

Table A.3. Environmental conditions and streamflow during sampling of Oak Creek, adjacent springs and tributary washes Summer 2011.

strm_mi	Site_ID	Date	Descript	Weather	7-day weather	Flushing	Stream		Velocity		ChanArea	Flow_cfs	Crew	Notes
							width	Depth (ft)	ft/s					
0.5	M13	7/5/2011	West Fork	Partly cloudy	Rain	N	10.1	0.75	0.58	3.79	2.2	CW, KK, JL	Highly used recreation area downstream of sampling site, DO meter not properly functioning	
49.0	M08	7/5/2011	Pine Flats	overcast	Rain	N	37.5	1.23	0.31	23.06	7.08	CW, KK, JL	DO meter not properly functioning	
46.0	M09A	7/5/2011	1/4 mi ds of Forest Houses	overcast/rain	Rain	N	45.5	2.54	0.46	57.79	26.7	CW, KK	Random site; site will be moved 1/4 mile upstream, DO meter not properly functioning	
37.4	M45	7/5/2011	Lomacasi	partly cloudy	rain	N						SML, LMP		
22.7	M32	7/5/2011	Dry Creek Confluence	clear	rain	N	23.0	1.7	0.7	19.6	13.7	SML, LMP	Abundant white bubbles on water surface. Occasional funky (dead animal) odor. No shade at cross-section	
17.0	M36	7/5/2011	Page Springs Bridge	overcast	rain	N	45.5	1.8	0.75	41.0	30.7	SML, LMP	Diversion dam takes considerable flow at outfall into an irrigation ditch above this cross-section	
8.9	M40	7/5/2011	Cornville Bridge	clear	rain	N	49.9	0.63	1.11	31.4	43.5	KJA, CJ	Semi turbid water, DO	
2.2	M41	7/5/2011	Cornville Estates	Partly cloudy	rain	N	51.3	2.4	0.11	116.3	11.4	KJA, CJ	turbid appearance to water	
46.3	M09	7/11/2011	Hoel's Wash/Forest Houses	clear	rain	N	29.5	1.23	0.32	36.5	10.9	KJA, LP	No biofilm, clear water	
43.7	M44	7/11/2011	Slide Rock	clear	rain	N	51.5	1.94	0.11	100.7	14.04	KJA, CW	clear water, layer of loose brown colored algae	
40.5	M17	7/11/2011	Indian Gardens	partly cloudy	rain	N	51.5	1.18	0.46	59.4	25.5	KJA, LP	Thin Layer diatoms, clear water	
40.0	M18	7/11/2011	Living Springs	partly cloudy	rain	N	52.2	2.02	0.33	101.4	35.2	KJA, LP	White bubbles on water surface. Clear water. Thin layer diatoms	
34.0	M25	7/11/2011	Chavez Crossing Campground	Partly cloudy	Rain	N	31	2.94	0.62	45.57	28.25	CW, KD		
17.2	M36	7/11/2011	Page Springs Bridge	overcast	Rain	N	48	3.24	0.54	77.76	41.99	CW, KD		
12.6	M39A	7/11/2011	below Spring Creek Confluence	clear	showers	N	74.7	2.85	0.4	106.4	42.6	SML, CTA	A lot of silt settled on bottom. Fairly turbid, but less than at Verde onfluence.	
8.9	M40	7/11/2011	Cornville Bridge	partly cloudy	showers		40.0	1.9	1.66	38.0	63.1	SML, CTA		
0.4	M43	7/11/2011	above Verde Confluence	clear	showers	N	42.2	1.7	1.66	35.9	59.5	SML, CTA	Bottom is 1.6-1.7 for about 20 feet, starting 11.4' from LEW and going toward REW. Many dragonflies & damselflies. Water is turbid. Was also turbid on July 1, 2011 during recon.	
0.1	M39	7/11/2011	Spring Creek										Collected <i>E coli</i> sample only in Spring Creek above path bridge. Sewer odor at Spring Creek.	
49.0	M08	7/14/2011	Pine Flats	clear	partly cloudy		37.1	2.51	0.39	91.9	33.3	KJA,CW	No biofilm, clear water; Possible error in reading <i>E. coli</i> result. Overhead light not turned off. Disregard result.	
37.4	M45	7/14/2011	Lomacasi	clear	partly cloudy		44.3	2.39	0.34	102.1	32.13	KJA,CW	No biofilm, clear water; Possible error in reading <i>E. coli</i> result. Overhead light not turned off. Disregard result.	
22.7	M32	7/14/2011	Dry Creek Confluence	clear	clear		24.4	1.09	0.68	25.9	16.19	KJA, CJ,CW	No biofilm, clear water; Possible error in reading <i>E. coli</i> result. Overhead light not turned off. Disregard result.	
2.2	M41	7/14/2011	Cornville Estates	clear	clear		50.9	2.28	0.31	108.7	34.71	KJA, CJ,CW	Possible error in reading <i>E. coli</i> result. Overhead light not turned off. Disregard result.	
40.5	M17	7/19/2011	Indian Gardens	Clear	Rain	Y?	43	1.5	0.99	32.25	31.83	CW, CJ	Discharge was increased due to Rain on 7/18/11 afternoon	
22.7	M32	7/19/2011	Dry Creek Confluence	Partly cloudy	Rain	Y?	30.2	1.16	0.94	17.51	16.41	CW, CJ	Discharge was increased due to Rain on 7/18/11 afternoon	

