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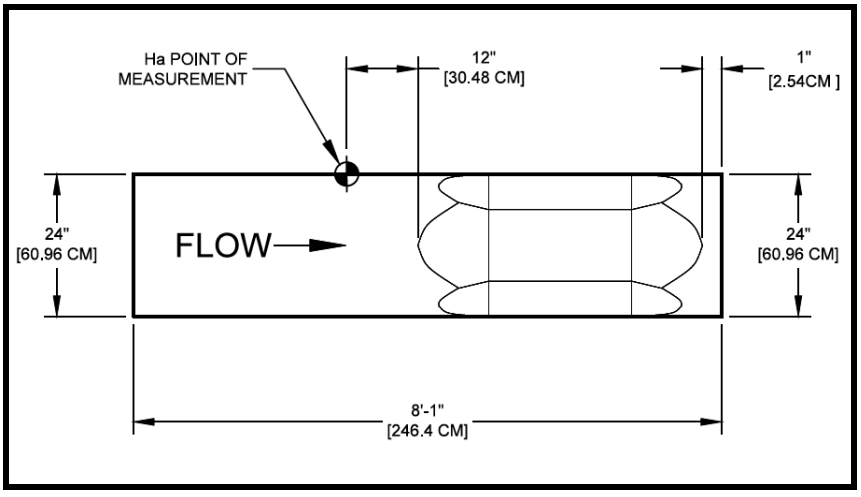
24-Inch Palmer-Bowlus Flume Discharge Table

85% Submergence Transition

Formulas (H in feet): CFS = 5.03 $H_{ft.}^{1.9}$ GPM = 2257.4 $H_{ft.}^{1.9}$ MGD = 3.25 $H_{ft.}^{1.9}$

Formulas (H in meters): L/S = 1402.25 $H_{m}^{1.9}$ M3/HR = 4864.7 $H_{m}^{1.9}$

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					
0.19	2.28	0.0579					
0.20	2.40	0.0610	0.2935	131.7	0.1897	8.312	29.91
0.21	2.52	0.0640	0.3182	142.8	0.2057	9.011	32.42
0.22	2.64	0.0671	0.3436	154.2	0.2221	9.731	35.01
0.23	2.76	0.0701	0.3699	166.0	0.2391	10.48	37.69
0.24	2.88	0.0732	0.3971	178.2	0.2566	11.25	40.46
0.25	3.00	0.0762	0.4250	190.7	0.2747	12.04	43.31
0.26	3.12	0.0792	0.4537	203.6	0.2932	12.85	46.23
0.27	3.24	0.0823	0.4832	216.9	0.3123	13.68	49.24
0.28	3.36	0.0853	0.5135	230.5	0.3319	14.54	52.33
0.29	3.48	0.0884	0.5446	244.4	0.3520	15.42	55.49
0.30	3.60	0.0914	0.5764	258.7	0.3725	16.32	58.74



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): $L/S = 1402.25\ H_{m}^{1.9}$ $M3/HR = 4864.7\ H_{m}^{1.9}$

FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
0.31	3.72	0.0945	0.6090	273.3	0.3936	17.25	62.06
0.32	3.84	0.0975	0.6424	288.3	0.4152	18.19	65.46
0.33	3.96	0.1006	0.6765	303.6	0.4372	19.16	68.94
0.34	4.08	0.1036	0.7113	319.2	0.4597	20.14	72.48
0.35	4.20	0.1067	0.7470	335.3	0.4828	21.16	76.12
0.36	4.32	0.1097	0.7833	351.5	0.5062	22.18	79.82
0.37	4.44	0.1128	0.8204	368.2	0.5302	23.23	83.60
0.38	4.56	0.1158	0.8583	385.2	0.5547	24.31	87.46
0.39	4.68	0.1189	0.8969	402.5	0.5797	25.40	91.39
0.40	4.80	0.1219	0.9362	420.2	0.6051	26.51	95.40
0.41	4.92	0.1250	0.9762	438.1	0.6309	27.65	99.47
0.42	5.04	0.1280	1.017	456.4	0.6573	28.80	103.6
0.43	5.16	0.1311	1.059	475.3	0.6844	29.99	107.9
0.44	5.28	0.1341	1.101	494.1	0.7116	31.18	112.2
0.45	5.40	0.1372	1.144	513.4	0.7394	32.40	116.6
0.46	5.52	0.1402	1.188	533.2	0.7678	33.64	121.1
0.47	5.64	0.1433	1.233	553.4	0.7969	34.92	125.6
0.48	5.76	0.1463	1.278	573.6	0.8260	36.19	130.2
0.49	5.88	0.1494	1.324	594.2	0.8557	37.50	134.9
0.50	6.00	0.1524	1.371	615.3	0.8861	38.83	139.7
0.51	6.12	0.1554	1.419	636.8	0.9171	40.19	144.6
0.52	6.24	0.1585	1.468	658.8	0.9488	41.57	149.6
0.53	6.36	0.1615	1.517	680.8	0.9804	42.96	154.6
0.54	6.48	0.1646	1.567	703.3	1.013	44.38	159.7
0.55	6.60	0.1676	1.618	726.2	1.046	45.82	164.9
0.56	6.72	0.1707	1.670	749.5	1.079	47.29	170.2
0.57	6.84	0.1737	1.723	773.3	1.114	48.80	175.6
0.58	6.96	0.1768	1.776	797.1	1.148	50.30	181.0
0.59	7.08	0.1798	1.830	821.3	1.183	51.83	186.5
0.60	7.20	0.1829	1.886	846.4	1.219	53.41	192.2
0.61	7.32	0.1859	1.942	871.6	1.255	55.00	197.9
0.62	7.44	0.1890	1.999	897.2	1.292	56.61	203.7
0.63	7.56	0.1920	2.057	923.2	1.329	58.25	209.6
0.64	7.68	0.1951	2.115	949.2	1.367	59.90	215.5
0.65	7.80	0.1981	2.157	968.1	1.394	61.09	219.8
0.66	7.92	0.2012	2.235	1003	1.444	63.30	227.7
0.67	8.04	0.2042	2.297	1031	1.485	65.05	234.1
0.68	8.16	0.2073	2.359	1059	1.525	66.81	240.4
0.69	8.28	0.2103	2.423	1087	1.566	68.62	246.9
0.70	8.40	0.2134	2.487	1116	1.607	70.43	253.4
0.71	8.52	0.2164	2.552	1145	1.649	72.27	260.0
0.72	8.64	0.2195	2.619	1175	1.693	74.17	266.9
0.73	8.76	0.2225	2.686	1205	1.736	76.07	273.7
0.74	8.88	0.2256	2.754	1236	1.780	77.99	280.6
0.75	9.00	0.2286	2.823	1267	1.825	79.95	287.7
0.76	9.12	0.2316	2.894	1299	1.870	81.96	294.9
0.77	9.24	0.2347	2.965	1331	1.916	83.97	302.1
0.78	9.36	0.2377	3.037	1363	1.963	86.01	309.5

Note: Formulas fit data within 1% of full scale

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Formulas (H in meters): L/S = 1402.25 $H_{m}^{1.9}$ M3/HR = 4864.7 $H_{m}^{1.9}$

FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
0.79	9.48	0.2408	3.110	1396	2.010	88.08	316.9
0.80	9.60	0.2438	3.185	1429	2.058	90.20	324.6
0.81	9.72	0.2469	3.260	1463	2.107	92.32	332.2
0.82	9.84	0.2499	3.337	1498	2.157	94.50	340.0
0.83	9.96	0.2530	3.414	1532	2.206	96.68	347.9
0.84	10.08	0.2560	3.493	1568	2.258	98.92	355.9
0.85	10.20	0.2591	3.572	1603	2.309	101.2	364.0
0.86	10.32	0.2621	3.653	1639	2.361	103.5	372.2
0.87	10.44	0.2652	3.735	1676	2.414	105.8	380.6
0.88	10.56	0.2682	3.818	1714	2.468	108.1	389.1
0.89	10.68	0.2713	3.901	1751	2.521	110.5	397.5
0.90	10.80	0.2743	3.986	1789	2.576	112.9	406.2
0.91	10.92	0.2774	4.073	1828	2.632	115.3	415.0
0.92	11.04	0.2804	4.160	1867	2.689	117.8	423.9
0.93	11.16	0.2835	4.248	1907	2.745	120.3	432.9
0.94	11.28	0.2865	4.337	1946	2.803	122.8	441.9
0.95	11.40	0.2896	4.428	1987	2.862	125.4	451.2
0.96	11.52	0.2926	4.519	2028	2.921	128.0	460.5
0.97	11.64	0.2957	4.612	2070	2.981	130.6	470.0
0.98	11.76	0.2987	4.706	2112	3.041	133.3	479.5
0.99	11.88	0.3018	4.800	2154	3.102	135.9	489.1
1.00	12.00	0.3048	4.896	2197	3.164	138.7	498.9
1.01	12.12	0.3078	4.993	2241	3.227	141.4	508.8
1.02	12.24	0.3109	5.091	2285	3.290	144.2	518.8
1.03	12.36	0.3139	5.190	2329	3.354	147.0	528.9
1.04	12.48	0.3170	5.290	2374	3.419	149.8	539.1
1.05	12.60	0.3200	5.391	2419	3.484	152.7	549.3
1.06	12.72	0.3231	5.493	2465	3.550	155.6	559.7
1.07	12.84	0.3261	5.596	2511	3.617	158.5	570.2
1.08	12.96	0.3292	5.701	2559	3.685	161.5	580.9
1.09	13.08	0.3322	5.806	2606	3.752	164.4	591.6
1.10	13.20	0.3353	5.912	2653	3.821	167.4	602.4
1.11	13.32	0.3383	6.019	2701	3.890	170.5	613.3
1.12	13.44	0.3414	6.127	2750	3.960	173.5	624.3
1.13	13.56	0.3444	6.236	2799	4.030	176.6	635.4
1.14	13.68	0.3475	6.346	2848	4.101	179.7	646.7
1.15	13.80	0.3505	6.456	2897	4.173	182.8	657.9
1.16	13.92	0.3536	6.568	2948	4.245	186.0	669.3
1.17	14.04	0.3566	6.681	2998	4.318	189.2	680.8
1.18	14.16	0.3597	6.794	3049	4.391	192.4	692.3
1.19	14.28	0.3627	6.908	3100	4.465	195.6	703.9
1.20	14.40	0.3658	7.023	3152	4.539	198.9	715.6
1.21	14.52	0.3688	7.139	3204	4.614	202.2	727.5
1.22	14.64	0.3719	7.256	3256	4.690	205.5	739.4
1.23	14.76	0.3749	7.373	3309	4.765	208.8	751.3
1.24	14.88	0.3780	7.491	3362	4.841	212.1	763.3
1.25	15.00	0.3810	7.610	3415	4.918	215.5	775.5
1.26	15.12	0.3840	7.730	3469	4.996	218.9	787.7

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FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
1.27	15.24	0.3871	7.850	3523	5.073	222.3	799.9
1.28	15.36	0.3901	7.971	3577	5.152	225.7	812.2
1.29	15.48	0.3932	8.092	3632	5.230	229.2	824.6
1.30	15.60	0.3962	8.215	3687	5.309	232.6	837.1
1.31	15.72	0.3993	8.337	3742	5.388	236.1	849.5
1.32	15.84	0.4023	8.461	3797	5.468	239.6	862.2
1.33	15.96	0.4054	8.585	3853	5.548	243.1	874.8
1.34	16.08	0.4084	8.709	3909	5.629	246.6	887.4
1.35	16.20	0.4115	8.834	3965	5.709	250.2	900.2
1.36	16.32	0.4145	8.959	4021	5.790	253.7	912.9
1.37	16.44	0.4176	9.085	4077	5.872	257.3	925.8
1.38	16.56	0.4206	9.211	4134	5.953	260.9	938.6
1.39	16.68	0.4237	9.338	4191	6.035	264.5	951.5
1.40	16.80	0.4267	9.465	4248	6.117	268.0	964.5

Note: Formulas fit data within 1% of full scale

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