

APPENDIX B. FECAL COLIFORM DATA ANALYSIS

Staff analyzed water quality data using a program developed by Tetra Tech, the United States Environmental Protection Agencies' contractor. The program is titled "Fecal Coliform Investigation and Analysis Spreadsheet (FECIA)." FECIA is a fully automated spreadsheet designed to assist in characterization and quantification of fecal coliform instream water quality objective exceedances. Data were compared against water quality objectives to determine magnitude and frequency of exceedances. FECIA generated the data analysis figures and tables that were used in completing the data analysis for this report. They are included here for reference.

All tables in Appendix B provide summary statistics for the figures shown above the tables. The tables display monthly statistical data including the mean, median, minimum, maximum, number of exceedances of the water contact recreation water quality objective versus the sample count (XS:Count), and the percent sample exceedance (XS%) of the water quality objective. Note that in Table 1, the value shown as the mean of all data was actually the mean of the geometric means. This value appears at the bottom of the mean column. The mean value for all data in all other tables is the mean of the maximum water quality objective means.

Aptos at Creek Mouth

Geometric Mean Water Quality Objective (200 MPN/100 mL)

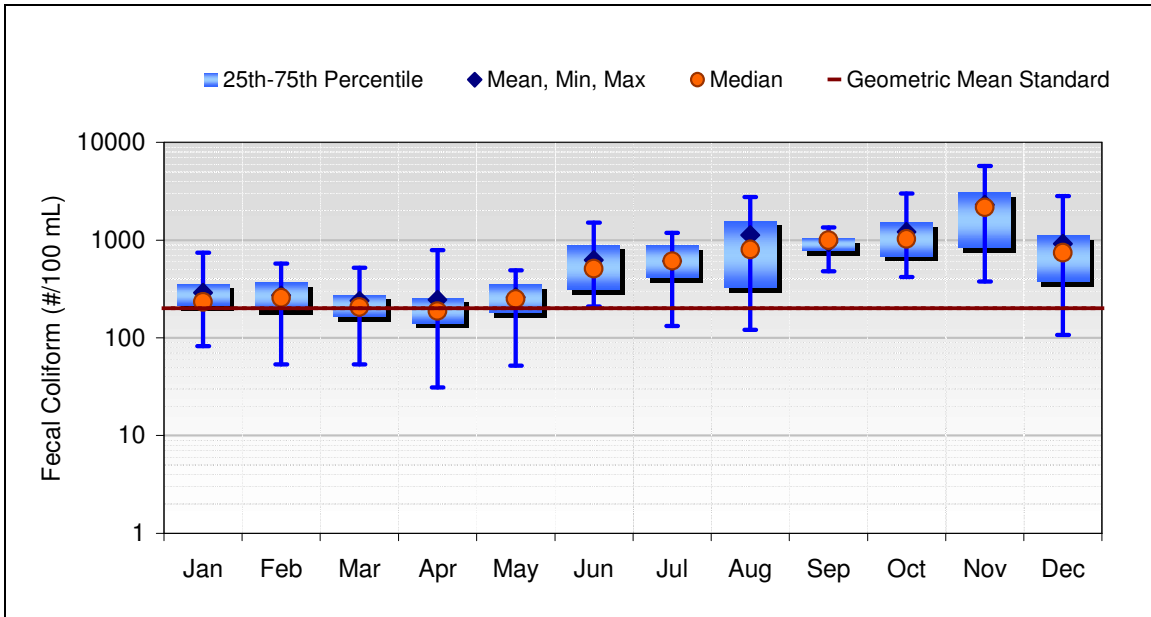


Figure 1 Aptos at Creek Mouth Fecal Coliform (#/100 mL) and Water Contact Recreation Geometric Mean Water Quality Objective (January 5, 2000 – June 26, 2006)

Table 1 Aptos at Creek Mouth Fecal Coliform Data Summary (#/100 mL) and Exceedance of Water Contract Recreation Geometric Mean Water Quality Objective

Summary Statistics (Data: 1/5/2000 to 6/26/2006)										
Month	Mean	Median	Min	Max	25th	75th	XS:Count	XS%		
Jan	288	234	82	743	211	353	17:22	77%		
Feb	272	256	53	576	194	366	21:31	68%		
Mar	238	206	54	523	163	274	17:33	52%		
Apr	246	187	31	790	141	255	12:31	39%		
May	262	248	52	492	181	350	20:28	71%		
Jun	626	510	209	1514	312	893	23:23	100%		
Jul	610	609	133	1190	411	885	19:24	79%		
Aug	1127	801	120	2764	327	1568	26:29	90%		
Sep	948	997	481	1347	783	1047	14:14	100%		
Oct	1214	1029	419	2980	679	1507	21:21	100%		
Nov	2295	2158	377	5732	836	3062	28:28	100%		
Dec	918	744	106	2820	379	1124	24:26	92%		
All Data	730	412	31	5732	214	893	242:310	78%		

Maximum Water Quality Objective (400 MPN/100 mL)

