OPENCHANNELFLOW

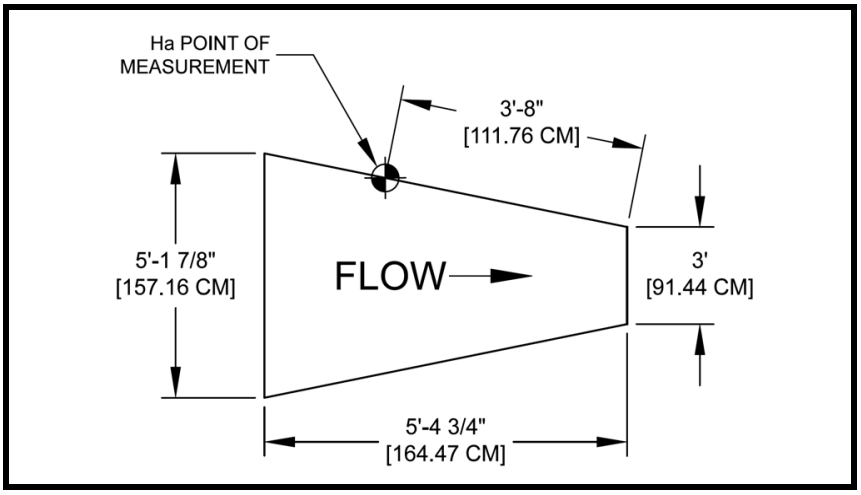
36-Inch Montana Flume Discharge Table

70% Submergence Transition ±3-5% Accuracy

Formulas (H in feet): CFS = 12 $H_{ft.}^{1.566}$ GPM = 5386 $H_{ft.}^{1.566}$ MGD = 7.756 $H_{ft.}^{1.566}$

Formulas (H in meters): L/S = 2184 $H_{m}^{1.566}$ M3/HR = 7863 $H_{m}^{1.566}$

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	0.6151	276.1	0.3975	17.42	62.68
0.16	1.92	0.0488	0.6805	305.4	0.4398	19.27	69.34
0.17	2.04	0.0518	0.7483	335.8	0.4836	21.19	76.25
0.18	2.16	0.0549	0.8183	367.3	0.5289	23.18	83.39
0.19	2.28	0.0579	0.8907	399.7	0.5756	25.22	90.76
0.20	2.40	0.0610	0.9651	433.2	0.6238	27.33	98.35
0.21	2.52	0.0640	1.0418	467.6	0.6733	29.50	106.2
0.22	2.64	0.0671	1.1205	502.9	0.7242	31.73	114.2
0.23	2.76	0.0701	1.2013	539.1	0.7764	34.02	122.4
0.24	2.88	0.0732	1.2841	576.3	0.8299	36.37	130.8
0.25	3.00	0.0762	1.3688	614.3	0.8847	38.77	139.5
0.26	3.12	0.0792	1.4556	653.3	0.9407	41.22	148.3
0.27	3.24	0.0823	1.5442	693.0	0.9980	43.73	157.4
0.28	3.36	0.0853	1.6347	733.6	1.056	46.29	166.6
0.29	3.48	0.0884	1.7270	775.1	1.116	48.91	176.0
0.30	3.60	0.0914	1.8212	817.3	1.177	51.58	185.6



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

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Formulas (H in meters): L/S = 2184 $H_{m}^{1.566}$ M3/HR = 7863 $H_{m}^{1.566}$

FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
0.31	3.72	0.0945	1.917	860.4	1.239	54.29	195.4
0.32	3.84	0.0975	2.015	904.3	1.302	57.06	205.3
0.33	3.96	0.1006	2.114	948.9	1.366	59.88	215.5
0.34	4.08	0.1036	2.216	994.3	1.432	62.74	225.8
0.35	4.20	0.1067	2.318	1041	1.498	65.66	236.2
0.36	4.32	0.1097	2.423	1087	1.566	68.62	246.9
0.37	4.44	0.1128	2.529	1135	1.635	71.63	257.7
0.38	4.56	0.1158	2.637	1184	1.704	74.68	268.7
0.39	4.68	0.1189	2.747	1233	1.775	77.78	279.9
0.40	4.80	0.1219	2.858	1283	1.847	80.93	291.2
0.41	4.92	0.1250	2.970	1333	1.920	84.12	302.7
0.42	5.04	0.1280	3.085	1384	1.994	87.35	314.3
0.43	5.16	0.1311	3.200	1436	2.068	90.63	326.1
0.44	5.28	0.1341	3.318	1489	2.144	93.96	338.1
0.45	5.40	0.1372	3.436	1542	2.221	97.32	350.2
0.46	5.52	0.1402	3.557	1596	2.299	100.7	362.4
0.47	5.64	0.1433	3.679	1651	2.378	104.2	374.9
0.48	5.76	0.1463	3.802	1706	2.457	107.7	387.4
0.49	5.88	0.1494	3.927	1762	2.538	111.2	400.1
0.50	6.00	0.1524	4.053	1819	2.619	114.8	413.0
0.51	6.12	0.1554	4.181	1876	2.702	118.4	426.0
0.52	6.24	0.1585	4.310	1934	2.785	122.0	439.2
0.53	6.36	0.1615	4.440	1993	2.870	125.7	452.5
0.54	6.48	0.1646	4.572	2052	2.955	129.5	465.9
0.55	6.60	0.1676	4.705	2112	3.041	133.3	479.5
0.56	6.72	0.1707	4.840	2172	3.128	137.1	493.2
0.57	6.84	0.1737	4.976	2233	3.216	140.9	507.1
0.58	6.96	0.1768	5.113	2295	3.305	144.8	521.1
0.59	7.08	0.1798	5.252	2357	3.394	148.7	535.2
0.60	7.20	0.1829	5.392	2420	3.485	152.7	549.5
0.61	7.32	0.1859	5.534	2483	3.576	156.7	563.9
0.62	7.44	0.1890	5.676	2548	3.669	160.8	578.4
0.63	7.56	0.1920	5.820	2612	3.762	164.8	593.1
0.64	7.68	0.1951	5.966	2677	3.856	168.9	607.9
0.65	7.80	0.1981	6.112	2743	3.950	173.1	622.8
0.66	7.92	0.2012	6.260	2810	4.046	177.3	637.9
0.67	8.04	0.2042	6.409	2877	4.142	181.5	653.1
0.68	8.16	0.2073	6.560	2944	4.240	185.8	668.4
0.69	8.28	0.2103	6.711	3012	4.338	190.1	683.9
0.70	8.40	0.2134	6.864	3081	4.436	194.4	699.5
0.71	8.52	0.2164	7.019	3150	4.536	198.8	715.2
0.72	8.64	0.2195	7.174	3220	4.637	203.2	731.0
0.73	8.76	0.2225	7.331	3290	4.738	207.6	747.0
0.74	8.88	0.2256	7.489	3361	4.840	212.1	763.1
0.75	9.00	0.2286	7.648	3432	4.943	216.6	779.3
0.76	9.12	0.2316	7.808	3504	5.046	221.1	795.6
0.77	9.24	0.2347	7.969	3577	5.151	225.7	812.1
0.78	9.36	0.2377	8.132	3650	5.256	230.3	828.7
0.79	9.48	0.2408	8.296	3723	5.362	234.9	845.4
0.80	9.60	0.2438	8.461	3797	5.468	239.6	862.2

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Formulas (H in feet): CFS = 12 $H_{ft.}^{1.566}$ GPM = 5386 $H_{ft.}^{1.566}$ MGD = 7.756 $H_{ft.}^{1.566}$

