

# **APPENDIX 1**

## **1.5-Foot H-Flume Lookup Table**

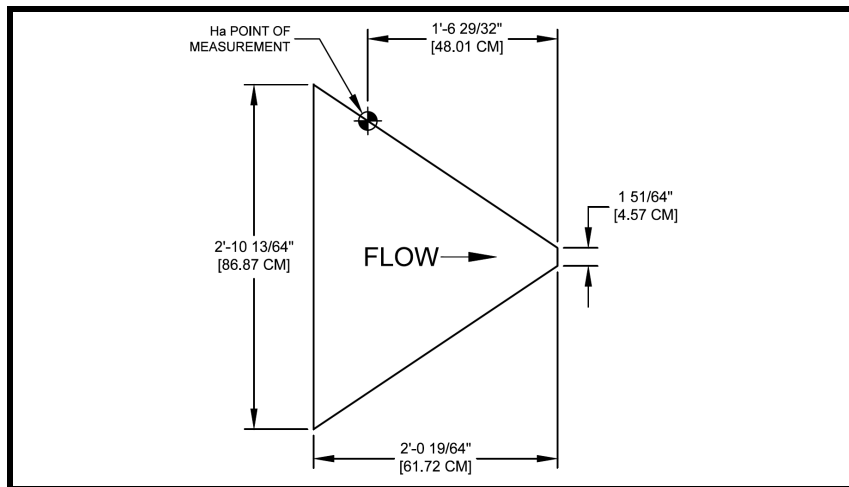


### 1.5-Foot H Flume Discharge Table

25-30% Submergence Transition ±2-5% Accuracy

Formulas (H in feet):  $CFS = -0.00014 - 0.00141 H_{ft}^{0.5} + 0.474778 H_{ft}^{1.5} + 1.63086 H_{ft}^{2.5}$   
 Formulas (H in meters):  $L/S = -0.00396436 - 0.07231968 H_m^{0.5} + 79.89379128 H_m^{1.5} + 900.3765227 H_m^{2.5}$

FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
0.01	0.12	0.0030	Excessive error due to fluid-flow properties and boundary conditions				
0.02	0.24	0.0061	0.0011	0.4937	0.0007	0.0312	0.1121
0.03	0.36	0.0091	0.0023	1.032	0.0015	0.0651	0.2344
0.04	0.48	0.0122	0.0039	1.750	0.0025	0.1104	0.3974
0.05	0.60	0.0152	0.0057	2.558	0.0037	0.1614	0.5808
0.06	0.72	0.0183	0.0078	3.501	0.0050	0.2209	0.7948
0.07	0.84	0.0213	0.0103	4.623	0.0067	0.2917	1.050
0.08	0.96	0.0244	0.0131	5.879	0.0085	0.3710	1.335
0.09	1.08	0.0274	0.0164	7.360	0.0106	0.4644	1.671
0.10	1.20	0.0305	0.0200	8.976	0.0129	0.5664	2.038
0.11	1.32	0.0335	0.0237	10.64	0.0153	0.6712	2.415
0.12	1.44	0.0366	0.0276	12.39	0.0178	0.7816	2.812
0.13	1.56	0.0396	0.0319	14.32	0.0206	0.9034	3.251
0.14	1.68	0.0427	0.0365	16.38	0.0236	1.034	3.719
0.15	1.80	0.0457	0.0414	18.58	0.0268	1.172	4.219
0.16	1.92	0.0488	0.0467	20.96	0.0302	1.323	4.759
0.17	2.04	0.0518	0.0523	23.47	0.0338	1.481	5.329
0.18	2.16	0.0549	0.0582	26.12	0.0376	1.648	5.931
0.19	2.28	0.0579	0.0645	28.95	0.0417	1.827	6.573
0.20	2.40	0.0610	0.0711	31.91	0.0460	2.014	7.245
0.21	2.52	0.0640	0.0780	35.01	0.0504	2.209	7.948
0.22	2.64	0.0671	0.0854	38.33	0.0552	2.419	8.702
0.23	2.76	0.0701	0.0931	41.78	0.0602	2.637	9.487
0.24	2.88	0.0732	0.1011	45.37	0.0653	2.863	10.30
0.25	3.00	0.0762	0.1095	49.14	0.0708	3.101	11.16
0.26	3.12	0.0792	0.1183	53.09	0.0765	3.350	12.05
0.27	3.24	0.0823	0.1275	57.22	0.0824	3.611	12.99
0.28	3.36	0.0853	0.1371	61.53	0.0886	3.883	13.97
0.29	3.48	0.0884	0.1470	65.97	0.0950	4.163	14.98
0.30	3.60	0.0914	0.157	70.46	0.1015	4.446	16.00



Curve fitted equation accurate to within 1.5%

Notes: Discharge is calculated to top of flume

Source: Field Manual for Research in Agricultural Hydrology, Agriculture Handbook No. 224, U.S. Department of Agriculture, February 1972