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							width	Depth (ft)	ft/s					
8.9	M40	7/19/2011	Cornville Bridge	Cloudy	Rain	Y?	54.3	2.36	1.47	64.07	94.18	CW, CJ	Discharge was increased due to Rain on 7/18/11 afternoon	
0.5	M13	7/28/2011	West Fork	Partly cloudy	partly cloudy		7.41	0.52	0.04	3.42	0.25	KJA, KM	clear water	
43.7	M44	7/28/2011	Slide Rock	raining	partly cloudy		51.9	1.97	0.06	99.48	6.13	KJA, KM	clear water, benthic algal coverage, duplicate e.coli	
40.0	M18	7/28/2011	Living Springs	cloudy	partly cloudy		52.3	1.66	0.29	84.16	32.02	KJA, KM	clear water	
34.0	M25	7/28/2011	Chavez Crossing Campground	Partly cloudy	partly cloudy		35	2.07	0.39	70	30.39	KJA, KM	clear water	
17.2	M36	7/28/2011	Page Springs Bridge	partly cloudy	showers	N	65.6	3.2	1.03	104.96	108.11	CW, CJ		
12.6	M39A	7/28/2011	below Spring Creek Confluence	partly cloudy	showers	N	63.5	3.41	0.36	108.27	38.49	CW, CJ		
0.4	M43	7/28/2011	above Verde Confluence	clear	showers	N	38.6	1.43	0.94	27.6	25.86	CW, CJ		
0.1	M39	7/28/2011	Spring Creek	partly cloudy	showers	N	13.1	1.42	n/a	9.3	n/a	CW, CJ	No discharge assessment method because flow was very inconsistent along a small area of channel	
	M49	8/1/2011	Jordan Pump									CTA		
	M48	8/1/2011	Arroyo Roble									KHD		
	M47	8/1/2011	Tlaquepaque									KHD		
	M46	8/1/2011	Soldier's Wash									KHD		
2.6	M26	8/1/2011	Carroll Canyon 3, trail (@Shelby)									SH	Likely <i>E. coli</i> underestimation. Sample contained a great deal of sediment which filled the bottom row of small cells that consequently did not fluoresce.	
0.6	M27	8/1/2011	Carroll Canyon 2, bridge									SH	Likely <i>E. coli</i> underestimation. Sample contained a great deal of sediment which filled the bottom row of small cells that consequently did not fluoresce.	
0.0	M51	8/1/2011	Carroll Canyon 1, mouth									SH	Likely <i>E. coli</i> underestimation. Sample contained a great deal of sediment which filled the bottom row of small cells that consequently did not fluoresce.	
8.9	M40	8/1/2011	Cornville Bridge									CJ		
0.5	M13	8/2/2011	West Fork	partly cloudy	rain		10	0.82	1.14	8.2	9.35	SML, JVS		
49.0	M08	8/2/2011	Pine Flats	partly cloudy	showers		40.7	1.16	1.03	47.21	48.63	SML, JVS		
46.3	M09	8/2/2011	Hoel's Wash/Forest Houses	clear	rain		33.2	1.88	n/a	62.42	n/a	SML, JVS		
43.7	M44	8/2/2011	Slide Rock	clear	rain		39.6	1.7	1.18	46.73	55.14	SML, JVS		
40.5	M17	8/2/2011	Indian Gardens	partly cloudy	Rain/Showers	N	45.6	2.21	n/a	50.39	n/a	CW, JL	Velocity (orange peel method) not done because of injured volunteer (recovering from knee surgery)	
40.0	M18	8/2/2011	Living Springs	partly cloudy	Rain/Showers	N	44.2	3.42	n/a	75.58	n/a	CW, JL	Velocity (orange peel method) not done because of injured volunteer (recovering from knee surgery)	
37.4	M45	8/2/2011	Lomacasi	partly cloudy	Storm/Rain	Y	41.9	3.27	0.68	68.51	46.65	CW, JL, JM	Some debris in water. Water was mostly clear.	
34.0	M25	8/2/2011	Chavez Crossing Campground	clear	Storm	Y	35.7	3.08	1.18	54.98	64.87	CW, JL, JM	A lot of debris in water. Water was reddish-brown, opaque, and muddy.	
27.9	M29	8/2/2011	below Red Rock State Park	clear	storm		21.2	1.45	1.25	30.74	38.43	KJA, KK, WJ		
22.7	M32	8/2/2011	Dry Creek Confluence	clear	storm		28.8	1.42	1.13	40.9	46.22	KJA, KK, WJ		
17.2	M36	8/2/2011	Page Springs Bridge	clear	storm		48	2.28	0.52	109.44	56.91	KJA, KK, WJ	Water was a medium brown color	
2.2	M41	8/2/2011	Cornville Estates	clear	storm		52.1	2.91	0.8	151.61	121.29	KJA, KK, WJ		