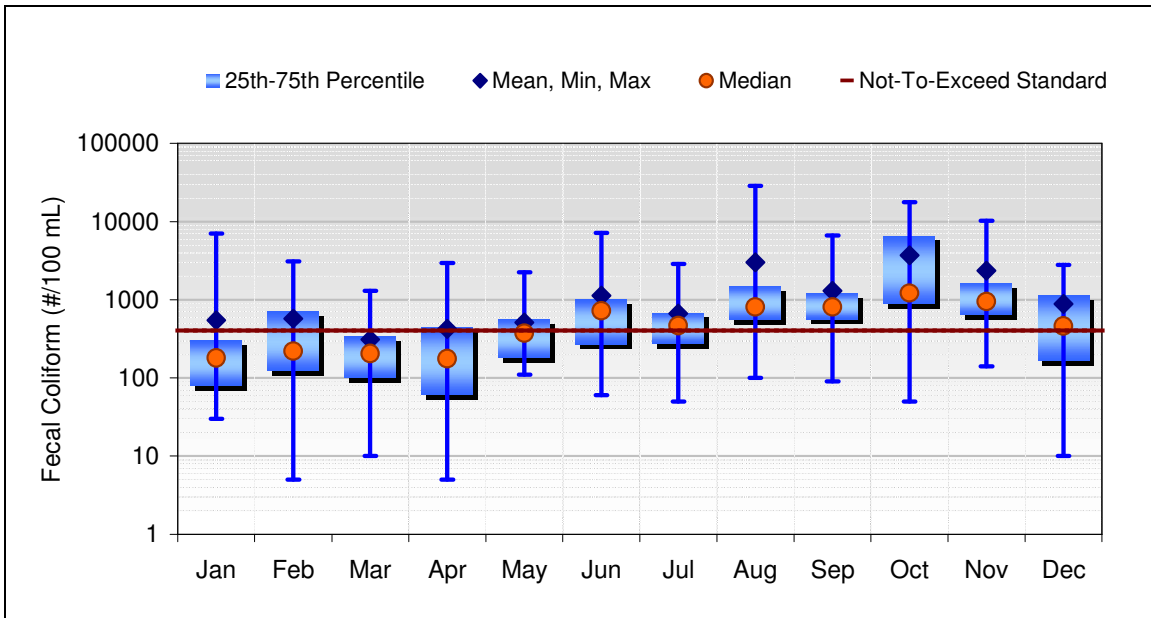


Figure 2 Aptos at Creek Mouth Fecal Coliform (#/100 mL) and Water Contact Maximum Water Quality Objective (January 5, 2000 through June 26, 2006)

Table 2 Aptos at Creek Mouth Fecal Coliform Data Summary (#/100 mL) and Exceedance of Water Contract Recreation Maximum Water Quality Objective

Summary Statistics (Data: 1/5/2000 to 6/26/2006)								
Month	Mean	Median	Min	Max	25th	75th	XS:Count	XS%
Jan	549	180	30	7020	80	300	6:33	18%
Feb	574	220	5	3100	123	708	11:30	37%
Mar	308	205	10	1300	100	338	7:34	21%
Apr	424	175	5	2950	60	445	9:32	28%
May	509	370	110	2250	180	563	15:31	48%
Jun	1126	720	60	7160	270	1000	20:31	65%
Jul	670	466	50	2850	273	677	15:28	54%
Aug	3001	800	100	28800	550	1480	22:29	76%
Sep	1302	800	90	6650	560	1200	20:23	87%
Oct	3676	1215	50	17700	875	6563	28:30	93%
Nov	2350	950	140	10200	640	1610	21:25	84%
Dec	881	460	10	2790	165	1148	13:26	50%
All Data	1244	480	5	28800	180	990	187:352	53%

Aptos Creek at Bridge on Spreckels

Geometric Mean Water Quality Objective (200 MPN/100 mL)

There was not enough water quality data collected at this sampling site to calculate geometric means.

Maximum Water Quality Objective (400 MPN/100 mL)

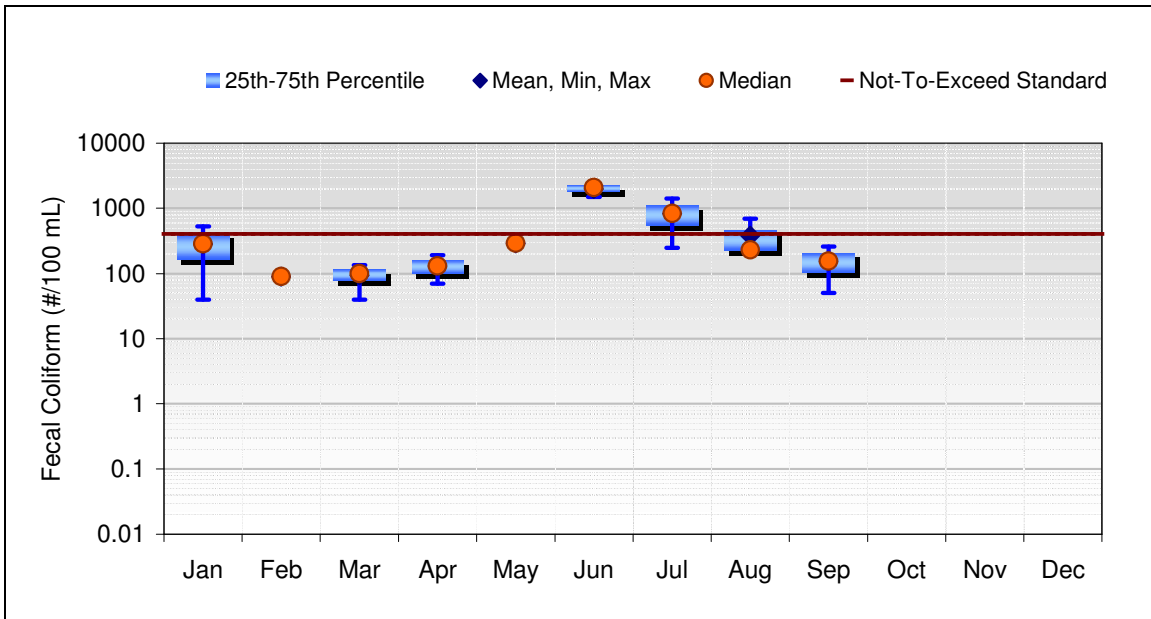


Figure 3 Aptos Creek at Bridge on Spreckels Fecal Coliform (#/100 mL) and Water Contact Maximum Water Quality Objective (March 1, 2000 through September 13, 2005)

Table 3 Aptos Creek at Bridge on Spreckels Fecal Coliform Data Summary (#/100 mL) and Exceedance of Water Contract Recreation Maximum Water Quality Objective

