

Conrad Weir Run-off Measurements

(Last rev. 17/08/2012)

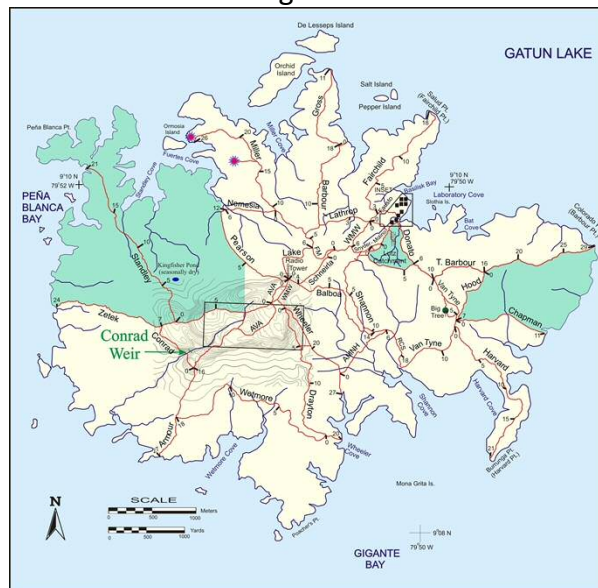
Run-off is measured at the Conrad catchment area from the water level multistage weir. The Conrad catchment drains much of the flat central area of Barro Colorado Island (see Figure 1).

From the period of its first construction to its final configuration in 1997, the weir has several stages of development: from a simple aluminum V-notch weir to a multi-stage, combination V-notch and rectangular weir. See Appendix 1 for details of each stage of the construction.

The height of the water is recorded at five-minute intervals with an ISCO Bubble Flow Meter. Data from these devices are converted into run-off (m^3) using the rating curves supplied in appendix 2.

The Conrad stream has a very low sediment load and it has never been necessary to remove accumulated sediments in stilling.

Figure 1



Barro Colorado Island showing location of Conrad Weir Catchment.

Figure 2



Photo of Final Configuration of Conrad Weir

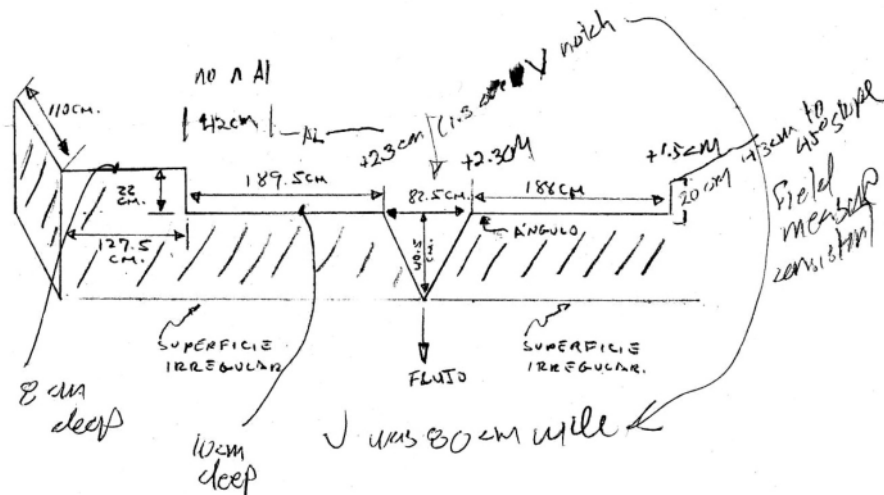
Appendix 1

Conrad Weir Construction History:

