

Drainage	A	B	C	D		E	F	G	H
	Area (mi ²)	Precipitation (in/yr)	ET (in/yr)	Yield (streamflow + ground-water recharge)		Gain/ Loss	Diversions	By-passes Diversions	Total Flow (Diversions + Bypass)
Laguna Creek	3.4	53	29	24	4,400	-600	1,400	2,400	3,800
Reggiardo Creek	1.4	46	26	20	1,500	-700	200	600	800
Laguna & Reggiardo Creeks	4.8	51	28	23	5,900	-1,300	1,600	3,000	4,600
Liddell Spring (includes quarry and sinkhole catchments)	0.4	38	20	18	400	1,100	1,250	250	1,500
Plant Spring	0.1	37	25	12	100	200	30	270	300
Laguna and Reggiardo Cks & Liddell Spring	5.2	50	28	22	6,300	-200	2,850	3,250	6,100
Laguna & Reggiardo Cks & Liddell & Plant Sps	5.3	50	28	22	6,400	0	2,880	3,520	6,400
Non-Karst Watershed									
Majors Creek	3.8	44	28	16	3,200	0	430	2,770	3,200

- Values in **bold** estimated from hard data.
- *Italics* indicate least certain estimates.
- Note that springflow along Laguna Creek is accounted for in gaging station and diversion records.
- Estimated water balance for Majors Creek watershed (non-karst) provided for comparison.

Column Notes:

- A. Drainage areas as shown in Figure 10. Liddell Spring drainage area includes quarry and some sinkhole catchments.
- B. Area-weighted averages; modified from Geomatrix (1999) using data summarized in Table 5.
- C. ET (evapotranspiration) = Precipitation - (Streamflow + Groundwater Recharge)
- D. Modified from regional relation by Geomatrix (1999) by adding 2-3 in/yr for Laguna and Reggiardo watersheds and 6 in/yr for Liddell Spring drainage. Higher rates justified by karst stream capture; high recharge into Santa Margarita Sandstone, sinkholes, etc.; and rainfall and runoff capture by quarry exposures and pit. Recharged groundwater discharges to springs and stream baseflow.
- E. Estimate needed to balance spring drainages. Losses include both stream capture and groundwater flow.
- F. Diversions by City of Santa Cruz (Table H-18) and RMC (21 gpm from Plant Spring). Estimated split between Laguna and Reggiardo Creeks.
- G. Difference between gaged total flow and diversions.
- H. Gaged total flow of Laguna and Majors creeks (Tables 13 and 14) and Liddell (Table 15) and Plant (PELA, 2005) springs.

Estimated Average Annual Water Balance for Stream and Spring Drainages near Bonny Doon Quarry

Table 41