



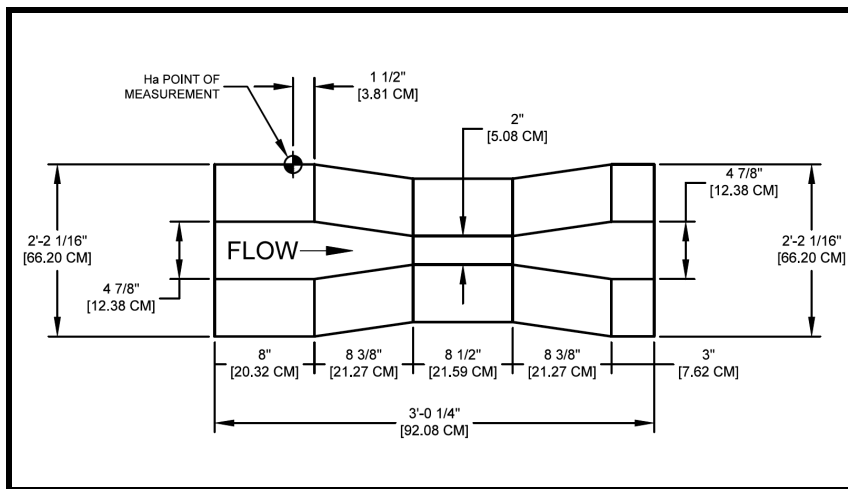
## 2 Inch 45-Degree WSC (No. 4) Trapezoidal Flume Discharge Table

80% Submergence Transition

Formulas (H in feet):  
Formulas (H in meters):

See Data Fit Equation Below  
See Data Fit Equation Below

FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
0.01	0.12	0.0030					
0.02	0.24	0.0061					
0.03	0.36	0.0091					
0.04	0.48	0.0122					
0.05	0.60	0.0152					
0.06	0.72	0.0183					
0.07	0.84	0.0213					
0.08	0.96	0.0244					
0.09	1.08	0.0274					
0.10	1.20	0.0305					
Excessive error due to fluid-flow properties and boundary conditions							
0.11	1.32	0.0335	0.0271	12.16	0.0175	0.7675	2.762
0.12	1.44	0.0366	0.0308	13.84	0.0199	0.8735	3.143
0.13	1.56	0.0396	0.0356	15.99	0.0230	1.009	3.630
0.14	1.68	0.0427	0.0413	18.55	0.0267	1.171	4.212
0.15	1.80	0.04572	0.0479	21.49	0.0309	1.356	4.879
0.16	1.92	0.0488	0.0552	24.76	0.0357	1.562	5.621
0.17	2.04	0.0518	0.0631	28.34	0.0408	1.788	6.434
0.18	2.16	0.0549	0.0717	32.19	0.0464	2.031	7.309
0.19	2.28	0.0579	0.0809	36.31	0.0523	2.291	8.244
0.20	2.40	0.0610	0.0906	40.68	0.0586	2.567	9.235
0.21	2.52	0.0640	0.1009	45.28	0.0652	2.857	10.28
0.22	2.64	0.0671	0.1116	50.11	0.0722	3.162	11.38
0.23	2.76	0.0701	0.1229	55.16	0.0794	3.481	12.53
0.24	2.88	0.0732	0.1347	60.45	0.0870	3.814	13.72
0.25	3.00	0.0762	0.1470	65.96	0.0950	4.162	14.98
0.26	3.12	0.0792	0.1598	71.71	0.1033	4.525	16.28
0.27	3.24	0.0823	0.1731	77.70	0.1119	4.903	17.64
0.28	3.36	0.0853	0.1870	83.94	0.1209	5.297	19.06
0.29	3.48	0.0884	0.2015	90.44	0.1302	5.707	20.53
0.30	3.60	0.0914	0.2166	97.22	0.1400	6.134	22.07



CFS = 0.107702 – 2.33095 H + 20.9685 H<sup>2</sup> – 73.4944 H<sup>3</sup> + 151.977 H<sup>4</sup> - 152.243 H<sup>5</sup> + 60.7906 H<sup>6</sup>

Notes: LPS = 3.04978101 – 216.55234 H + 6391.1988 H<sup>2</sup> – 73494.4 H<sup>3</sup> + 498612.205 H<sup>4</sup> - 1638730 H<sup>5</sup> + 2146799.78 H<sup>6</sup>

Discharge equations were generated by curve fitting to within +/-5% the data in the calibration curve graphs in Figs. 3, 4 of the source material.

