



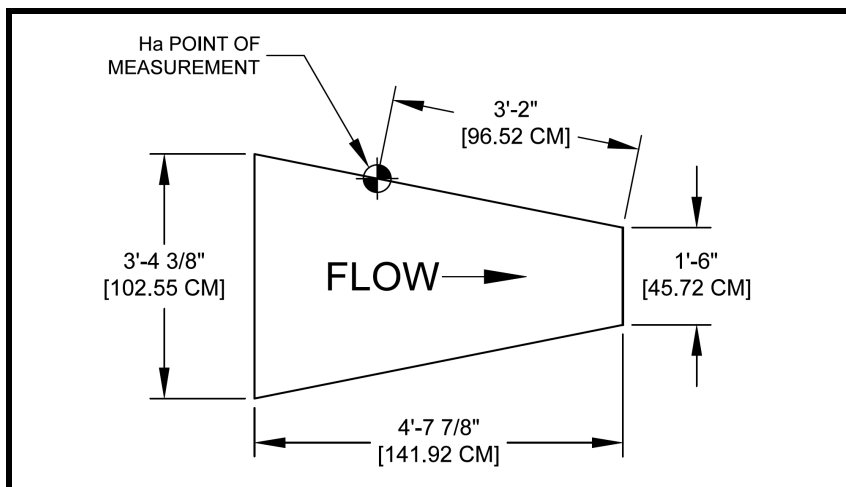
18-Inch Montana Flume Discharge Table

No Submergence ±3-5% Accuracy

Formulas (H in feet): CFS = 6 H_{ft}^{1.538}
 Formulas (H in meters): L/S = 1056 H_m^{1.538}

GPM = 2693 H_{ft}^{1.538} MGD = 3.878 H_{ft}^{1.538}
 M3/HR = 3803 H_m^{1.522}

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	0.1738	78.02	0.1124	4.923	17.71
0.11	1.32	0.0335	0.2013	90.34	0.1301	5.700	20.51
0.12	1.44	0.0366	0.2301	103.3	0.1487	6.517	23.45
0.13	1.56	0.0396	0.2603	116.8	0.1682	7.370	26.52
0.14	1.68	0.0427	0.2917	130.9	0.1885	8.260	29.72
0.15	1.80	0.0457	0.3243	145.6	0.2096	9.185	33.05
0.16	1.92	0.0488	0.3582	160.7	0.2315	10.14	36.50
0.17	2.04	0.0518	0.3932	176.5	0.2541	11.13	40.06
0.18	2.16	0.0549	0.4293	192.7	0.2775	12.16	43.75
0.19	2.28	0.0579	0.4665	209.4	0.3015	13.21	47.54
0.20	2.40	0.0610	0.5048	226.6	0.3263	14.30	51.44
0.21	2.52	0.0640	0.5442	244.2	0.3517	15.41	55.45
0.22	2.64	0.0671	0.5845	262.3	0.3778	16.55	59.56
0.23	2.76	0.0701	0.6259	280.9	0.4045	17.72	63.78
0.24	2.88	0.0732	0.6682	299.9	0.4319	18.92	68.09
0.25	3.00	0.0762	0.7115	319.3	0.4599	20.15	72.50
0.26	3.12	0.0792	0.7558	339.2	0.4884	21.40	77.01
0.27	3.24	0.0823	0.8009	359.5	0.5176	22.68	81.61
0.28	3.36	0.0853	0.8470	380.1	0.5474	23.99	86.31
0.29	3.48	0.0884	0.8940	401.2	0.5778	25.32	91.09
0.30	3.60	0.0914	0.9418	422.7	0.6087	26.67	95.97



Sources:

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FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
0.31	3.72	0.0945	0.9905	444.5	0.6402	28.05	100.9
0.32	3.84	0.0975	1.040	466.8	0.6722	29.46	106.0
0.33	3.96	0.1006	1.091	489.4	0.7048	30.88	111.1
0.34	4.08	0.1036	1.142	512.4	0.7379	32.33	116.3
0.35	4.20	0.1067	1.194	535.8	0.7715	33.81	121.6
0.36	4.32	0.1097	1.247	559.5	0.8057	35.31	127.0
0.37	4.44	0.1128	1.300	583.6	0.8404	36.82	132.5
0.38	4.56	0.1158	1.355	608.0	0.8756	38.37	138.0
0.39	4.68	0.1189	1.410	632.8	0.9113	39.93	143.7
0.40	4.80	0.1219	1.466	657.9	0.9474	41.52	149.4
0.41	4.92	0.1250	1.523	683.4	0.9841	43.12	155.2
0.42	5.04	0.1280	1.580	709.2	1.021	44.75	161.0
0.43	5.16	0.1311	1.638	735.3	1.059	46.40	167.0
0.44	5.28	0.1341	1.697	761.8	1.097	48.07	173.0
0.45	5.40	0.1372	1.757	788.6	1.136	49.76	179.0
0.46	5.52	0.1402	1.817	815.7	1.175	51.47	185.2
0.47	5.64	0.1433	1.879	843.1	1.214	53.20	191.4
0.48	5.76	0.1463	1.940	870.9	1.254	54.95	197.7
0.49	5.88	0.1494	2.003	898.9	1.295	56.72	204.1
0.50	6.00	0.1524	2.066	927.3	1.335	58.51	210.5
0.51	6.12	0.1554	2.130	956.0	1.377	60.32	217.1
0.52	6.24	0.1585	2.195	985.0	1.418	62.15	223.6
0.53	6.36	0.1615	2.260	1014	1.461	64.00	230.3
0.54	6.48	0.1646	2.326	1044	1.503	65.87	237.0
0.55	6.60	0.1676	2.392	1074	1.546	67.75	243.8
0.56	6.72	0.1707	2.460	1104	1.590	69.66	250.6
0.57	6.84	0.1737	2.527	1134	1.634	71.58	257.5
0.58	6.96	0.1768	2.596	1165	1.678	73.52	264.5
0.59	7.08	0.1798	2.665	1196	1.722	75.48	271.6
0.60	7.20	0.1829	2.735	1227	1.768	77.45	278.7
0.61	7.32	0.1859	2.805	1259	1.813	79.45	285.9
0.62	7.44	0.1890	2.876	1291	1.859	81.46	293.1
0.63	7.56	0.1920	2.948	1323	1.905	83.49	300.4
0.64	7.68	0.1951	3.020	1356	1.952	85.54	307.8
0.65	7.80	0.1981	3.093	1388	1.999	87.60	315.2
0.66	7.92	0.2012	3.167	1421	2.047	89.68	322.7
0.67	8.04	0.2042	3.241	1454	2.095	91.78	330.2
0.68	8.16	0.2073	3.316	1488	2.143	93.90	337.9
0.69	8.28	0.2103	3.391	1522	2.191	96.03	345.5
0.70	8.40	0.2134	3.467	1556	2.241	98.18	353.3
0.71	8.52	0.2164	3.543	1590	2.290	100.3	361.0
0.72	8.64	0.2195	3.620	1625	2.340	102.5	368.9
0.73	8.76	0.2225	3.698	1660	2.390	104.7	376.8
0.74	8.88	0.2256	3.776	1695	2.440	106.9	384.8
0.75	9.00	0.2286	3.855	1730	2.491	109.2	392.8
0.76	9.12	0.2316	3.934	1766	2.543	111.4	400.9
0.77	9.24	0.2347	4.014	1801	2.594	113.7	409.0
0.78	9.36	0.2377	4.094	1838	2.646	116.0	417.2
0.79	9.48	0.2408	4.175	1874	2.699	118.2	425.5
0.80	9.60	0.2438	4.257	1911	2.751	120.6	433.8