Formulas (H in meters): L/S = 2184 $H_{m}^{1.566}$ M3/HR = 7863 $H_{m}^{1.566}$

FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
0.81	9.72	0.2469	8.627	3872	5.576	244.3	879.1
0.82	9.84	0.2499	8.795	3947	5.684	249.1	896.2
0.83	9.96	0.2530	8.963	4023	5.793	253.8	913.3
0.84	10.08	0.2560	9.133	4099	5.903	258.6	930.6
0.85	10.20	0.2591	9.304	4175	6.013	263.5	948.0
0.86	10.32	0.2621	9.476	4253	6.124	268.3	965.6
0.87	10.44	0.2652	9.649	4330	6.236	273.3	983.2
0.88	10.56	0.2682	9.823	4409	6.349	278.2	1001
0.89	10.68	0.2713	9.998	4487	6.462	283.2	1019
0.90	10.80	0.2743	10.17	4566	6.576	288.1	1037
0.91	10.92	0.2774	10.35	4646	6.691	293.2	1055
0.92	11.04	0.2804	10.53	4726	6.806	298.2	1073
0.93	11.16	0.2835	10.71	4807	6.922	303.3	1091
0.94	11.28	0.2865	10.89	4888	7.039	308.5	1110
0.95	11.40	0.2896	11.07	4970	7.157	313.6	1128
0.96	11.52	0.2926	11.26	5052	7.275	318.8	1147
0.97	11.64	0.2957	11.44	5135	7.394	324.0	1166
0.98	11.76	0.2987	11.63	5218	7.514	329.3	1185
0.99	11.88	0.3018	11.81	5302	7.634	334.5	1204
1.00	12.00	0.3048	12.00	5386	7.756	339.8	1223
1.01	12.12	0.3078	12.19	5470	7.877	345.2	1242
1.02	12.24	0.3109	12.38	5555	8.000	350.5	1261
1.03	12.36	0.3139	12.57	5641	8.123	355.9	1281
1.04	12.48	0.3170	12.76	5727	8.247	361.4	1300
1.05	12.60	0.3200	12.95	5813	8.371	366.8	1320
1.06	12.72	0.3231	13.15	5900	8.497	372.3	1340
1.07	12.84	0.3261	13.34	5988	8.622	377.8	1359
1.08	12.96	0.3292	13.54	6075	8.749	383.4	1379
1.09	13.08	0.3322	13.73	6164	8.876	388.9	1399
1.10	13.20	0.3353	13.93	6253	9.004	394.5	1420
1.11	13.32	0.3383	14.13	6342	9.133	400.2	1440
1.12	13.44	0.3414	14.33	6431	9.262	405.8	1460
1.13	13.56	0.3444	14.53	6522	9.392	411.5	1481
1.14	13.68	0.3475	14.73	6612	9.522	417.2	1501
1.15	13.80	0.3505	14.94	6703	9.653	423.0	1522
1.16	13.92	0.3536	15.14	6795	9.785	428.8	1543
1.17	14.04	0.3566	15.34	6887	9.917	434.6	1564
1.18	14.16	0.3597	15.55	6979	10.05	440.4	1585
1.19	14.28	0.3627	15.76	7072	10.18	446.3	1606
1.20	14.40	0.3658	15.97	7165	10.32	452.1	1627
1.21	14.52	0.3688	16.17	7259	10.45	458.1	1648
1.22	14.64	0.3719	16.38	7353	10.59	464.0	1670
1.23	14.76	0.3749	16.59	7448	10.73	470.0	1691
1.24	14.88	0.3780	16.81	7543	10.86	476.0	1713
1.25	15.00	0.3810	17.02	7638	11.00	482.0	1734
1.26	15.12	0.3840	17.23	7734	11.14	488.0	1756
1.27	15.24	0.3871	17.45	7831	11.28	494.1	1778
1.28	15.36	0.3901	17.66	7927	11.42	500.2	1800
1.29	15.48	0.3932	17.88	8024	11.56	506.4	1822
1.30	15.60	0.3962	18.10	8122	11.70	512.5	1844