Summary Statistics (Data: 3/1/2000 to 9/13/2005)								
Month	Mean	Median	Min	Max	25th	75th	XS:Count	XS%
Jan	285	285	40	530	163	408	1:2	50%
Feb	90	90	90	90	90	90	0:1	0%
Mar	94	100	40	135	78	116	0:4	0%
Apr	130	130	70	190	100	160	0:2	0%
May	290	290	290	290	290	290	0:1	0%
Jun	1990	2100	1500	2370	1800	2235	3:3	100%
Jul	835	835	250	1420	543	1128	1:2	50%
Aug	383	230	220	700	225	465	1:3	33%
Sep	155	155	50	260	103	208	0:2	0%
Oct	0	0	0	0	0	0	0:0	n/a
Nov	0	0	0	0	0	0	0:0	n/a
Dec	0	0	0	0	0	0	0:0	n/a
All Data	534	225	40	2370	90	573	6:20	30%

Aptos Creek at Valencia Creek

Geometric Mean Water Quality Objective (200 MPN/100 mL)

There was not enough water quality data collected at this sampling site to calculate geometric means.

Maximum Water Quality Objective (400 MPN/100 mL)

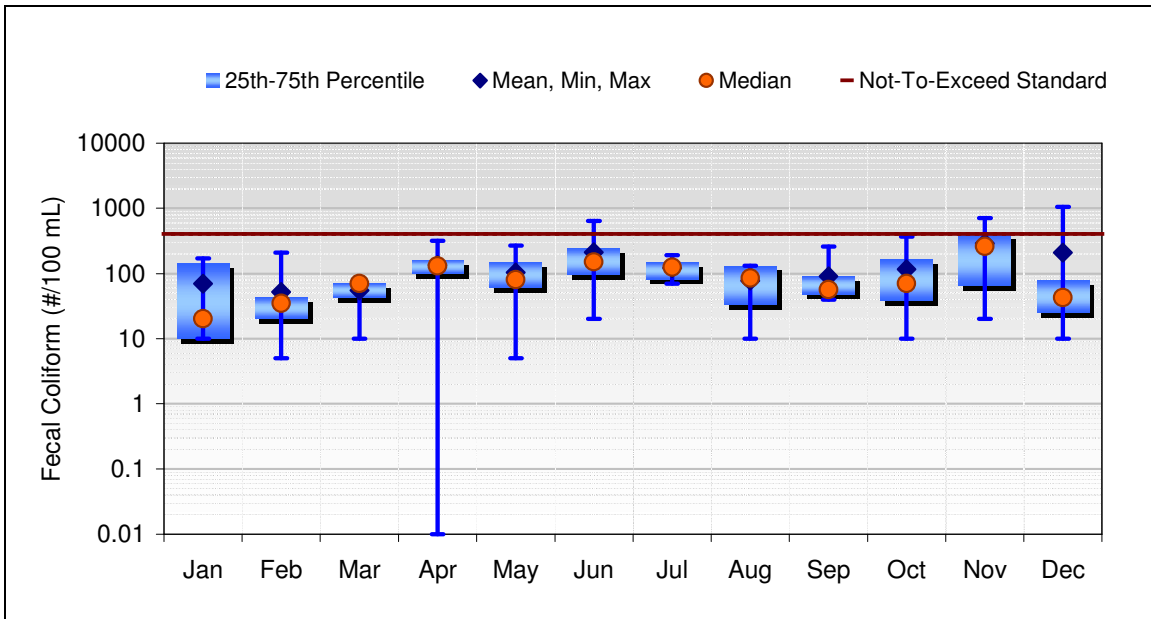


Figure 4 Aptos Creek at Valencia Creek Fecal Coliform (#/100 mL) and Water Contact Maximum Water Quality Objective (February 1, 2000 through June 12, 2006)

Table 4 Aptos Creek at Valencia Creek Fecal Coliform Data Summary (#/100 mL) and Exceedance of Water Contract Recreation Maximum Water Quality Objective

Summary Statistics (Data: 2/1/2000 to 6/12/2006)								
Month	Mean	Median	Min	Max	25th	75th	XS:Count	XS%
Jan	70	20	10	170	10	140	0:5	0%
Feb	52	35	5	210	20	43	0:8	0%
Mar	55	70	10	80	43	70	0:7	0%
Apr	136	130	0	320	100	160	0:9	0%
May	103	80	5	270	60	150	0:9	0%
Jun	213	150	20	640	95	245	2:11	18%
Jul	122	125	70	190	82	148	0:6	0%
Aug	78	85	10	132	33	131	0:4	0%
Sep	90	56	40	260	48	90	0:7	0%
Oct	116	70	10	370	38	165	0:8	0%
Nov	291	260	20	710	65	400	1:5	20%
Dec	209	43	10	1050	25	79	1:6	17%
All Data	129	80	0	1050	40	150	4:85	5%

Valencia Creek at Aptos Creek

Geometric Mean Water Quality Objective (200 MPN/100 mL)

There was not enough water quality data collected at this sampling site to calculate geometric means.

Maximum Water Quality Objective (400 MPN/100 mL)