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FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
0.81	9.72	0.2469	4.339	1947	2.804	122.9	442.2
0.82	9.84	0.2499	4.422	1984	2.858	125.2	450.6
0.83	9.96	0.2530	4.505	2022	2.912	127.6	459.1
0.84	10.08	0.2560	4.589	2059	2.966	130.0	467.6
0.85	10.20	0.2591	4.673	2097	3.020	132.3	476.2
0.86	10.32	0.2621	4.758	2135	3.075	134.7	484.8
0.87	10.44	0.2652	4.843	2174	3.130	137.2	493.5
0.88	10.56	0.2682	4.929	2212	3.186	139.6	502.3
0.89	10.68	0.2713	5.015	2251	3.242	142.0	511.1
0.90	10.80	0.2743	5.102	2290	3.298	144.5	519.9
0.91	10.92	0.2774	5.190	2329	3.354	147.0	528.8
0.92	11.04	0.2804	5.278	2369	3.411	149.5	537.8
0.93	11.16	0.2835	5.366	2408	3.468	152.0	546.8
0.94	11.28	0.2865	5.455	2448	3.526	154.5	555.9
0.95	11.40	0.2896	5.545	2489	3.584	157.0	565.0
0.96	11.52	0.2926	5.635	2529	3.642	159.6	574.2
0.97	11.64	0.2957	5.725	2570	3.700	162.1	583.4
0.98	11.76	0.2987	5.816	2610	3.759	164.7	592.7
0.99	11.88	0.3018	5.908	2651	3.818	167.3	602.0
1.00	12.00	0.3048	6.000	2693	3.878	169.9	611.4
1.01	12.12	0.3078	6.093	2734	3.938	172.5	620.8
1.02	12.24	0.3109	6.186	2776	3.998	175.2	630.3
1.03	12.36	0.3139	6.279	2818	4.058	177.8	639.8
1.04	12.48	0.3170	6.373	2860	4.119	180.5	649.4
1.05	12.60	0.3200	6.468	2903	4.180	183.2	659.0
1.06	12.72	0.3231	6.563	2945	4.241	185.9	668.7
1.07	12.84	0.3261	6.658	2988	4.303	188.6	678.4
1.08	12.96	0.3292	6.754	3031	4.365	191.3	688.2
1.09	13.08	0.3322	6.850	3074	4.427	194.0	698.1
1.10	13.20	0.3353	6.947	3118	4.490	196.7	707.9
1.11	13.32	0.3383	7.045	3162	4.553	199.5	717.8
1.12	13.44	0.3414	7.142	3206	4.616	202.3	727.8
1.13	13.56	0.3444	7.241	3250	4.680	205.1	737.8
1.14	13.68	0.3475	7.340	3294	4.744	207.9	747.9
1.15	13.80	0.3505	7.439	3339	4.808	210.7	758.0
1.16	13.92	0.3536	7.539	3383	4.872	213.5	768.2
1.17	14.04	0.3566	7.639	3428	4.937	216.3	778.4
1.18	14.16	0.3597	7.739	3473	5.002	219.2	788.6
1.19	14.28	0.3627	7.840	3519	5.067	222.0	798.9
1.20	14.40	0.3658	7.942	3564	5.133	224.9	809.3
1.21	14.52	0.3688	8.044	3610	5.199	227.8	819.7
1.22	14.64	0.3719	8.147	3656	5.265	230.7	830.1
1.23	14.76	0.3749	8.249	3702	5.332	233.6	840.6
1.24	14.88	0.3780	8.353	3749	5.398	236.6	851.2
1.25	15.00	0.3810	8.457	3795	5.466	239.5	861.7
1.26	15.12	0.3840	8.561	3842	5.533	242.4	872.4
1.27	15.24	0.3871	8.666	3889	5.601	245.4	883.0
1.28	15.36	0.3901	8.771	3936	5.669	248.4	893.7
1.29	15.48	0.3932	8.876	3984	5.737	251.4	904.5
1.30	15.60	0.3962	8.982	4031	5.805	254.4	915.3

