

Attachment 4-1

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Table 4-1. FY 06-07 SCVURPPP monitoring plan for Santa Clara Basin Watersheds¹.

Watershed Area	Data Type ²	Quarter in FY 06-07				Rationale	Lead Agency
		1st	2nd	3rd	4th		
Coyote Creek	Chemical						
	Contaminants-Water ³	S (2)		S (2)		<ul style="list-style-type: none"> Baseline: Metals (dissolved and total) were measured at eight stream locations in Coyote Creek during summer season in 1999-2001 and organophosphate pesticides were sampled at 2-3 sites during summer 2000-01 as part of Stream Augmentation Study. FY 06-07: Conduct screening level monitoring of dissolved and total metals and organophosphate pesticides concentrations at two sites during summer and winter seasons. Hardness of water samples will be measured synoptically. 	SCVURPPP
	Contaminants-Sediment ⁴	S (8)			S (8)	<ul style="list-style-type: none"> Baseline: Metal concentrations were measured in sediment samples at nine stream locations in Coyote Creek during summer season in 1999 as part of SEIDP project. PCB and mercury concentrations in sediment were measured in selected catchments of Coyote Creek watershed during 2000-01 as part of Regional Project. FY 06-07: Conduct screening level monitoring of metals, PCBs and pyrethroids at eight stream locations during summer and spring season. TOC, percent solids and sediment grain size will be measured synoptically. 	SCVURPPP
	General Water Quality ⁵	S(10)		S (2)	S(18)	<ul style="list-style-type: none"> Baseline: General water quality sampling was measured at eight stream locations in Coyote Creek during summer season in 1999-2001. Continuous temperature monitoring conducted by SCVWD as part of FAHCE project. FY 06-07: Screening level measurements of general water quality using probes will be conducted synoptically with water sampling (two sites), sediment sampling (eight sites) and bioassessment (ten sites). Continuous temperature monitoring will be conducted by SCVWD as part of Mid-Coyote Flood Control Project. 	SCVURPPP/ SCVWD
	Biological						
	Toxicity-Sediment ⁶	S (4)			S (4)	<ul style="list-style-type: none"> Baseline: No existing baseline data. FY 06-07: Sediment toxicity testing will be conducted at four sites during summer and spring season, synoptically with sediment chemistry sampling. 	SCVURPPP
Pathogen Indicator Organisms ⁷	S (4)		S (4)		<ul style="list-style-type: none"> Baseline: Bacterial indicators concentrations in water were measured at eight stream locations in Coyote Creek during summer season in 1999-2001 as part of Stream Augmentation Study. FY 06-07: Conduct monitoring of bacterial indicators at four stream sites located in city and county parks during summer and winter season. 	SCVURPPP	

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	Bioassessment – Macroinvertebrates ⁸				S(10)	<ul style="list-style-type: none"> Baseline: Benthic macroinvertebrate (BMI) bioassessments were conducted at eleven sites in Coyote Creek mainstem during 1997 as part of USGS study. BMI assessments were also conducted at nine sites during 1999 as part of SEIDP and six sites during 2000 as part of Stream Augmentation Study. FY 06-07: Benthic macroinvertebrate bioassessment will be conducted at ten sites synoptically with physical habitat assessment. BMI sampling will occur at all sediment sampling sites. 	SCVURPPP
	Bioassessment – Fish ⁹					<ul style="list-style-type: none"> Baseline: Existing fish survey data were collected within the Coyote mainstem in the following studies: 12 sites by Rob Leidy during 1995-97, 18 sites by SCVURPPP during 1999 and five sites by SCVWD during 2000. Downstream migrant trapping was also conducted by SCVWD during 1998-2000. FY 06-07: Fish community sampling and out-stream migrant trapping for steelhead is planned in the Coyote mainstem starting in spring 2007 by SCVWD as part of Mid-Coyote Flood Control Project. 	SCVWD
<i>Physical</i>							
	Physical Habitat ¹⁰				S(10)	<ul style="list-style-type: none"> Baseline: Continuous aquatic habitat survey was conducted in 1999 as part of FAHCE Project by SCVWD. Habitat surveys were also conducted at 18 stream locations in Coyote mainstem in 1999 as part of SEIDP. FY 06-07: Visual physical habitat assessment will be conducted, concurrent with macroinvertebrate sampling, at ten sites. Aquatic habitat surveys are planned in Coyote mainstem starting in fall 2006 by SCVWD as part of Mid-Coyote Flood Control Project. 	SCVURPPP/ SCVWD
	Sediment Characterization ¹¹				S(4)	<ul style="list-style-type: none"> Baseline: Substrate composition and embeddedness was visually estimated in Coyote mainstem in 1999 as part of FAHCE Project. FY 06-07: Substrate composition and embeddedness will be visually estimated, concurrent with habitat assessment, at ten sites in Coyote mainstem. Collection of surface/subsurface sediment samples are planned in Coyote mainstem starting in fall 2006 by SCVWD as part of Mid-Coyote Flood Control Project. 	SCVURPPP/ SCVWD
	Channel Dynamics and Hydrology					<ul style="list-style-type: none"> Baseline: Historical ecology study was conducted in the Coyote Creek watershed by SFEI in 2005-06. FY 06-07: Longitudinal profiles, suspended and bedload sediment sampling, and bankfull discharge measurements will be measured by SCVWD as part of Mid-Coyote Flood Control Project. 	SCVWD