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FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
0.31	3.72	0.0945	0.168	75.40	0.1086	4.758	17.12
0.32	3.84	0.0975	0.179	80.34	0.1157	5.069	18.24
0.33	3.96	0.1006	0.191	85.72	0.1234	5.409	19.46
0.34	4.08	0.1036	0.203	91.11	0.1312	5.749	20.69
0.35	4.20	0.1067	0.215	96.49	0.1390	6.089	21.91
0.36	4.32	0.1097	0.228	102.3	0.1474	6.457	23.23
0.37	4.44	0.1128	0.241	108.2	0.1558	6.825	24.56
0.38	4.56	0.1158	0.255	114.4	0.1648	7.222	25.98
0.39	4.68	0.1189	0.269	120.7	0.1739	7.618	27.41
0.40	4.80	0.1219	0.283	127.0	0.1829	8.015	28.84
0.41	4.92	0.1250	0.298	133.7	0.1926	8.439	30.37
0.42	5.04	0.1280	0.314	140.9	0.2029	8.892	32.00
0.43	5.16	0.1311	0.330	148.1	0.2133	9.346	33.63
0.44	5.28	0.1341	0.346	155.3	0.2236	9.799	35.26
0.45	5.40	0.1372	0.363	162.9	0.2346	10.28	36.99
0.46	5.52	0.1402	0.380	170.5	0.2456	10.76	38.72
0.47	5.64	0.1433	0.398	178.6	0.2572	11.27	40.56
0.48	5.76	0.1463	0.416	186.7	0.2689	11.78	42.39
0.49	5.88	0.1494	0.435	195.2	0.2811	12.32	44.33
0.50	6.00	0.1524	0.454	203.8	0.2934	12.86	46.26
0.51	6.12	0.1554	0.473	212.3	0.3057	13.40	48.20
0.52	6.24	0.1585	0.493	221.3	0.3186	13.96	50.24
0.53	6.36	0.1615	0.514	230.7	0.3322	14.56	52.38
0.54	6.48	0.1646	0.535	240.1	0.3458	15.15	54.52
0.55	6.60	0.1676	0.557	250.0	0.3600	15.77	56.76
0.56	6.72	0.1707	0.579	259.9	0.3742	16.40	59.00
0.57	6.84	0.1737	0.601	269.7	0.3884	17.02	61.24
0.58	6.96	0.1768	0.624	280.1	0.4033	17.67	63.59
0.59	7.08	0.1798	0.648	290.8	0.4188	18.35	66.03
0.60	7.20	0.1829	0.672	301.6	0.4343	19.03	68.48
0.61	7.32	0.1859	0.697	312.8	0.4505	19.74	71.02
0.62	7.44	0.1890	0.722	324.0	0.4666	20.45	73.57
0.63	7.56	0.1920	0.747	335.3	0.4828	21.16	76.12
0.64	7.68	0.1951	0.773	346.9	0.4996	21.89	78.77
0.65	7.80	0.1981	0.800	359.0	0.5170	22.66	81.52
0.66	7.92	0.2012	0.827	371.2	0.5345	23.42	84.27
0.67	8.04	0.2042	0.855	383.7	0.5526	24.21	87.12
0.68	8.16	0.2073	0.883	396.3	0.5707	25.01	89.98
0.69	8.28	0.2103	0.912	409.3	0.5894	25.83	92.93
0.70	8.40	0.2134	0.942	422.8	0.6088	26.68	95.99
0.71	8.52	0.2164	0.972	436.2	0.6282	27.53	99.05
0.72	8.64	0.2195	1.002	449.7	0.6476	28.38	102.1
0.73	8.76	0.2225	1.033	463.6	0.6676	29.25	105.3
0.74	8.88	0.2256	1.065	478.0	0.6883	30.16	108.5
0.75	9.00	0.2286	1.097	492.3	0.7090	31.07	111.8
0.76	9.12	0.2316	1.130	507.1	0.7303	32.00	115.1
0.77	9.24	0.2347	1.163	522.0	0.7516	32.94	118.5
0.78	9.36	0.2377	1.197	537.2	0.7736	33.90	122.0
0.79	9.48	0.2408	1.231	552.5	0.7956	34.86	125.4
0.80	9.60	0.2438	1.27	570.0	0.8208	35.97	129.4