1. August 1992
 - Simple weir made out of rocks
2. September 1993
 - Weir rebuilt using cement and rocks
3. April 1994
 - Add rocks and concrete around 'V' to seal holes
4. September 1994
 - 'V' notched aluminum plate added (this is also the current 'V')
 - Sides of plate supported by combination of rocks and cement
5. May 1996
 - Wings (concrete blocks and cement), added to each side of the 'V'
6. April 24, 1997
 - Added addition wings to the end of each side of weir at angle.
 - Increased height at the ends of each side of weir
 - Extended left hand wing (facing weir) out at an angle by about 1m
 - Cleared rocks just below 'V' and downstream to guarantee free flow of water at all stages
7. August 14, 1997
 - Added aluminum angle bar to top of weir on both sides of 'V'
 - Aug. 26 – Continued work on leveling bar
 - Sept. 2 – Work on bar finished. New level of 'V' = 413 mm
 - Oct. 21 – Filed bar so that it is now level to within 1mm along entire length



Diagram of Conrad Weir. December 1, 1998 – Final Configuration



Appendix 1

Conrad stage-discharge relations

FROM	21/07/1993	FROM	9/22/1994	FROM	5/17/1996	FROM	4/27/1997	FROM	8/19/1997
0.00	0.00000	0.00	0.00000	0.00	0.00000	0.00	0.00000	0.00	0.00000
0.01	0.00001	0.01	0.00001	0.01	0.00001	0.01	0.00001	0.01	0.00001
0.02	0.00002	0.02	0.00008	0.02	0.00008	0.02	0.00008	0.02	0.00008
0.03	0.00010	0.03	0.00022	0.03	0.00022	0.03	0.00022	0.03	0.00022
0.04	0.00024	0.04	0.00044	0.04	0.00044	0.04	0.00044	0.04	0.00044
0.05	0.00050	0.05	0.00077	0.05	0.00077	0.05	0.00077	0.05	0.00077
0.06	0.00089	0.06	0.00122	0.06	0.00122	0.06	0.00122	0.06	0.00122
0.07	0.00145	0.07	0.00179	0.07	0.00179	0.07	0.00179	0.07	0.00179
0.08	0.00211	0.08	0.00250	0.08	0.00250	0.08	0.00250	0.08	0.00250
0.09	0.00285	0.09	0.00335	0.09	0.00335	0.09	0.00335	0.09	0.00335
0.10	0.00368	0.10	0.00436	0.10	0.00436	0.10	0.00436	0.10	0.00436
0.11	0.00457	0.11	0.00554	0.11	0.00554	0.11	0.00554	0.11	0.00554
0.12	0.00550	0.12	0.00688	0.12	0.00688	0.12	0.00688	0.12	0.00688
0.13	0.00654	0.13	0.00841	0.13	0.00841	0.13	0.00841	0.13	0.00841
0.14	0.00769	0.14	0.01012	0.14	0.01012	0.14	0.01012	0.14	0.01012
0.15	0.00812	0.15	0.01203	0.15	0.01203	0.15	0.01203	0.15	0.01203
0.16	0.01008	0.16	0.01413	0.16	0.01413	0.16	0.01413	0.16	0.01413
0.17	0.01199	0.17	0.01644	0.17	0.01644	0.17	0.01644	0.17	0.01644
0.18	0.01452	0.18	0.01897	0.18	0.01897	0.18	0.01897	0.18	0.01897
0.19	0.01728	0.19	0.02172	0.19	0.02172	0.19	0.02172	0.19	0.02172
0.20	0.01993	0.20	0.02469	0.20	0.02469	0.20	0.02469	0.20	0.02469
0.21	0.02310	0.21	0.03008	0.21	0.02789	0.21	0.02789	0.21	0.02789
0.22	0.02729	0.22	0.03585	0.22	0.03133	0.22	0.03133	0.22	0.03133
0.23	0.03102	0.23	0.04244	0.23	0.03501	0.23	0.03501	0.23	0.03501
0.24	0.03482	0.24	0.04993	0.24	0.03894	0.24	0.03894	0.24	0.03894
0.25	0.03737	0.25	0.05828	0.25	0.04313	0.25	0.04313	0.25	0.04313
0.26	0.04135	0.26	0.06666	0.26	0.04757	0.26	0.04757	0.26	0.04757
0.27	0.04751	0.27	0.07728	0.27	0.05227	0.27	0.05227	0.27	0.05227
0.28	0.05344	0.28	0.09089	0.28	0.05725	0.28	0.05725	0.28	0.05725
0.29	0.06174	0.29	0.10766	0.29	0.06250	0.29	0.06250	0.29	0.06250
0.30	0.07079	0.30	0.12642	0.30	0.06819	0.30	0.06819	0.30	0.06803
0.31	0.08022	0.31	0.14684	0.31	0.07366	0.31	0.07366	0.31	0.07366
0.32	0.08965	0.32	0.16846	0.32	0.07932	0.32	0.07932	0.32	0.07932
0.33	0.10158	0.33	0.19282	0.33	0.08518	0.33	0.08518	0.33	0.08518
0.34	0.11455	0.34	0.22006	0.34	0.09122	0.34	0.09122	0.34	0.09122
0.35	0.12828	0.35	0.24895	0.35	0.09744	0.35	0.09744	0.35	0.09744