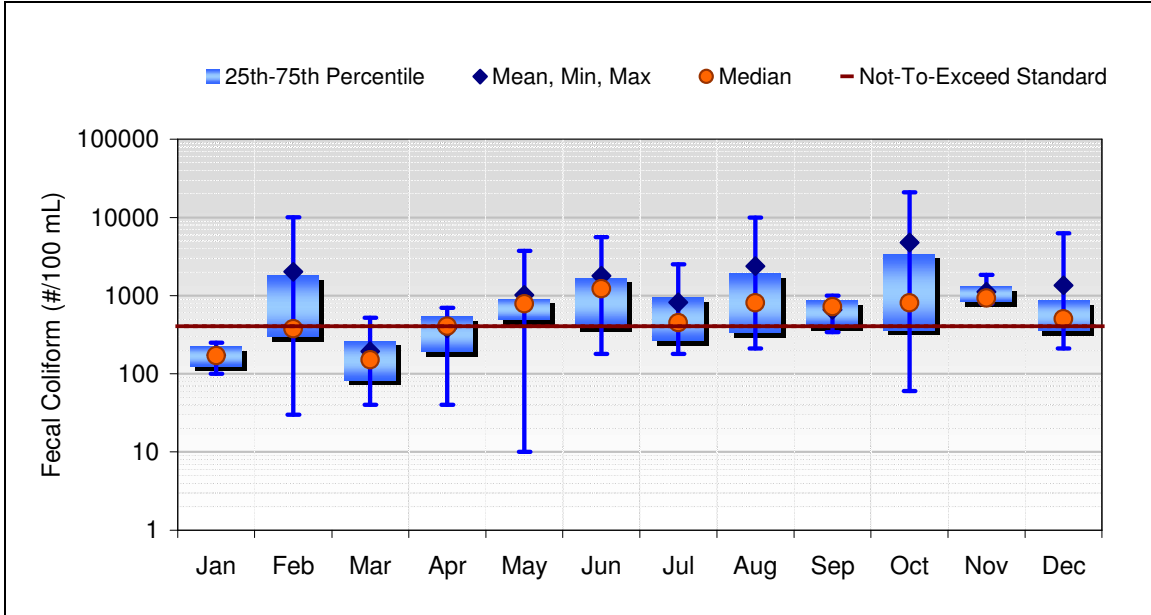


Figure 5 Valencia Creek at Aptos Creek Fecal Coliform (#/100 mL) and Water Contact Maximum Water Quality Objective (February 1, 2000 through June 12, 2006)

Table 5 Valencia Creek at Aptos Creek Fecal Coliform Data Summary (#/100 mL) and Exceedance of Water Contract Recreation Maximum Water Quality Objective

Summary Statistics (Data: 2/1/2000 to 6/12/2006)								
Month	Mean	Median	Min	Max	25th	75th	XS:Count	XS%
Jan	173	170	100	250	125	223	0:6	0%
Feb	2014	375	30	10060	295	1813	4:10	40%
Mar	193	150	40	520	83	263	1:8	13%
Apr	379	405	40	700	190	543	5:10	50%
May	1014	780	10	3740	490	910	11:13	85%
Jun	1791	1220	180	5600	400	1680	9:13	69%
Jul	822	450	180	2510	267	945	4:8	50%
Aug	2389	810	210	10001	335	1945	4:6	67%
Sep	660	720	340	1000	410	870	7:9	78%
Oct	4765	800	60	21080	360	3425	8:11	73%
Nov	1122	925	790	1850	830	1313	6:6	100%
Dec	1355	500	210	6310	355	878	4:7	57%
All Data	1481	520	10	21080	275	1139	63:107	59%

Valencia Creek at Trout Gulch

Geometric Mean Water Quality Objective (200 MPN/100 mL)

There was not enough water quality data collected at this sampling site to calculate geometric means.

Maximum Water Quality Objective (400 MPN/100 mL)

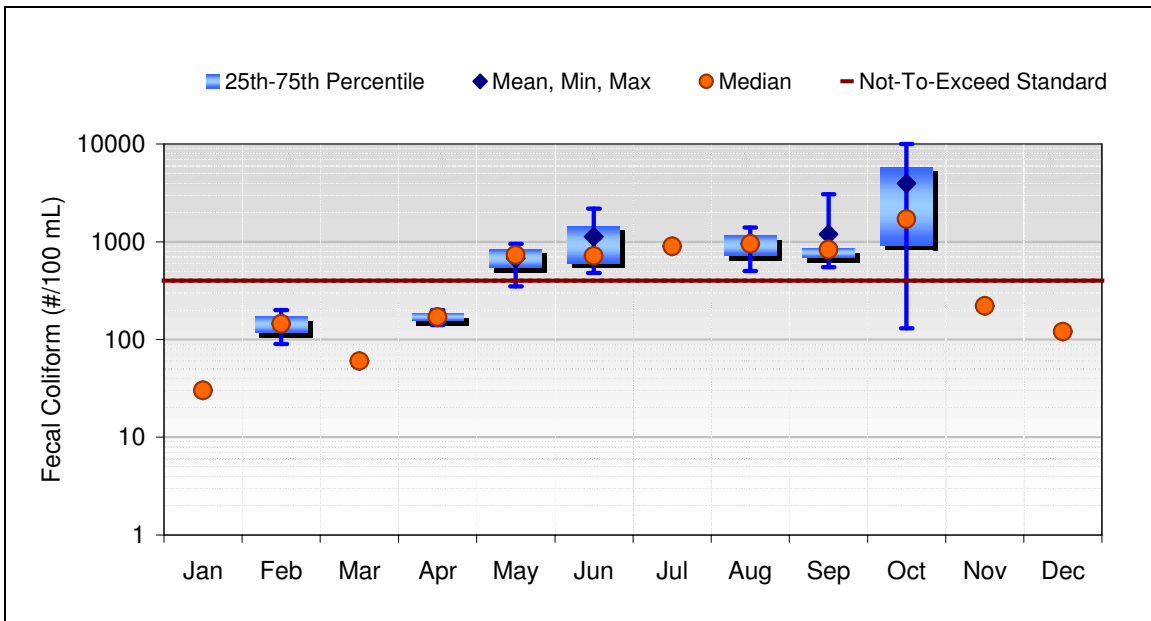


Figure 6. Valencia Creek at Trout Gulch Fecal Coliform (#/100 mL) and Water Contact Maximum Water Quality Objective (May 24, 2000 through September 13, 2005)

Table 6. Valencia Creek at Trout Gulch Fecal Coliform Data Summary (#/100 mL) and Exceedance of Water Contract Recreation Maximum Water Quality Objective

Summary Statistics (Data: 5/24/2000 to 9/13/2005)								
Month	Mean	Median	Min	Max	25th	75th	XS:Count	XS%
Jan	30	30	30	30	30	30	0:1	0%
Feb	145	145	90	200	118	173	0:2	0%
Mar	60	60	60	60	60	60	0:1	0%
Apr	170	170	140	200	155	185	0:2	0%
May	677	730	350	950	540	840	2:3	67%
Jun	1130	720	480	2190	600	1455	3:3	100%
Jul	900	900	900	900	900	900	1:1	100%
Aug	950	950	500	1400	725	1175	2:2	100%
Sep	1198	830	550	3060	690	860	5:5	100%
Oct	3947	1710	130	10000	920	5855	2:3	67%
Nov	220	220	220	220	220	220	0:1	0%
Dec	120	120	120	120	120	120	0:1	0%
All Data	1084	550	30	10000	200	900	15:25	60%

Valencia Creek Behind School

Geometric Mean Water Quality Objective (200 MPN/100 mL)

There was not enough water quality data collected at this sampling site to calculate geometric means.

