

## **APPENDIX G**

**Physical habitat constituents assessed during benthic  
macroinvertebrate surveys of the Carmel River**

Year	Season	Site	Flow (cfs)	Site Habitat Score (0-200)	Ave. Canopy (%)	Ave. Width (ft)	Ave. Depth (ft)	Ave. Velocity (ft/s)	Ave. Riffle Gradient (%)	Substrate Index (mm)	Dominant Substrate Class	Subdominant Substrate Class	Sand (%)	Gravel (%)	Cobble (%)	Boulder (%)	Bedrock (%)
2000	Fall	CRCA	20	179	68	25	1.0	1.9	2.7	201	boulder	cobble	4	13	36	47	1
		CRSH	20	166	57	22	1.0	0.7	1.9	167	cobble	boulder	5	13	59	23	0
		SHRC	1.5	139	60	6.6	0.6	0.8	0.5	156	cobble	gravel	0	18	67	14	0
		CRSP	20	142	43	23	0.7	2.3	3.0	161	cobble	boulder	8	13	55	23	0
		CRRR	20	109	22	21	0.9	2.4	1.4	105	cobble	gravel	10	33	53	3	0
2001	Spring	CRCA	25	173	71	32	0.8	2.1	2.8	204	boulder	cobble	4	14	33	50	0
		CRSH	25	184	64	21	0.9	1.7	2.1	179	cobble	boulder	5	13	48	33	0
		CRSP	25	162	55	25	0.8	2.4	2.7	132	cobble	gravel	6	22	66	7	0
		CRDD_US	ND	point source design	24	23	0.8	2.1	1.0	63	sand	gravel	45	25	25	5	0
		CRDD_DS	ND		5	24	0.6	3.0	3.0	108	cobble	gravel	15	25	35	15	0
		CRRR	20	110	29	25	0.7	2.9	1.9	81	gravel	cobble	13	46	40	1	0
2001	Fall	CRCA	7.5	185	68	25	0.7	1.3	4.1	236	boulder	cobble	1	11	18	69	0
		CRSH	7.0	169	67	13	0.8	1.8	7.0	221	boulder	cobble	2	7	36	33	23
		CRSP	6.0	164	62	19	0.5	2.2	2.9	129	cobble	gravel	8	28	49	14	0
		CRRR	12	140	42	20	0.6	2.3	2.4	65	gravel	cobble	29	43	25	1	2
2002	Spring	CRCA	25	179	71	22	1.2	2.8	3.0	204	boulder	cobble	1	11	40	47	0
		CRSH	20	173	51	15	0.8	2.6	3.0	207	boulder	cobble	2	8	44	46	0
		CRSP	35	167	49	24	0.9	2.9	3.4	168	cobble	boulder	2	17	41	33	0
		CRRR	25	142	24	22	0.8	3.3	2.4	97	cobble	gravel	4	47	48	1	0
	Fall	CRCA	6.5	179	62	27	0.6	1.5	4.1	206	boulder	cobble	3	14	31	52	0
		CRSH	6.5	170	53	15	0.6	1.9	6.5	151	cobble	boulder	7	13	43	27	0
		CRRW	6.5	157	40	15	0.7	2.3	3.7	167	cobble	boulder	5	15	53	26	0
		CRSP	6.0	159	41	22	0.5	2.8	3.2	171	cobble	boulder	5	13	55	27	0
CRRR	2.0	119	54	14	0.4	1.6	3.3	63	cobble	gravel	13	60	26	0	0		
2003	Spring	CRCA	40	188	59	37	1.2	2.4	3.3	183	boulder	cobble	4	20	34	42	0
		CRSH	50	177	51	26	1.5	3.0	4.2	210	boulder	cobble	6	13	25	57	0
		CRRW	53	158	43	30	1.1	3.3	2.3	161	cobble	boulder	8	20	42	30	0
		CRSP	53	168	47	26	1.4	3.3	2.2	146	cobble	boulder	12	20	38	27	0
		CRRR	60	155	32	31	1.1	2.6	1.6	91	gravel	cobble	13	43	40	2	2
	Fall	CRCA	7.5	176	59	25	0.9	1.8	3.0	226	boulder	cobble	2	9	29	58	2
		CRSH	8	165	54	13	0.5	1.8	2.2	208	boulder	cobble	1	12	38	49	0
		CRRW	9	166	43	17	0.6	2.6	2.8	174	cobble	boulder	5	12	55	28	0
		CRSP	9	174	71	21	0.6	1.9	2.3	154	boulder	cobble	15	23	28	30	3.3
CRRR	6	146	59	19	0.4	2.4	1.8	80	gravel	cobble	12	51	36	1.7	0		