0.36	0.14344	0.36	0.28005	0.36	0.10384	0.36	0.10384	0.36	0.10384
0.37	0.15902	0.37	0.31232	0.37	0.11040	0.37	0.11040	0.37	0.11040
0.38	0.17497	0.38	0.34561	0.38	0.11710	0.38	0.11710	0.38	0.11710
0.39	0.19126	0.39	0.37991	0.39	0.12395	0.39	0.12395	0.39	0.12395
0.40	0.20779	0.40	0.41496	0.40	0.13093	0.40	0.13093	0.40	0.13093
0.41	0.22451	0.41	0.45055	0.41	0.14164	0.41	0.14164	0.41	0.13815
0.42	0.24134	0.42	0.48654	0.42	0.15890	0.42	0.15880	0.42	0.15039
0.43	0.25825	0.43	0.52278	0.43	0.18865	0.43	0.18414	0.43	0.17007
0.44	0.27516	0.44	0.55916	0.44	0.22612	0.44	0.21480	0.44	0.19430
0.45	0.29203	0.45	0.59554	0.45	0.26978	0.45	0.24972	0.45	0.22209
0.46	0.30881	0.46	0.63180	0.46	0.31856	0.46	0.28817	0.46	0.25277
0.47	0.32544	0.47	0.66779	0.47	0.37162	0.47	0.32955	0.47	0.28582
0.48	0.34186	0.48	0.70340	0.48	0.42826	0.48	0.37335	0.48	0.32081
0.49	0.35803	0.49	0.73850	0.49	0.48786	0.49	0.41913	0.49	0.35737
0.50	0.37388	0.50	0.77295	0.50	0.54985	0.50	0.46647	0.50	0.39516
0.51	0.38935	0.51	0.80661	0.51	0.61372	0.51	0.51500	0.51	0.43385
0.52	0.40438	0.52	0.83936	0.52	0.67897	0.52	0.56433	0.52	0.47316
0.53	0.41891	0.53	0.87105	0.53	0.74511	0.53	0.61414	0.53	0.51279
0.54	0.43288	0.54	0.90154	0.54	0.81168	0.54	0.66406	0.54	0.55247
0.55	0.44622	0.55	0.93066	0.55	0.87822	0.55	0.71376	0.55	0.59193
0.56	0.45884	0.56	0.95827	0.56	0.94427	0.56	0.76291	0.56	0.63088
0.57	0.47068	0.57	0.98419	0.57	1.00937	0.57	0.81115	0.57	0.66905
0.58	0.48166	0.58	1.00825	0.58	1.07304	0.58	0.85815	0.58	0.70617
0.59	0.49169	0.59	1.03025	0.59	1.13479	0.59	0.90354	0.59	0.74195
0.60	0.50066	0.60	1.05000	0.60	1.19414	0.60	0.94695	0.60	0.77609
0.61	0.50848	0.61	1.06727	0.61	1.25054	0.61	0.98799	0.61	0.80828
0.62	0.51504	0.62	1.08181	0.62	1.30344	0.62	1.02626	0.62	0.83819