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FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
1.31	15.72	0.3993	18.32	8220	11.84	518.7	1866
1.32	15.84	0.4023	18.54	8319	11.98	524.9	1889
1.33	15.96	0.4054	18.76	8418	12.12	531.2	1911
1.34	16.08	0.4084	18.98	8517	12.26	537.4	1934
1.35	16.20	0.4115	19.20	8617	12.41	543.7	1956
1.36	16.32	0.4145	19.42	8717	12.55	550.0	1979
1.37	16.44	0.4176	19.65	8817	12.70	556.4	2002
1.38	16.56	0.4206	19.87	8918	12.84	562.8	2025
1.39	16.68	0.4237	20.10	9020	12.99	569.2	2048
1.40	16.80	0.4267	20.32	9122	13.14	575.6	2071
1.41	16.92	0.4298	20.55	9224	13.28	582.0	2094
1.42	17.04	0.4328	20.78	9326	13.43	588.5	2118
1.43	17.16	0.4359	21.01	9430	13.58	595.0	2141
1.44	17.28	0.4389	21.24	9533	13.73	601.5	2164
1.45	17.40	0.4420	21.47	9637	13.88	608.1	2188
1.46	17.52	0.4450	21.70	9741	14.03	614.7	2212
1.47	17.64	0.4481	21.94	9846	14.18	621.3	2235
1.48	17.76	0.4511	22.17	9951	14.33	627.9	2259
1.49	17.88	0.4542	22.41	10056	14.48	634.6	2283
1.50	18.00	0.4572	22.64	10162	14.63	641.3	2307
1.51	18.12	0.4602	22.88	10269	14.79	648.0	2331
1.52	18.24	0.4633	23.12	10375	14.94	654.7	2356
1.53	18.36	0.4663	23.36	10482	15.10	661.5	2380
1.54	18.48	0.4694	23.60	10590	15.25	668.2	2404
1.55	18.60	0.4724	23.84	10698	15.41	675.0	2429
1.56	18.72	0.4755	24.08	10806	15.56	681.9	2454
1.57	18.84	0.4785	24.32	10915	15.72	688.7	2478
1.58	18.96	0.4816	24.56	11024	15.87	695.6	2503
1.59	19.08	0.4846	24.81	11133	16.03	702.5	2528
1.60	19.20	0.4877	25.05	11243	16.19	709.5	2553
1.61	19.32	0.4907	25.30	11353	16.35	716.4	2578
1.62	19.44	0.4938	25.54	11464	16.51	723.4	2603
1.63	19.56	0.4968	25.79	11575	16.67	730.4	2628
1.64	19.68	0.4999	26.04	11686	16.83	737.4	2653
1.65	19.80	0.5029	26.29	11798	16.99	744.5	2679
1.66	19.92	0.5060	26.54	11910	17.15	751.6	2704
1.67	20.04	0.5090	26.79	12023	17.31	758.7	2730
1.68	20.16	0.5121	27.04	12136	17.48	765.8	2755
1.69	20.28	0.5151	27.29	12249	17.64	772.9	2781
1.70	20.40	0.5182	27.55	12363	17.80	780.1	2807
1.71	20.52	0.5212	27.80	12477	17.97	787.3	2833
1.72	20.64	0.5243	28.06	12591	18.13	794.5	2859
1.73	20.76	0.5273	28.31	12706	18.30	801.8	2885
1.74	20.88	0.5304	28.57	12821	18.46	809.0	2911
1.75	21.00	0.5334	28.83	12937	18.63	816.3	2937
1.76	21.12	0.5364	29.08	13053	18.80	823.7	2964
1.77	21.24	0.5395	29.34	13169	18.96	831.0	2990
1.78	21.36	0.5425	29.60	13286	19.13	838.4	3017
1.79	21.48	0.5456	29.86	13403	19.30	845.8	3043
1.80	21.60	0.5486	30.13	13520	19.47	853.2	3070