Maximum Water Quality Objective (400 MPN/100 mL)

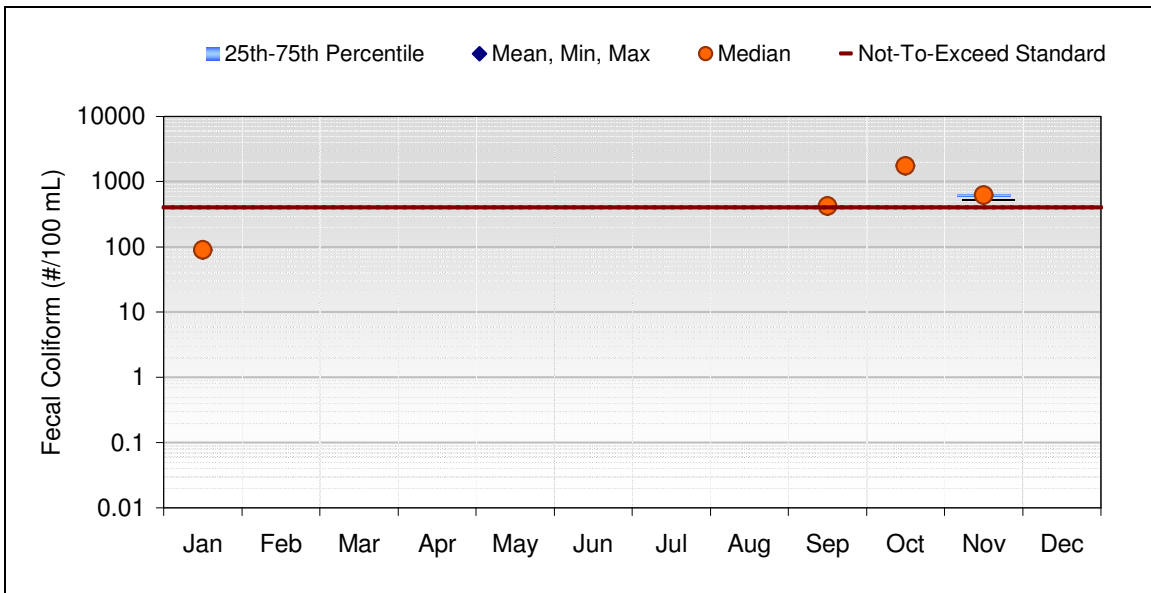


Figure 7 Valencia Creek Behind School Fecal Coliform (#/100 mL) and Water Contact Maximum Water Quality Objective (September 28, 2000 through January 25, 2005)

Table 7 Valencia Creek Behind School Fecal Coliform Data Summary (#/100 mL) and Exceedance of Water Contract Recreation Maximum Water Quality Objective

Summary Statistics (Data: 9/28/2000 to 1/25/2005)								
Month	Mean	Median	Min	Max	25th	75th	XS:Count	XS%
Jan	90	90	90	90	90	90	0:1	0%
Feb	0	0	0	0	0	0	0:0	n/a
Mar	0	0	0	0	0	0	0:0	n/a
Apr	0	0	0	0	0	0	0:0	n/a
May	0	0	0	0	0	0	0:0	n/a
Jun	0	0	0	0	0	0	0:0	n/a
Jul	0	0	0	0	0	0	0:0	n/a
Aug	0	0	0	0	0	0	0:0	n/a
Sep	420	420	420	420	420	420	1:1	100%
Oct	1750	1750	1750	1750	1750	1750	1:1	100%
Nov	620	620	580	660	600	640	2:2	100%
Dec	0	0	0	0	0	0	0:0	n/a
All Data	700	580	90	1750	420	660	4:5	80%

Valencia Creek at Fork

Geometric Mean Water Quality Objective (200 MPN/100 mL)

There was not enough water quality data collected at this sampling site to calculate geometric means.

Maximum Water Quality Objective (400 MPN/100 mL)