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FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
0.81	9.72	0.2469	1.30	583.4	0.8402	36.82	132.5
0.82	9.84	0.2499	1.34	601.4	0.8660	37.95	136.5
0.83	9.96	0.2530	1.38	619.3	0.8919	39.08	140.6
0.84	10.08	0.2560	1.41	632.8	0.9113	39.93	143.7
0.85	10.20	0.2591	1.45	650.8	0.9371	41.06	147.8
0.86	10.32	0.2621	1.49	668.7	0.9630	42.20	151.8
0.87	10.44	0.2652	1.53	686.7	0.9888	43.33	155.9
0.88	10.56	0.2682	1.57	704.6	1.015	44.46	160.0
0.89	10.68	0.2713	1.61	722.6	1.041	45.60	164.1
0.90	10.80	0.2743	1.65	740.5	1.066	46.73	168.1
0.91	10.92	0.2774	1.69	758.5	1.092	47.86	172.2
0.92	11.04	0.2804	1.73	776.4	1.118	48.99	176.3
0.93	11.16	0.2835	1.78	798.9	1.150	50.41	181.4
0.94	11.28	0.2865	1.82	816.8	1.176	51.54	185.5
0.95	11.40	0.2896	1.86	834.8	1.202	52.68	189.5
0.96	11.52	0.2926	1.91	857.2	1.234	54.09	194.6
0.97	11.64	0.2957	1.95	875.2	1.260	55.22	198.7
0.98	11.76	0.2987	2.00	897.6	1.293	56.64	203.8
0.99	11.88	0.3018	2.05	920.0	1.325	58.06	208.9
1.00	12.00	0.3048	2.09	938.0	1.351	59.19	213.0
1.01	12.12	0.3078	2.14	960.4	1.383	60.60	218.1
1.02	12.24	0.3109	2.19	982.9	1.415	62.02	223.2
1.03	12.36	0.3139	2.24	1005	1.448	63.44	228.3
1.04	12.48	0.3170	2.30	1032	1.486	65.14	234.4
1.05	12.60	0.3200	2.35	1055	1.519	66.55	239.5
1.06	12.72	0.3231	2.40	1077	1.551	67.97	244.6
1.07	12.84	0.3261	2.45	1100	1.583	69.38	249.7
1.08	12.96	0.3292	2.50	1122	1.616	70.80	254.8
1.09	13.08	0.3322	2.56	1149	1.655	72.50	260.9
1.10	13.20	0.3353	2.61	1171	1.687	73.92	266.0
1.11	13.32	0.3383	2.67	1198	1.726	75.61	272.1
1.12	13.44	0.3414	2.73	1225	1.764	77.31	278.2
1.13	13.56	0.3444	2.78	1248	1.797	78.73	283.3
1.14	13.68	0.3475	2.84	1275	1.835	80.43	289.4
1.15	13.80	0.3505	2.90	1302	1.874	82.13	295.5
1.16	13.92	0.3536	2.96	1328	1.913	83.83	301.6
1.17	14.04	0.3566	3.02	1355	1.952	85.53	307.7
1.18	14.16	0.3597	3.08	1382	1.991	87.23	313.9
1.19	14.28	0.3627	3.14	1409	2.029	88.92	320.0
1.20	14.40	0.3658	3.20	1436	2.068	90.62	326.1
1.21	14.52	0.3688	3.27	1468	2.113	92.61	333.2
1.22	14.64	0.3719	3.33	1495	2.152	94.31	339.3
1.23	14.76	0.3749	3.39	1521	2.191	96.00	345.4
1.24	14.88	0.3780	3.46	1553	2.236	97.99	352.6
1.25	15.00	0.3810	3.52	1580	2.275	99.69	358.7
1.26	15.12	0.3840	3.59	1611	2.320	101.7	365.8
1.27	15.24	0.3871	3.66	1643	2.365	103.7	373.0
1.28	15.36	0.3901	3.73	1674	2.411	105.6	380.1
1.29	15.48	0.3932	3.80	1705	2.456	107.6	387.2
1.30	15.60	0.3962	3.87	1737	2.501	109.6	394.4

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FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
1.31	15.72	0.3993	3.94	1768	2.546	111.6	401.5
1.32	15.84	0.4023	4.01	1800	2.592	113.6	408.6
1.33	15.96	0.4054	4.08	1831	2.637	115.5	415.8
1.34	16.08	0.4084	4.15	1863	2.682	117.5	422.9
1.35	16.20	0.4115	4.22	1894	2.727	119.5	430.0
1.36	16.32	0.4145	4.30	1930	2.779	121.8	438.2
1.37	16.44	0.4176	4.37	1961	2.824	123.8	445.3
1.38	16.56	0.4206	4.45	1997	2.876	126.0	453.5
1.39	16.68	0.4237	4.52	2029	2.921	128.0	460.6
1.40	16.80	0.4267	4.60	2064	2.973	130.3	468.7
1.41	16.92	0.4298	4.68	2100	3.025	132.5	476.9
1.42	17.04	0.4328	4.76	2136	3.076	134.8	485.0
1.43	17.16	0.4359	4.84	2172	3.128	137.1	493.2
1.44	17.28	0.4389	4.92	2208	3.180	139.3	501.3
1.45	17.40	0.4420	5.00	2244	3.232	141.6	509.5
1.46	17.52	0.4450	5.08	2280	3.283	143.9	517.7
1.47	17.64	0.4481	5.16	2316	3.335	146.1	525.8
1.48	17.76	0.4511	5.24	2352	3.387	148.4	534.0
1.49	17.88	0.4542	5.33	2392	3.445	150.9	543.1

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