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FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
1.31	15.72	0.3993	9.089	4079	5.874	257.4	926.2
1.32	15.84	0.4023	9.196	4127	5.943	260.4	937.1
1.33	15.96	0.4054	9.303	4175	6.013	263.5	948.0
1.34	16.08	0.4084	9.411	4224	6.082	266.5	959.0
1.35	16.20	0.4115	9.519	4272	6.152	269.6	970.0
1.36	16.32	0.4145	9.628	4321	6.223	272.7	981.1
1.37	16.44	0.4176	9.737	4370	6.293	275.8	992.2
1.38	16.56	0.4206	9.847	4419	6.364	278.9	1003
1.39	16.68	0.4237	9.957	4468	6.435	282.0	1015
1.40	16.80	0.4267	10.07	4518	6.506	285.1	1026
1.41	16.92	0.4298	10.18	4568	6.578	288.2	1037
1.42	17.04	0.4328	10.29	4618	6.650	291.4	1048
1.43	17.16	0.4359	10.40	4668	6.722	294.5	1060
1.44	17.28	0.4389	10.51	4718	6.794	297.7	1071
1.45	17.40	0.4420	10.63	4769	6.867	300.9	1083
1.46	17.52	0.4450	10.74	4819	6.940	304.1	1094
1.47	17.64	0.4481	10.85	4870	7.013	307.3	1106
1.48	17.76	0.4511	10.97	4921	7.087	310.5	1117
1.49	17.88	0.4542	11.08	4972	7.161	313.8	1129
1.50	18.00	0.4572	11.19	5024	7.235	317.0	1141
1.51	18.12	0.4602	11.31	5075	7.309	320.3	1152
1.52	18.24	0.4633	11.42	5127	7.383	323.5	1164
1.53	18.36	0.4663	11.54	5179	7.458	326.8	1176
1.54	18.48	0.4694	11.66	5231	7.533	330.1	1188
1.55	18.60	0.4724	11.77	5284	7.609	333.4	1200
1.56	18.72	0.4755	11.89	5336	7.684	336.7	1212
1.57	18.84	0.4785	12.01	5389	7.760	340.0	1224
1.58	18.96	0.4816	12.13	5442	7.836	343.4	1236
1.59	19.08	0.4846	12.24	5495	7.913	346.7	1248
1.60	19.20	0.4877	12.36	5548	7.990	350.1	1260
1.61	19.32	0.4907	12.48	5601	8.066	353.5	1272
1.62	19.44	0.4938	12.60	5655	8.144	356.8	1284
1.63	19.56	0.4968	12.72	5709	8.221	360.2	1296
1.64	19.68	0.4999	12.84	5763	8.299	363.6	1308
1.65	19.80	0.5029	12.96	5817	8.377	367.1	1321
1.66	19.92	0.5060	13.08	5871	8.455	370.5	1333
1.67	20.04	0.5090	13.20	5926	8.533	373.9	1345
1.68	20.16	0.5121	13.33	5980	8.612	377.4	1358
1.69	20.28	0.5151	13.45	6035	8.691	380.8	1370
1.70	20.40	0.5182	13.57	6090	8.770	384.3	1383
1.71	20.52	0.5212	13.69	6145	8.850	387.8	1395
1.72	20.64	0.5243	13.82	6201	8.930	391.3	1408
1.73	20.76	0.5273	13.94	6256	9.009	394.8	1420
1.74	20.88	0.5304	14.06	6312	9.090	398.3	1433
1.75	21.00	0.5334	14.19	6368	9.170	401.8	1446
1.76	21.12	0.5364	14.31	6424	9.251	405.4	1459
1.77	21.24	0.5395	14.44	6480	9.332	408.9	1471
1.78	21.36	0.5425	14.56	6537	9.413	412.5	1484
1.79	21.48	0.5456	14.69	6593	9.495	416.0	1497
1.80	21.60	0.5486	14.82	6650	9.576	419.6	1510