strm_mi	Site_ID	Date	Descript	Weather	7-day weather	Flushing	Stream		Velocity		Crew	Notes
							width	Depth (ft)	ft/s	ChanArea		
	S41	8/10/2011	Spring 41, upstream of SRSP	partly cloudy	overcast	N					CW, AB	Forgot to take pictures
	S52	8/10/2011	Spring 52, Indian Gardens	clear	overcast	N					CW, AB	Forgot to take pictures; Flow was too small to take pH, cond, and TDS measurements
	S49	8/10/2011	Spring 49 near source	clear	overcast	N					CW, AB	Forgot to take pictures
	S48	8/10/2011	Spring 48, Indian Gardens	clear	overcast	N					CW, AB	Forgot to take pictures; Forgot to write down bacterial collection time, so I estimated
	S45	8/10/2011	Spring 45 waterfall	clear	overcast	N					CW, AB	Forgot to take pictures
	S42	8/10/2011	Spring 42, Munds Creek	clear	overcast	N					CW, AB	Forgot to take pictures
	S2	8/10/2011	Spring 2, South of IG bridge	clear	overcast	N					CW, AB	Forgot to take pictures
	S16	8/10/2011	Spring 16, Zane Grey's cabin	clear	overcast	N					CW, AB	Forgot to take pictures
	S16	8/24/2011	Spring 16, Zane Grey's cabin	clear	showers	N					CW, KK	Wasn't able to fill sample bottles to top because of shallow water
	S41	8/24/2011	Spring 41, upstream of SRSP	clear	showers	N					CW, KK	Compared to 8/10/2011, air temp is 4°C cooler, but water temp is 3°C warmer
	S52	8/24/2011	Spring 52, Indian Gardens	clear	showers	N					CW, KK	Took pH, cond, TDS, and temp measurements with water in sample bottle; compared to 8/10/2011 air and water temp are about 3-4°C warmer
	S49	8/24/2011	Spring 49 near source	clear	showers	N					CW, KK	Compared to 8/10/2011, elevation difference is 134 ft higher?, air and water temp are about 3-5°C warmer
	S100	8/24/2011	Page Springs Source	clear	showers	N					KA, MN	DO meter not working; DNA sample may have been switched with Spring Creek M39A?
	F3	8/24/2011	Spring Creek above WWT pond	clear	showers	N					KA, MN	DO meter not working
	M39	8/24/2011	Spring Creek	clear	showers	N					KA, MN	DO meter not working. Exceeds <i>E. coli</i> standard. DNA sample may have been switched with Page Springs S100.
	S98	8/24/2011	Bubbling Ponds Spring	clear	showers	N					KA, MN	DO meter not working. Not allowed to collect pH, conductivity, TDS at Bubbling Ponds Spring.
	F4	8/24/2011	Bubbling Ponds outfall	clear	showers	N					KA, MN	DO meter not working
	S35	9/1/2011	Spring 35, West Fork								KJA, MN	
	S36	9/1/2011	Spring 36, West Fork								KJA, MN	
	S39	9/1/2011	Walnut Spring, West Fork								KJA, MN	
	S1	9/1/2011	Spring 1, Indian Gardens								KJA, MN	
	S3	9/1/2011	Spring 3, Indian Gardens								KJA, MN	
	F5	9/1/2011	Creek from Spring 59, Indian Gardens								KJA, MN	
	S58	9/1/2011	Spring 58 Pool, Indian Gardens								KJA, MN	