Source: *Trapezoidal Flumes for Measuring Flow in Irrigation Channels*, USDA-ARS 41-140, March 1968



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See Data Fit Equation In Notes  
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FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
0.31	3.72	0.0945	0.2323	104.3	0.1502	6.580	23.68
0.32	3.84	0.0975	0.2487	111.6	0.1608	7.044	25.35
0.33	3.96	0.1006	0.2658	119.3	0.1718	7.528	27.09
0.34	4.08	0.1036	0.2836	127.3	0.1833	8.032	28.90
0.35	4.20	0.1067	0.3022	135.6	0.1953	8.558	30.79
0.36	4.32	0.1097	0.3215	144.3	0.2078	9.106	32.76
0.37	4.44	0.1128	0.3417	153.3	0.2208	9.676	34.82
0.38	4.56	0.1158	0.3627	162.8	0.2344	10.27	36.96
0.39	4.68	0.1189	0.3845	172.6	0.2485	10.89	39.18
0.40	4.80	0.1219	0.4073	182.8	0.2632	11.53	41.50
0.41	4.92	0.1250	0.4309	193.4	0.2785	12.20	43.91
0.42	5.04	0.1280	0.4556	204.5	0.2944	12.90	46.42
0.43	5.16	0.1311	0.4811	215.9	0.3109	13.63	49.03
0.44	5.28	0.1341	0.5077	227.8	0.3281	14.38	51.73
0.45	5.40	0.1372	0.5352	240.2	0.3459	15.16	54.54
0.46	5.52	0.1402	0.5638	253.0	0.3644	15.97	57.45
0.47	5.64	0.1433	0.5933	266.3	0.3835	16.80	60.46
0.48	5.76	0.1463	0.6240	280.0	0.4033	17.67	63.58
0.49	5.88	0.1494	0.6556	294.2	0.4237	18.57	66.81
0.50	6.00	0.1524	0.6884	308.9	0.4449	19.49	70.15
0.51	6.12	0.1554	0.7222	324.1	0.4668	20.45	73.59
0.52	6.24	0.1585	0.7571	339.8	0.4893	21.44	77.15
0.53	6.36	0.1615	0.7931	355.9	0.5126	22.46	80.82
0.54	6.48	0.1646	0.8302	372.6	0.5366	23.51	84.60
0.55	6.60	0.1676	0.8684	389.8	0.5613	24.59	88.49
0.56	6.72	0.1707	0.9078	407.4	0.5867	25.71	92.51
0.57	6.84	0.1737	0.9483	425.6	0.6129	26.86	96.64
0.58	6.96	0.1768	0.9900	444.3	0.6399	28.04	100.9
0.59	7.08	0.1798	1.033	463.6	0.6676	29.25	105.3
0.60	7.20	0.1829	1.077	483.4	0.6961	30.50	109.8
0.61	7.32	0.1859	1.122	503.7	0.7254	31.79	114.4
0.62	7.44	0.1890	1.169	524.7	0.7556	33.11	119.1
0.63	7.56	0.1920	1.217	546.2	0.7866	34.47	124.0
0.64	7.68	0.1951	1.267	568.4	0.8185	35.87	129.1
0.65	7.80	0.1981	1.317	591.2	0.8514	37.31	134.2
0.66	7.92	0.2012	1.370	614.7	0.8853	38.79	139.6
0.67	8.04	0.2042	1.424	639.0	0.9201	40.32	145.1
0.68	8.16	0.2073	1.479	663.9	0.9561	41.90	150.7
0.69	8.28	0.2103	1.537	689.7	0.9932	43.52	156.6
0.70	8.40	0.2134	1.596	716.4	1.032	45.20	162.7
0.71	8.52	0.2164	1.658	743.9	1.071	46.94	168.9
0.72	8.64	0.2195	1.721	772.5	1.112	48.74	175.4
0.73	8.76	0.2225	1.787	802.0	1.155	50.61	182.1
0.74	8.88	0.2256	1.856	832.8	1.199	52.55	189.1
0.75	9.00	0.2286	1.927	864.7	1.245	54.57	196.3

Source: *Trapezoidal Flumes for Measuring Flow in Irrigation Channels*, USDA-ARS 41-140, March 1968