OPENCHANNELFLOW

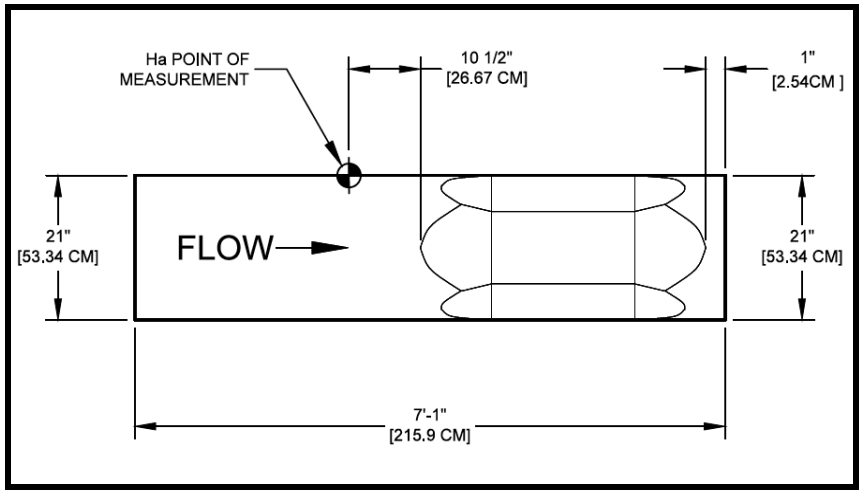
21-Inch Palmer-Bowlus Flume Discharge Table

85% Submergence Transition

Formulas (H in feet): CFS = 4.61 $H_{ft.}^{1.9}$ GPM = 2069 $H_{ft.}^{1.9}$ MGD = 2.98 $H_{ft.}^{1.9}$

Formulas (H in meters): L/S = 1285.16 $H_{m}^{1.9}$ M3/HR = 4489.2 $H_{m}^{1.9}$

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					
0.03	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					
0.11	1.32	0.0335					
0.12	1.44	0.0366					
0.13	1.56	0.0396					
0.14	1.68	0.0427					
0.15	1.80	0.0457					
0.16	1.92	0.0488					
0.17	2.04	0.0518					
0.18	2.16	0.0549	0.2223	99.77	0.1437	6.296	22.65
0.19	2.28	0.0579	0.2431	109.1	0.1571	6.885	24.77
0.20	2.40	0.0610	0.2646	118.8	0.1710	7.493	26.96
0.21	2.52	0.0640	0.2869	128.8	0.1854	8.125	29.24
0.22	2.64	0.0671	0.3098	139.0	0.2002	8.774	31.57
0.23	2.76	0.0701	0.3334	149.6	0.2155	9.442	33.97
0.24	2.88	0.0732	0.3577	160.5	0.2312	10.13	36.45
0.25	3.00	0.0762	0.3827	171.8	0.2473	10.84	39.00
0.26	3.12	0.0792	0.4084	183.3	0.2639	11.57	41.62
0.27	3.24	0.0823	0.4348	195.1	0.2810	12.31	44.31
0.28	3.36	0.0853	0.4619	207.3	0.2985	13.08	47.07
0.29	3.48	0.0884	0.4897	219.8	0.3165	13.87	49.90
0.30	3.60	0.0914	0.5181	232.5	0.3348	14.67	52.79



Note: Formulas fit data within 1% of full scale

Sources: Isco Open Channel Flow Measurement Handbook, 6th Edition

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Formulas (H in meters): L/S = 1285.16 $H_{m}^{1.9}$ M3/HR = 4489.2 $H_{m}^{1.9}$

FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
0.31	3.72	0.0945	0.5473	245.6	0.3537	15.50	55.77
0.32	3.84	0.0975	0.5772	259.0	0.3730	16.35	58.82
0.33	3.96	0.1006	0.6077	272.7	0.3928	17.21	61.92
0.34	4.08	0.1036	0.6390	286.8	0.4130	18.10	65.11
0.35	4.20	0.1067	0.6709	301.1	0.4336	19.00	68.36
0.36	4.32	0.1097	0.7036	315.8	0.4547	19.93	71.70
0.37	4.44	0.1128	0.7370	330.8	0.4763	20.87	75.10
0.38	4.56	0.1158	0.7711	346.1	0.4984	21.84	78.58
0.39	4.68	0.1189	0.8059	361.7	0.5209	22.82	82.12
0.40	4.80	0.1219	0.8415	377.7	0.5439	23.83	85.75
0.41	4.92	0.1250	0.8778	394.0	0.5673	24.86	89.45
0.42	5.04	0.1280	0.9148	410.6	0.5912	25.91	93.22
0.43	5.16	0.1311	0.9526	427.5	0.6157	26.98	97.07
0.44	5.28	0.1341	0.9911	444.8	0.6405	28.07	101.0
0.45	5.40	0.1372	1.030	462.3	0.6657	29.17	105.0
0.46	5.52	0.1402	1.071	480.7	0.6922	30.33	109.1
0.47	5.64	0.1433	1.111	498.6	0.7180	31.46	113.2
0.48	5.76	0.1463	1.153	517.5	0.7452	32.65	117.5
0.49	5.88	0.1494	1.195	536.3	0.7723	33.84	121.8
0.50	6.00	0.1524	1.239	556.1	0.8008	35.09	126.3
0.51	6.12	0.1554	1.283	575.8	0.8292	36.33	130.7
0.52	6.24	0.1585	1.327	595.6	0.8576	37.58	135.2
0.53	6.36	0.1615	1.373	616.2	0.8874	38.88	139.9
0.54	6.48	0.1646	1.420	637.3	0.9177	40.21	144.7
0.55	6.60	0.1676	1.467	658.4	0.9481	41.55	149.5
0.56	6.72	0.1707	1.515	679.9	0.9791	42.90	154.4
0.57	6.84	0.1737	1.564	701.9	1.011	44.29	159.4
0.58	6.96	0.1768	1.614	724.4	1.043	45.71	164.5
0.59	7.08	0.1798	1.665	747.3	1.076	47.15	169.7
0.60	7.20	0.1829	1.716	770.1	1.109	48.60	174.9
0.61	7.32	0.1859	1.769	793.9	1.143	50.10	180.3
0.62	7.44	0.1890	1.822	817.7	1.178	51.60	185.7
0.63	7.56	0.1920	1.877	842.4	1.213	53.16	191.3
0.64	7.68	0.1951	1.932	867.1	1.249	54.71	196.9
0.65	7.80	0.1981	1.988	892.2	1.285	56.30	202.6
0.66	7.92	0.2012	2.045	917.8	1.322	57.91	208.4
0.67	8.04	0.2042	2.103	943.8	1.359	59.56	214.3
0.68	8.16	0.2073	2.162	970.3	1.397	61.23	220.3
0.69	8.28	0.2103	2.222	997.2	1.436	62.93	226.4
0.70	8.40	0.2134	2.283	1025	1.476	64.65	232.6
0.71	8.52	0.2164	2.345	1052	1.516	66.41	239.0
0.72	8.64	0.2195	2.408	1081	1.556	68.19	245.4
0.73	8.76	0.2225	2.472	1109	1.598	70.01	251.9
0.74	8.88	0.2256	2.537	1139	1.640	71.85	258.5
0.75	9.00	0.2286	2.603	1168	1.682	73.72	265.2
0.76	9.12	0.2316	2.669	1198	1.725	75.59	272.0
0.77	9.24	0.2347	2.737	1228	1.769	77.51	278.9
0.78	9.36	0.2377	2.806	1259	1.814	79.47	285.9

Note: Formulas fit data within 1% of full scale

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Formulas (H in meters): $L/S = 1285.16\ H_{m}^{1.9}$ $M3/HR = 4489.2\ H_{m}^{1.9}$

FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
0.79	9.48	0.2408	2.876	1291	1.859	81.45	293.1
0.80	9.60	0.2438	2.947	1323	1.905	83.46	300.3
0.81	9.72	0.2469	3.019	1355	1.951	85.50	307.6
0.82	9.84	0.2499	3.091	1387	1.998	87.54	315.0
0.83	9.96	0.2530	3.165	1420	2.046	89.63	322.5
0.84	10.08	0.2560	3.240	1454	2.094	91.76	330.2
0.85	10.20	0.2591	3.316	1488	2.143	93.91	337.9
0.86	10.32	0.2621	3.393	1523	2.193	96.09	345.7
0.87	10.44	0.2652	3.470	1557	2.243	98.27	353.6
0.88	10.56	0.2682	3.549	1593	2.294	100.5	361.6
0.89	10.68	0.2713	3.629	1629	2.345	102.8	369.8
0.90	10.80	0.2743	3.710	1665	2.398	105.1	378.0
0.91	10.92	0.2774	3.791	1701	2.450	107.4	386.3
0.92	11.04	0.2804	3.874	1739	2.504	109.7	394.8
0.93	11.16	0.2835	3.958	1776	2.558	112.1	403.3
0.94	11.28	0.2865	4.042	1814	2.612	114.5	411.9
0.95	11.40	0.2896	4.128	1853	2.668	116.9	420.6
0.96	11.52	0.2926	4.214	1891	2.724	119.3	429.4
0.97	11.64	0.2957	4.301	1930	2.780	121.8	438.3
0.98	11.76	0.2987	4.390	1970	2.837	124.3	447.3
0.99	11.88	0.3018	4.479	2010	2.895	126.8	456.4
1.00	12.00	0.3048	4.569	2051	2.953	129.4	465.6
1.01	12.12	0.3078	4.659	2091	3.011	131.9	474.8
1.02	12.24	0.3109	4.751	2132	3.071	134.5	484.1
1.03	12.36	0.3139	4.843	2174	3.130	137.2	493.5
1.04	12.48	0.3170	4.937	2216	3.191	139.8	503.1
1.05	12.60	0.3200	5.031	2258	3.252	142.5	512.7
1.06	12.72	0.3231	5.126	2301	3.313	145.2	522.3
1.07	12.84	0.3261	5.221	2343	3.374	147.9	532.0
1.08	12.96	0.3292	5.317	2386	3.436	150.6	541.8
1.09	13.08	0.3322	5.414	2430	3.499	153.3	551.7
1.10	13.20	0.3353	5.512	2474	3.562	156.1	561.7
1.11	13.32	0.3383	5.610	2518	3.626	158.9	571.7
1.12	13.44	0.3414	5.709	2562	3.690	161.7	581.7
1.13	13.56	0.3444	5.809	2607	3.754	164.5	591.9
1.14	13.68	0.3475	5.909	2652	3.819	167.3	602.1
1.15	13.80	0.3505	6.009	2697	3.884	170.2	612.3
1.16	13.92	0.3536	6.111	2743	3.950	173.1	622.7
1.17	14.04	0.3566	6.212	2788	4.015	175.9	633.0
1.18	14.16	0.3597	6.315	2834	4.081	178.8	643.5
1.19	14.28	0.3627	6.417	2880	4.147	181.7	653.9
1.20	14.40	0.3658	6.521	2927	4.215	184.7	664.5
1.21	14.52	0.3688	6.624	2973	4.281	187.6	675.0
1.22	14.64	0.3719	6.728	3020	4.348	190.5	685.6
1.23	14.76	0.3749	6.833	3067	4.416	193.5	696.3
1.24	14.88	0.3780	6.937	3113	4.483	196.5	706.9
1.25	15.00	0.3810	7.043	3161	4.552	199.5	717.7

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