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FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
1.81	21.72	0.5517	14.94	6707	9.658	423.2	1523
1.82	21.84	0.5547	15.07	6764	9.740	426.8	1536
1.83	21.96	0.5578	15.20	6821	9.823	430.4	1549
1.84	22.08	0.5608	15.33	6879	9.905	434.0	1562
1.85	22.20	0.5639	15.45	6936	9.988	437.7	1575
1.86	22.32	0.5669	15.58	6994	10.07	441.3	1588
1.87	22.44	0.5700	15.71	7052	10.15	445.0	1601
1.88	22.56	0.5730	15.84	7110	10.24	448.6	1614
1.89	22.68	0.5761	15.97	7168	10.32	452.3	1628
1.90	22.80	0.5791	16.10	7226	10.41	456.0	1641
1.91	22.92	0.5822	16.23	7285	10.49	459.7	1654
1.92	23.04	0.5852	16.36	7344	10.58	463.4	1667
1.93	23.16	0.5883	16.49	7403	10.66	467.1	1681
1.94	23.28	0.5913	16.63	7462	10.75	470.9	1694
1.95	23.40	0.5944	16.76	7521	10.83	474.6	1708
1.96	23.52	0.5974	16.89	7580	10.92	478.3	1721
1.97	23.64	0.6005	17.02	7640	11.00	482.1	1735
1.98	23.76	0.6035	17.16	7700	11.09	485.9	1748
1.99	23.88	0.6066	17.29	7760	11.17	489.6	1762
2.00	24.00	0.6096	17.42	7820	11.26	493.4	1775
2.01	24.12	0.6126	17.56	7880	11.35	497.2	1789
2.02	24.24	0.6157	17.69	7940	11.43	501.0	1803
2.03	24.36	0.6187	17.83	8001	11.52	504.9	1817
2.04	24.48	0.6218	17.96	8061	11.61	508.7	1830
2.05	24.60	0.6248	18.10	8122	11.70	512.5	1844
2.06	24.72	0.6279	18.23	8183	11.78	516.4	1858
2.07	24.84	0.6309	18.37	8245	11.87	520.2	1872
2.08	24.96	0.6340	18.51	8306	11.96	524.1	1886
2.09	25.08	0.6370	18.64	8367	12.05	528.0	1900
2.10	25.20	0.6401	18.78	8429	12.14	531.9	1914
2.11	25.32	0.6431	18.92	8491	12.23	535.8	1928
2.12	25.44	0.6462	19.06	8553	12.32	539.7	1942
2.13	25.56	0.6492	19.20	8615	12.41	543.6	1956
2.14	25.68	0.6523	19.33	8677	12.50	547.5	1970
2.15	25.80	0.6553	19.47	8740	12.59	551.5	1984
2.16	25.92	0.6584	19.61	8802	12.68	555.4	1999
2.17	26.04	0.6614	19.75	8865	12.77	559.4	2013
2.18	26.16	0.6645	19.89	8928	12.86	563.4	2027
2.19	26.28	0.6675	20.03	8991	12.95	567.3	2041
2.20	26.40	0.6706	20.17	9054	13.04	571.3	2056
2.21	26.52	0.6736	20.32	9118	13.13	575.3	2070
2.22	26.64	0.6767	20.46	9181	13.22	579.3	2085
2.23	26.76	0.6797	20.60	9245	13.31	583.4	2099
2.24	26.88	0.6828	20.74	9309	13.41	587.4	2114
2.25	27.00	0.6858	20.88	9373	13.50	591.4	2128
2.26	27.12	0.6888	21.03	9437	13.59	595.5	2143
2.27	27.24	0.6919	21.17	9501	13.68	599.5	2157
2.28	27.36	0.6949	21.31	9566	13.77	603.6	2172
2.29	27.48	0.6980	21.46	9630	13.87	607.7	2187
2.30	27.60	0.7010	21.60	9695	13.96	611.8	2201

Sources:

Water Measurement Manual, 3rd Edition, United States Department of the Interior, Bureau of Reclamation

ASTM D 1941-91 (2007): Standard Test Method for Open Channel Flow Measurement of Water with Parshall Flume



18-Inch Montana Flume Discharge Table

No Submergence ±3-5% Accuracy

Formulas (H in feet): $CFS = 6 H_{ft}^{1.538}$
 Formulas (H in meters): $L/S = 1056 H_m^{1.538}$

$GPM = 2693 H_{ft}^{1.538}$ $MGD = 3.878 H_{ft}^{1.538}$
 $M3/HR = 3803 H_m^{1.522}$

FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
2.31	27.72	0.7041	21.75	9760	14.05	615.9	2216
2.32	27.84	0.7071	21.89	9825	14.15	620.0	2231
2.33	27.96	0.7102	22.04	9890	14.24	624.1	2246
2.34	28.08	0.7132	22.18	9955	14.34	628.2	2260
2.35	28.20	0.7163	22.33	10021	14.43	632.3	2275
2.36	28.32	0.7193	22.47	10087	14.53	636.5	2290
2.37	28.44	0.7224	22.62	10152	14.62	640.6	2305
2.38	28.56	0.7254	22.77	10218	14.72	644.8	2320
2.39	28.68	0.7285	22.92	10284	14.81	649.0	2335
2.40	28.80	0.7315	23.06	10351	14.91	653.1	2350
2.41	28.92	0.7346	23.21	10417	15.00	657.3	2365
2.42	29.04	0.7376	23.36	10484	15.10	661.5	2380
2.43	29.16	0.7407	23.51	10550	15.19	665.7	2395
2.44	29.28	0.7437	23.66	10617	15.29	670.0	2411
2.45	29.40	0.7468	23.81	10684	15.39	674.2	2426
2.46	29.52	0.7498	23.96	10751	15.48	678.4	2441
2.47	29.64	0.7529	24.11	10819	15.58	682.7	2456
2.48	29.76	0.7559	24.26	10886	15.68	686.9	2472
2.49	29.88	0.7590	24.41	10954	15.77	691.2	2487
2.50	30.00	0.7620	24.56	11021	15.87	695.5	2502

Sources:

Water Measurement Manual, 3rd Edition, United States Department of the Interior, Bureau of Reclamation

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