strm_mi	Site_ID	Date	Descript	Weather	7-day weather	Flushing	Stream width	Depth (ft)	Velocity ft/s	ChanArea	Flow_cfs	Crew	Notes
	S67	9/1/2011	Spring 67, Indian Gardens									KJA, MN	
	S75	9/1/2011	Spring 75 Pool, Indian Gardens									KJA, MN	
	S77	9/1/2011	Spring 77 Pool, Indian Gardens									KJA, MN	
	S78	9/1/2011	Spring 78, Indian Gardens									KJA, MN	
	M49	9/6/2011	Jordan Pump									SML, KJA	
	M48	9/6/2011	Arroyo Roble									SML, KJA	
	M46	9/6/2011	Soldier's Wash									SML, KJA	
	F1	9/6/2011	Chavez Ranch Day Use Area									SML, KJA	
	M26	9/6/2011	Carroll Canyon 3, trail (@Shelby)									SML, KJA	
	M27	9/6/2011	Carroll Canyon 2, bridge									SML, KJA	
37.4	M45	9/7/2011	Lomacasi									CW	Normal clarity conditions
34.0	M25	9/7/2011	Chavez Crossing Campground									CW	Fairly clear, small amount of debris on waters surface
27.9	M29	9/7/2011	below Red Rock State Park									CW	E.coli Duplicate sample taken here; Muddy, partially opaque water, could barely see bottom of creek
17.2	M36	9/7/2011	Page Springs Bridge									CW	I smelled sewage at the sampling site
8.9	M40	9/7/2011	Cornville Bridge									CW	
	M49	9/11/2011	Jordan Pump									KJA	
	M48	9/11/2011	Arroyo Roble									KJA	
	M46	9/11/2011	Soldier's Wash									KHD	
	M26	9/11/2011	Carroll Canyon 3, trail (@Shelby)									KHD	
	M27	9/11/2011	Carroll Canyon 2, bridge									KHD	
49.0	M08	9/11/2011	Pine Flats									KJA	
40.5	M17	9/11/2011	Indian Gardens									KJA	
37.4	M45	9/11/2011	Lomacasi									KJA	
34.0	M25	9/11/2011	Chavez Crossing Campground									KJA	
27.9	M29	9/11/2011	below Red Rock State Park									SML, KHD	
22.7	M32	9/11/2011	Dry Creek Confluence									SML, KHD	
17.2	M36	9/11/2011	Page Springs Bridge									SML, KHD	
2.2	M41	9/11/2011	Cornville Estates									SML, KHD	
	F4	9/11/2011	Bubbling Ponds outfall									SML, KHD	
49.0	M08	9/15/2011	Pine Flats									KJA	Samples were too turbid to analyze for nutrients without filtering. Could not filter within the hold time, so nutrients were not analyzed.