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FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
1.81	21.72	0.5517	30.39	13638	19.64	860.6	3097
1.82	21.84	0.5547	30.65	13756	19.81	868.1	3123
1.83	21.96	0.5578	30.92	13875	19.98	875.5	3150
1.84	22.08	0.5608	31.18	13994	20.15	883.0	3177
1.85	22.20	0.5639	31.45	14113	20.32	890.6	3204
1.86	22.32	0.5669	31.71	14233	20.50	898.1	3232
1.87	22.44	0.5700	31.98	14353	20.67	905.7	3259
1.88	22.56	0.5730	32.25	14473	20.84	913.3	3286
1.89	22.68	0.5761	32.52	14594	21.02	920.9	3314
1.90	22.80	0.5791	32.79	14715	21.19	928.5	3341
1.91	22.92	0.5822	33.06	14837	21.37	936.2	3369
1.92	23.04	0.5852	33.33	14958	21.54	943.9	3396
1.93	23.16	0.5883	33.60	15081	21.72	951.6	3424
1.94	23.28	0.5913	33.87	15203	21.89	959.3	3452
1.95	23.40	0.5944	34.15	15326	22.07	967.1	3480
1.96	23.52	0.5974	34.42	15449	22.25	974.9	3508
1.97	23.64	0.6005	34.70	15573	22.43	982.7	3536
1.98	23.76	0.6035	34.98	15697	22.60	990.5	3564
1.99	23.88	0.6066	35.25	15821	22.78	998.3	3592
2.00	24.00	0.6096	35.53	15946	22.96	1006	3620
2.01	24.12	0.6126	35.81	16071	23.14	1014	3649
2.02	24.24	0.6157	36.09	16196	23.32	1022	3677
2.03	24.36	0.6187	36.37	16322	23.50	1030	3706
2.04	24.48	0.6218	36.65	16448	23.69	1038	3735
2.05	24.60	0.6248	36.93	16575	23.87	1046	3763
2.06	24.72	0.6279	37.21	16701	24.05	1054	3792
2.07	24.84	0.6309	37.50	16828	24.23	1062	3821
2.08	24.96	0.6340	37.78	16956	24.42	1070	3850
2.09	25.08	0.6370	38.07	17084	24.60	1078	3879
2.10	25.20	0.6401	38.35	17212	24.79	1086	3908
2.11	25.32	0.6431	38.64	17340	24.97	1094	3937
2.12	25.44	0.6462	38.92	17469	25.16	1102	3966
2.13	25.56	0.6492	39.21	17599	25.34	1110	3996
2.14	25.68	0.6523	39.50	17728	25.53	1119	4025
2.15	25.80	0.6553	39.79	17858	25.72	1127	4055
2.16	25.92	0.6584	40.08	17988	25.90	1135	4084
2.17	26.04	0.6614	40.37	18119	26.09	1143	4114
2.18	26.16	0.6645	40.66	18250	26.28	1152	4144
2.19	26.28	0.6675	40.96	18381	26.47	1160	4173
2.20	26.40	0.6706	41.25	18513	26.66	1168	4203
2.21	26.52	0.6736	41.54	18645	26.85	1177	4233
2.22	26.64	0.6767	41.84	18777	27.04	1185	4263
2.23	26.76	0.6797	42.13	18909	27.23	1193	4293
2.24	26.88	0.6828	42.43	19042	27.42	1202	4324
2.25	27.00	0.6858	42.73	19176	27.61	1210	4354
2.26	27.12	0.6888	43.02	19309	27.81	1218	4384
2.27	27.24	0.6919	43.32	19443	28.00	1227	4415
2.28	27.36	0.6949	43.62	19578	28.19	1235	4445
2.29	27.48	0.6980	43.92	19712	28.39	1244	4476
2.30	27.60	0.7010	44.22	19847	28.58	1252	4506

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

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OPENCHANNELFLOW

36-Inch Montana Flume Discharge Table

70% Submergence Transition ±3-5% Accuracy

Formulas (H in feet): CFS = 12 $H_{ft.}^{1.566}$ GPM = 5386 $H_{ft.}^{1.566}$ MGD = 7.756 $H_{ft.}^{1.566}$

Formulas (H in meters): L/S = 2184 $H_{m}^{1.566}$ M3/HR = 7863 $H_{m}^{1.566}$

FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
2.31	27.72	0.7041	44.52	19983	28.78	1261	4537
2.32	27.84	0.7071	44.83	20118	28.97	1269	4568
2.33	27.96	0.7102	45.13	20254	29.17	1278	4599
2.34	28.08	0.7132	45.43	20390	29.36	1287	4630
2.35	28.20	0.7163	45.74	20527	29.56	1295	4661
2.36	28.32	0.7193	46.04	20664	29.76	1304	4692
2.37	28.44	0.7224	46.35	20801	29.96	1313	4723
2.38	28.56	0.7254	46.66	20939	30.15	1321	4754
2.39	28.68	0.7285	46.96	21077	30.35	1330	4785
2.40	28.80	0.7315	47.27	21215	30.55	1339	4817
2.41	28.92	0.7346	47.58	21354	30.75	1347	4848
2.42	29.04	0.7376	47.89	21493	30.95	1356	4880
2.43	29.16	0.7407	48.20	21632	31.15	1365	4912
2.44	29.28	0.7437	48.51	21771	31.35	1374	4943
2.45	29.40	0.7468	48.82	21911	31.55	1383	4975
2.46	29.52	0.7498	49.13	22052	31.76	1391	5007
2.47	29.64	0.7529	49.45	22192	31.96	1400	5039
2.48	29.76	0.7559	49.76	22333	32.16	1409	5071
2.49	29.88	0.7590	50.08	22474	32.36	1418	5103
2.50	30.00	0.7620	50.39	22616	32.57	1427	5135

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

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