x (4.50 in/hr) x (0.25 Acs)
$Q_{3\text{-}2}$ = 1.07 cfs

$Q_{3\text{-}3}$ = (0.95) x (4.50 in/hr) x (0.38 Acs)
$Q_{3\text{-}3}$ = 1.62 cfs

$Q_{3\text{-}4}$ = (0.95) x (4.50 in/hr) x (0.15 Acs)
$Q_{3\text{-}4}$ = 0.62 cfs

$Q_{3\text{-}5}$ = (0.95) x (4.50 in/hr) x (0.18 Acs)
$Q_{3\text{-}5}$ = 0.75 cfs

$Q_{3\text{-}6}$ = (0.95) x (4.50 in/hr) x (0.30 Acs)
$Q_{3\text{-}6}$ = 1.29 cfs

$Q_{3\text{-}7}$ = (0.95) x (4.50 in/hr) x (0.09 Acs)
$Q_{3\text{-}7}$ = 0.36 cfs

$Q_{3\text{-}8}$ = (0.95) x (4.50 in/hr) x (0.17 Acs)
$Q_{3\text{-}8}$ = 0.71 cfs

$Q_{4\text{-}1}$ = (0.95) x (4.50 in/hr) x (0.15 Acs)
$Q_{4\text{-}1}$ = 0.62 cfs

$Q_{4\text{-}2}$ = (0.95) x (4.50 in/hr) x (0.19 Acs)
$Q_{4\text{-}2}$ = 0.80 cfs

$Q_{4\text{-}3}$ = (0.95) x (4.50 in/hr) x (0.56 Acs)
$Q_{4\text{-}3}$ = 2.41 cfs

$Q_{4\text{-}4}$ = (0.95) x (4.50 in/hr) x (0.05 Acs)
$Q_{4\text{-}4}$ = 0.20 cfs

$Q_{4\text{-}5}$ = (0.30) x (4.50 in/hr) x (0.27 Acs)
$Q_{4\text{-}5}$ = 0.36 cfs

$Q_{4\text{-}6}$ = (0.30) x (4.50 in/hr) x (0.14 Acs)
$Q_{4\text{-}6}$ = 0.19 cfs

$Q_{4\text{-}7}$ = (0.30) x (4.50 in/hr) x (0.25 Acs)
$Q_{4\text{-}7}$ = 0.33 cfs