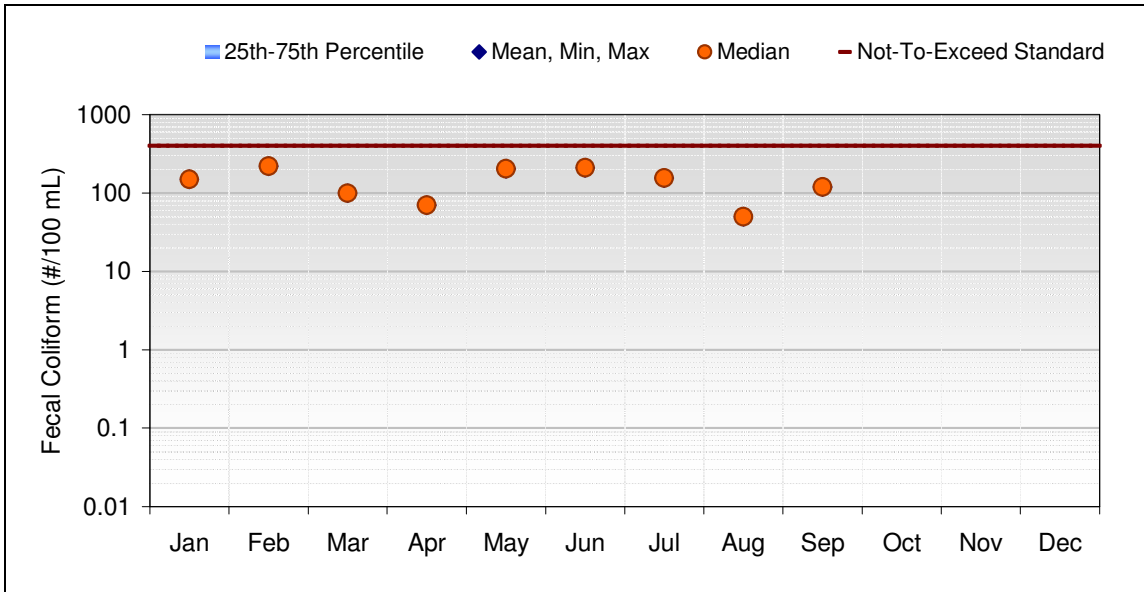


Figure 8 Valencia Creek at Fork Fecal Coliform (#/100 mL) and Water Contact Maximum Water Quality Objective (January 25, 2005 through September 13, 2005)

Table 8 Valencia Creek at Fork Fecal Coliform Data Summary (#/100 mL) and Exceedance of Water Contract Recreation Maximum Water Quality Objective

Summary Statistics (Data: 1/25/2005 to 9/13/2005)								
Month	Mean	Median	Min	Max	25th	75th	XS:Count	XS%
Jan	150	150	150	150	150	150	0:1	0%
Feb	220	220	220	220	220	220	0:1	0%
Mar	100	100	100	100	100	100	0:1	0%
Apr	70	70	70	70	70	70	0:1	0%
May	204	204	204	204	204	204	0:1	0%
Jun	210	210	210	210	210	210	0:1	0%
Jul	156	156	156	156	156	156	0:1	0%
Aug	50	50	50	50	50	50	0:1	0%
Sep	120	120	120	120	120	120	0:1	0%
Oct	0	0	0	0	0	0	0:0	n/a
Nov	0	0	0	0	0	0	0:0	n/a
Dec	0	0	0	0	0	0	0:0	n/a
All Data	142	150	50	220	100	204	0:9	0%

West Branch Valencia Creek

Geometric Mean Water Quality Objective (200 MPN/100 mL)

There was not enough water quality data collected at this sampling site to calculate geometric means.

Maximum Water Quality Objective (400 MPN/100 mL)

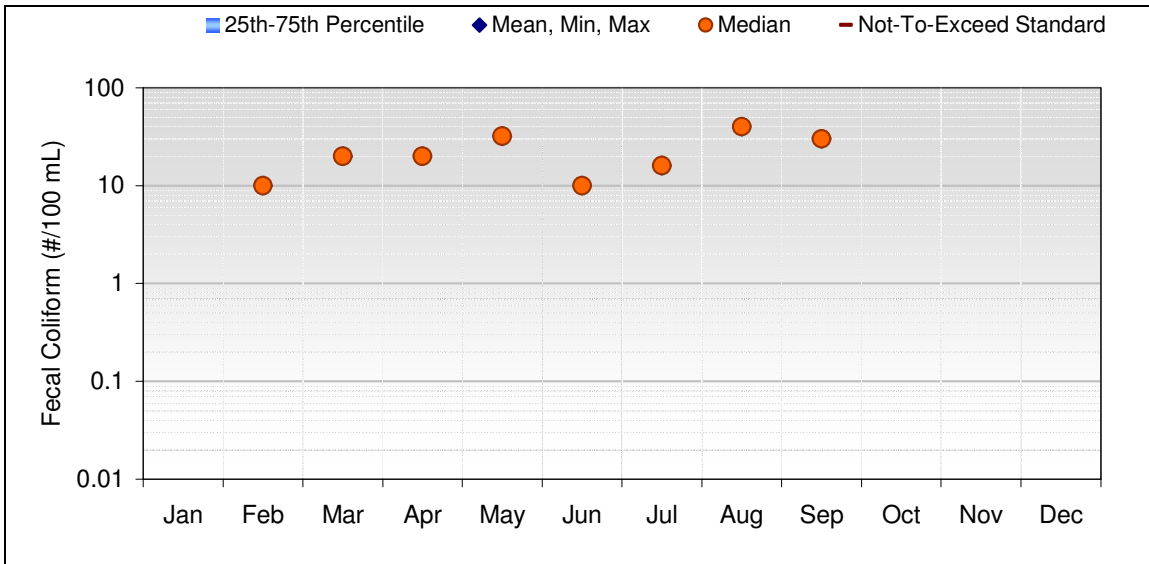


Figure 9 West Branch Valencia Creek Fecal Coliform (#/100 mL) and Water Contact Maximum Water Quality Objective (February 3, 2005 through September 13, 2005)

Table 9 West Branch Valencia Creek Fecal Coliform Data Summary (#/100 mL) and Exceedance of Water Contract Recreation Maximum Water Quality Objective

Summary Statistics (Data: 2/3/2005 to 9/13/2005)									
Month	Mean	Median	Min	Max	25th	75th	XS:Count	XS%	
Jan	0	0	0	0	0	0	0:0	n/a	
Feb	10	10	10	10	10	10	0:1	0%	
Mar	20	20	20	20	20	20	0:1	0%	
Apr	20	20	20	20	20	20	0:1	0%	
May	32	32	32	32	32	32	0:1	0%	
Jun	10	10	10	10	10	10	0:1	0%	
Jul	16	16	16	16	16	16	0:1	0%	
Aug	40	40	40	40	40	40	0:1	0%	
Sep	30	30	30	30	30	30	0:1	0%	
Oct	0	0	0	0	0	0	0:0	n/a	
Nov	0	0	0	0	0	0	0:0	n/a	
Dec	0	0	0	0	0	0	0:0	n/a	
All Data	22	20	10	40	15	31	0:8	0%	

Trout Gulch at Valencia Creek

Geometric Mean Water Quality Objective (200 MPN/100 mL)

There was not enough water quality data collected at this sampling site to calculate geometric means.