strm_mi	Site_ID	Date	Descript	Weather	7-day weather	Flushing	Stream width	Depth (ft)	Velocity ft/s	ChanArea	Flow_cfs	Crew	Notes
40.5	M17	9/15/2011	Indian Gardens									KJA	Samples were too turbid to analyze for nutrients without filtering. Could not filter within the hold time, so nutrients were not analyzed.
37.4	M45	9/15/2011	Lomacasi									KJA	Samples were too turbid to analyze for nutrients without filtering. Could not filter within the hold time, so nutrients were not analyzed.
34.0	M25	9/15/2011	Chavez Crossing Campground									KJA	Samples were too turbid to analyze for nutrients without filtering. Could not filter within the hold time, so nutrients were not analyzed.
27.9	M29	9/15/2011	below Red Rock State Park									KJA	Samples were too turbid to analyze for nutrients without filtering. Could not filter within the hold time, so nutrients were not analyzed.
22.7	M32	9/15/2011	Dry Creek Confluence									KJA	Samples were too turbid to analyze for nutrients without filtering. Could not filter within the hold time, so nutrients were not analyzed.
17.2	M36	9/15/2011	Page Springs Bridge									KJA	Samples were too turbid to analyze for nutrients without filtering. Could not filter within the hold time, so nutrients were not analyzed.
8.9	M40	9/15/2011	Cornville Bridge									KJA	Samples were too turbid to analyze for nutrients without filtering. Could not filter within the hold time, so nutrients were not analyzed.
	S52	9/16/2011	Spring 52, Indian Gardens	overcast	storm	N						CW, MN	
	S49A	9/16/2011	Spring 49 source	overcast	storm	N						CW, MN	E.coli Duplicate sample taken
	F6	9/16/2011	Spring ditch, AGFD	overcast	storm	Y						CW, MN	Across from Bubbling Ponds source site
	S107	9/16/2011	Spring ditch	overcast	storm	Y						CW, MN	Oak Creek had a heavy sediment load at the ditch outfall, but ditch itself did not
	S98	9/16/2011	Bubbling Ponds Spring	overcast	stotrm	Y						CW, MN	Instruments not allowed in water
	F4	9/16/2011	Bubbling Ponds outfall	overcast	storm	N						CW, MN	
	S100	9/16/2011	Page Springs source	clear	storm	N						CW, MN	Sampled about 1-2 feet below metal gate
	F3	9/16/2011	Spring Creek above WWT pond	clear	storm	Y						CW, MN	Evidence of a recent large storm
	M39	9/16/2011	Spring Creek	clear	storm	Y						CW, MN	Evidence of a recent large storm
	S9	9/20/2011	Pine Flat spring @ road	clear	storm	N						CW, MN	
	S41	9/20/2011	Spring 41, upstream of SRSP	clear	storm	N						CW, MN	
	S49A	9/20/2011	Spring 49 source	clear	storm	N						CW, MN	
	S49	9/20/2011	Spring 49 near source	clear	storm	N						CW, MN	
	F7	9/20/2011	Lower Indian Gardens spring, upper end	clear	storm	N						CW, MN	
	S71	9/20/2011	Lower Indian Gardens spring, midway	clear	storm	N						CW, MN	
	S70	9/20/2011	Lower Indian Gardens spring, near fish runs	clear	storm	N						CW, MN	Water has a definite blue color in sample bottles

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	F6	9/20/2011	Spring ditch, AGFD	clear	storm	N						CW, MN	
	S107	9/20/2011	Spring ditch	clear	storm	N						CW, MN	
	S109	9/21/2011	Lower Indian Gardens spring, down channel									KJA, MS	
	S45A	9/22/2011	Spring 45 source									CW, MN	
	S45B	9/22/2011	Spring 45 water fountain on side of house									CW, MN	
	S71	9/22/2011	Lower Indian Gardens spring, midway	overcast	overcast	N						CW, MN	
	S70	9/22/2011	Lower Indian Gardens spring, near runs	overcast	overcast	N						CW, MN	Water has a definite blue color in sample bottles
	S109	9/22/2011	Lower Indian Garden spring, down channel	overcast	overcast	N						CW, MN	

gray highlight denotes samples from tributary streams
green highlight denotes samples from springs
no highlighting denotes Oak Creek samples

bold numbers mean "greater than"
italic numbers mean "less than"
red font means "out of hold time" or other attention