Year	Season	Site	Flow	Site Habitat Score	Ave. Canopy	Ave. Width	Ave. Depth	Ave. Velocity	Ave. Riffle Gradient	Substrate Index	Dominant Substrate Class	Subdominant Substrate Class	Sand	Gravel	Cobble	Boulder	Bedrock
			(cfs)	(0-200)	(%)	(ft)	(ft)	(ft/s)	(%)	(mm)			(%)	(%)	(%)	(%)	(%)
2004	Fall	CRLP	ND	160	75	27	1.1	2.7	2.0	198	boulder	cobble	19	6	18	57	0
		CRCA	ND	178	60	27	0.7	2.7	3.9	184	boulder	cobble	5	20	32	43	0
		CRSH	ND	154	75	21	1.8	1.7	2.3	192	cobble	boulder	8.3	12	35	45	0
		SHRC	ND	154	75	4	0.6	1.3	0.5	166	cobble	boulder	0.3	12	72	16	0
		CRSP	ND	161	41	17	0.7	2.3	3.7	152	cobble	gravel	5	23	50	22	0
		CRRR	ND	138	37	21	0.5	1.9	1.6	76	gravel	cobble	13	60	17	10	0
2005	Fall	CRLP	ND	180	85	28	0.8	1.7	2.5	165	cobble	boulder	10	20	35	35	0
		CRCA	11	174	60	30	0.7	1.6	3.0	219	boulder	cobble	5	10	25	60	0
		CRSH	9	162	77	14	0.7	2.1	2.0	239	boulder	cobble	1	7.3	41	51	0
		CRSP	9	155	60	18	0.6	3	4.2	147	cobble	gravel	8.3	23	47	22	0
		CRRR	7	130	76	16	0.5	0.9	2.0	122	cobble	gravel	13	35	40	2	10
2006	Fall	CRLP	ND	179	91	35	0.8	2.2	2.0	177	boulder	cobble	10	20	30	35	5
		CRCA	ND	165	67	39	0.5	1.8	6.0	233	boulder	cobble	3	7	25	65	0
		CRSH	ND	159	72	14	0.6	2.5	2.5	164	cobble	boulder	10	15	50	20	5
		CRSP	ND	168	94	14	0.6	3.2	2.0	132	cobble	gravel	10	20	60	10	0
		CRRR	ND	135	57	17	0.5	1.9	1.0	97	cobble	gravel	20	35	35	10	0
2007	Fall	CRLP	3.5	173	94	20	0.5	1.2	2.5	190	boulder	cobble	7	15	35	40	3
		CRCA	3.5	169	84	18	0.6	1.4	3.0	206	boulder	cobble	5	10	35	50	0
		CRSH	3.5	160	89	12	0.7	0.8	2.5	184	cobble	boulder	7	15	40	35	3
		CRSP	3.5	159	82	9	0.4	0.6	2.0	133	cobble	gravel	15	25	40	18	2
		CRSW	ND	130	66	8	0.5	1.5	3.0	98	cobble	gravel	5	45	48	2	0
2008	Fall	CRLP	10	171	93	24	0.8	1.3	2.0	159	cobble	boulder	10	25	32	30	3
		CRCA	6.2	178	74	26	0.7	1.8	2.5	163	boulder	cobble	10	22	33	35	0
		CRSH	ND	168	84	15	0.6	1.6	3.0	147	cobble	boulder	5	17	40	30	3
		SHRC	ND	137	65	6	0.5	1.3	0.5	170	cobble	gravel	2	13	80	5	0
		CRSP	5.5	154	88	14	0.5	1.2	2.5	98	cobble	gravel	15	35	45	5	0
		CRSW	ND	145	56	10	0.5	1.8	3.0	98	cobble	gravel	13	35	50	2	0
2009	Fall	CRLP	25	175	85	26	0.8	1.5	1.7	163	cobble	boulder	15	20	30	30	5
		CRCA	25	182	50	26	0.7	2.5	2.0	200	boulder	cobble	3	17	30	50	0
		CRSH	25	176	90	14	1.1	2.0	1.5	205	cobble	boulder	5	10	40	40	5
		CRSP	25	171	74	15	1.2	2.8	2.5	176	boulder	cobble	5	25	30	38	2
		CRRR	28	158	76	15	1.1	3	1.5	138	cobble	gravel	2	20	73	5	0