Maximum Water Quality Objective (400 MPN/100 mL)

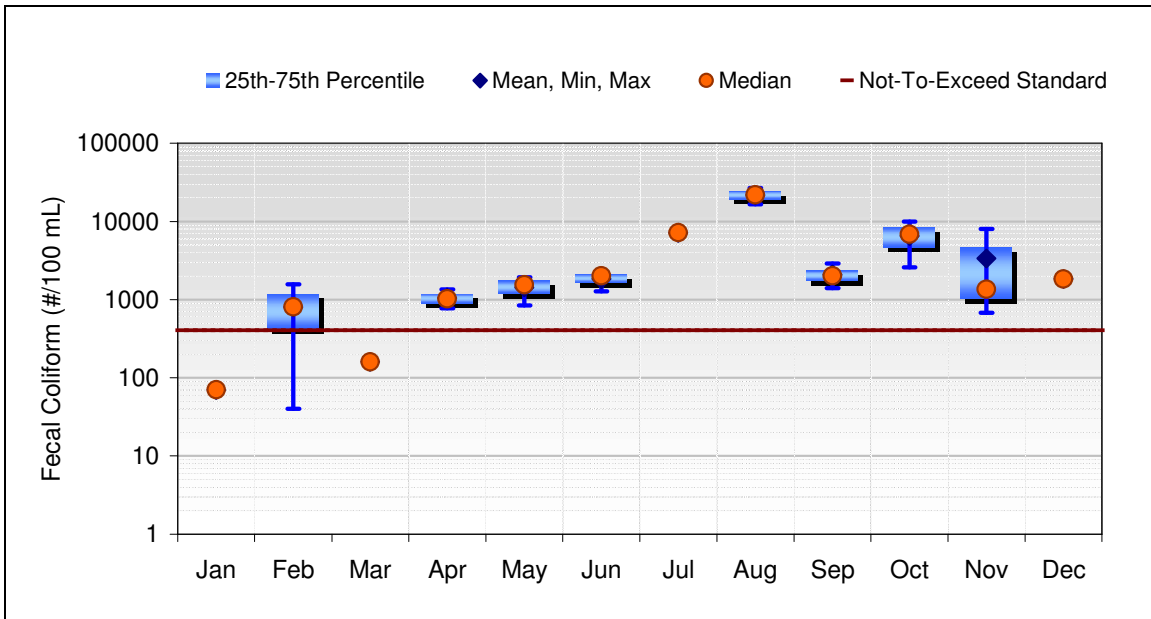


Figure 10 Trout Gulch at Valencia Creek Fecal Coliform (#/100 mL) and Water Contact Maximum Water Quality Objective (May 24, 2000 through September 13, 2005)

Table 10 Trout Gulch at Valencia Creek Fecal Coliform Data Summary (#/100 mL) and Exceedance of Water Contract Recreation Maximum Water Quality Objective

Summary Statistics (Data: 5/24/2000 to 9/13/2005)								
Month	Mean	Median	Min	Max	25th	75th	XS:Count	XS%
Jan	70	70	70	70	70	70	0:1	0%
Feb	800	800	40	1560	420	1180	1:2	50%
Mar	160	160	160	160	160	160	0:1	0%
Apr	1047	1020	770	1350	895	1185	3:3	100%
May	1437	1540	840	1930	1190	1735	3:3	100%
Jun	1827	2000	1270	2210	1635	2105	3:3	100%
Jul	7130	7130	7130	7130	7130	7130	1:1	100%
Aug	21680	21680	16560	26800	19120	24240	2:2	100%
Sep	2082	2020	1400	2890	1750	2350	5:5	100%
Oct	6463	6820	2570	10000	4695	8410	3:3	100%
Nov	3347	1350	680	8010	1015	4680	3:3	100%
Dec	1830	1830	1830	1830	1830	1830	1:1	100%
All Data	3819	1790	40	26800	1208	2650	25:28	89%

Trout Gulch at Valencia Road

Geometric Mean Water Quality Objective (200 MPN/100 mL)

There was not enough water quality data collected at this sampling site to calculate geometric means.

Maximum Water Quality Objective (400 MPN/100 mL)

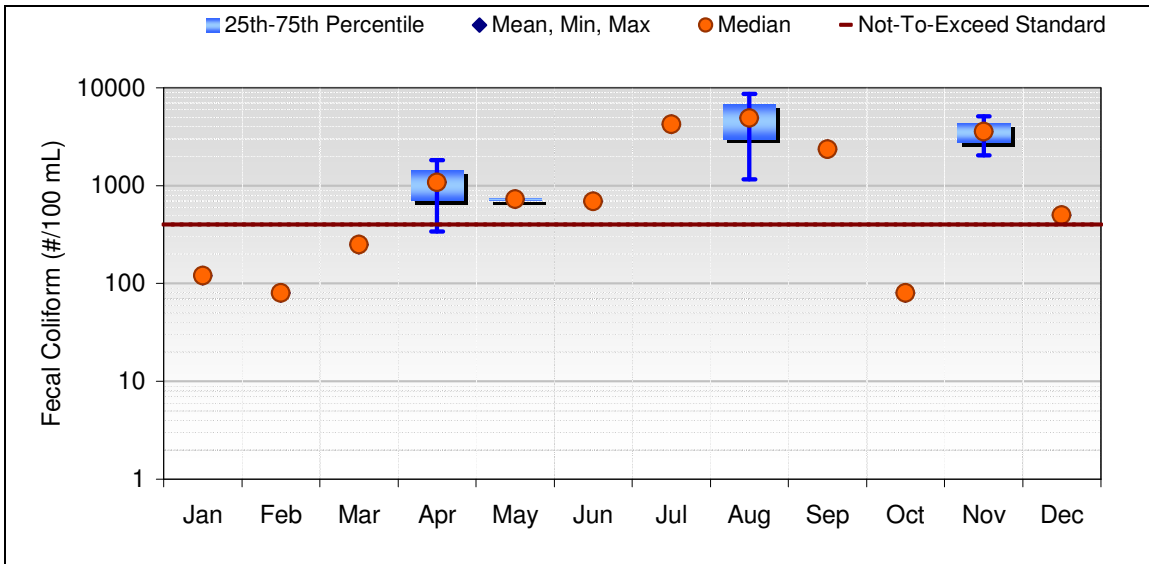


Figure 11 Trout Gulch at Valencia Road Fecal Coliform (#/100 mL) and Water Contact Maximum Water Quality Objective (May 24, 2000 through September 13, 2005)

Table 11 Trout Gulch at Valencia Road Fecal Coliform Data Summary (#/100 mL) and Exceedance of Water Contract Recreation Maximum Water Quality Objective

Summary Statistics (Data: 10/24/2000 to 9/13/2005)									
Month	Mean	Median	Min	Max	25th	75th	XS:Count	XS%	
Jan	120	120	120	120	120	120	0:1	0%	
Feb	80	80	80	80	80	80	0:1	0%	
Mar	250	250	250	250	250	250	0:1	0%	
Apr	1080	1080	340	1820	710	1450	1:2	50%	
May	729	729	690	768	710	749	2:2	100%	
Jun	690	690	690	690	690	690	1:1	100%	
Jul	4230	4230	4230	4230	4230	4230	1:1	100%	
Aug	4900	4900	1160	8640	3030	6770	2:2	100%	
Sep	2360	2360	2360	2360	2360	2360	1:1	100%	
Oct	80	80	80	80	80	80	0:1	0%	
Nov	3570	3570	2040	5100	2805	4335	2:2	100%	
Dec	500	500	500	500	500	500	1:1	100%	
All Data	1804	729	80	8640	318	2120	11:16	69%	

Trout Gulch at End of Baker Road

Geometric Mean Water Quality Objective (200 MPN/100 mL)

There were insufficient water quality data at this station from 05/24/2000 to 09/13/2005. No months had the minimum of five samples needed to calculate geometric means.

Maximum Water Quality Objective (400 MPN/100 mL)

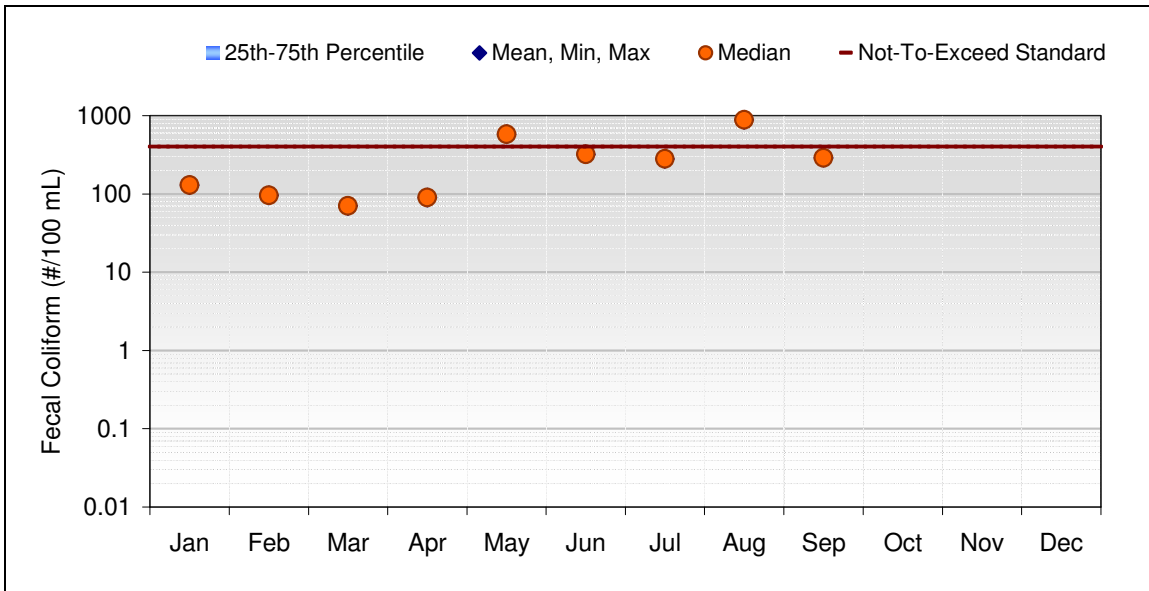


Figure 12 Trout Gulch at End of Baker Road Fecal Coliform (#/100 mL) and Water Contact Maximum Water Quality Objective (January 25, 2005 through September 13, 2005)

Table 12 Trout Gulch at End of Baker Road Fecal Coliform Data Summary (#/100 mL) and Exceedance of Water Contract Recreation Maximum Water Quality Objective

Summary Statistics (Data: 1/25/2005 to 9/13/2005)								
Month	Mean	Median	Min	Max	25th	75th	XS:Count	XS%
Jan	130	130	130	130	130	130	0:1	0%
Feb	96	96	96	96	96	96	0:1	0%
Mar	70	70	70	70	70	70	0:1	0%
Apr	90	90	90	90	90	90	0:1	0%
May	580	580	580	580	580	580	1:1	100%
Jun	320	320	320	320	320	320	0:1	0%
Jul	280	280	280	280	280	280	0:1	0%
Aug	880	880	880	880	880	880	1:1	100%
Sep	290	290	290	290	290	290	0:1	0%
Oct	0	0	0	0	0	0	0:0	n/a
Nov	0	0	0	0	0	0	0:0	n/a
Dec	0	0	0	0	0	0	0:0	n/a
All Data	304	280	70	880	96	320	2:9	22%