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		1st	2nd	3rd	4th		
	Riparian Vegetation					<ul style="list-style-type: none"> Baseline: Bankside and canopy cover was estimated as part of FAHCE Project (1999). FY 06-07: Bankside cover, canopy cover and qualitative assessment of riparian vegetation will be conducted in fall 2006 by SCVWD as part of Mid-Coyote Flood Control Project. 	SCVWD
Stevens Creek	<i>Chemical</i>						
	Contaminants – Water Quality	S (2)		S (2)		<ul style="list-style-type: none"> Baseline: Screening level monitoring of dissolved and total metals and organophosphate pesticides concentrations was conducted by SCVURPPP during FY 05-06 at two sites synoptically with toxicity testing during dry and wet seasons. Metals and pesticides were also measured in 2003 by RWQCB as part of SWAMP. FY 06-07: Continue screening level monitoring of dissolved and total metals and organophosphate pesticides concentrations at two sites during dry and wet seasons. 	SCVURPPP
	General Water Quality	S (2)		S (2)	S (7)	<ul style="list-style-type: none"> Baseline: Screening level measurements of general water quality was conducted by SCVURPPP synoptically with water chemistry (2 sites) and BMI bioassessment (6 sites) in FY 05-06. General water quality sampling (both probe and continuous) was conducted in 2002-03 by RWQCB at three sites during three seasonal time periods. FY 06-07: Screening level measurements of general water quality will be conducted synoptically with water chemistry (2 sites) and bioassessment sampling (7 sites). 	SCVURPPP
	<i>Biological</i>						
	Toxicity - Water Quality	S (2)		S (2)		<ul style="list-style-type: none"> Baseline: Toxicity of water was conducted by SCVURPPP at two sites in FY 05-06 during dry and wet season synoptically with water chemistry samples. Water toxicity testing was also conducted in 2002-03 by RWQCB at two sites during three seasonal time periods. FY 06-07: Toxicity of water will be conducted at two sites during dry and wet season, synoptically with water chemistry sampling. 	SCVURPPP
	Pathogen Indicator Organisms	S (2)		S (2)		<ul style="list-style-type: none"> Baseline: Screening level monitoring of bacterial indicators was conducted by SCVURPPP in FY 05-06 at two sites during two seasonal time periods. FY 06-07: Continue screening level monitoring of bacterial indicators at two sites during two seasonal time periods. 	SCVURPPP
Bioassessment - Macroinvertebrates				S (7)	<ul style="list-style-type: none"> Baseline: BMI bioassessment study was conducted at seven sites during spring season of FY 05-06. BMI bioassessments were also conducted in Stevens Creek during April 2002 by RWQCB at eight sites and by USGS in spring and fall 1997 at seven sites. FY 06-07: Continue BMI bioassessment study at seven sites during spring season. 	SCVURPPP	

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Watershed Area	Data Type ²	Quarter in FY 06-07				Rationale	Lead Agency
		1st	2nd	3rd	4th		
	Bioassessment - Fish					<ul style="list-style-type: none"> Baseline: Fish surveys were conducted at five stream locations between 1994 and 1996 by Rob Leidy. Additional fish survey information was collected by the SCVWD at selected locations between 1998 and 2000. FY 06-07: No sampling is planned. 	SCVURPPP
	<i>Physical</i>						
	Physical Habitat				S (7)	<ul style="list-style-type: none"> Baseline: Visual physical habitat assessments, concurrent with macroinvertebrate sampling, were conducted in April 2006 at six sites by SCVURPPP, and at eight sites by RWQCB in April 2002. FY 06-07: Visual physical habitat assessments will be conducted, concurrent with macroinvertebrate sampling, at six sites. 	SCVURPPP
	Sediment Characterization				S (7)	<ul style="list-style-type: none"> Baseline: Substrate composition and embeddedness was visually estimated in April 2006 by SCVURPPP at six sites and in 2002 by RWQCB at eight sites. FY 06-07: Substrate composition and embeddedness will be visually estimated, concurrent with habitat assessment, at six sites. 	SCVURPPP
	Channel Dynamics and Hydrology					<ul style="list-style-type: none"> Baseline: Geomorphic assessment conducted in 2004 as part of SCVWD Stream Stewardship Project. FY 06-07: Monitoring objectives have not been identified at this time. 	SCVURPPP
	Riparian Vegetation					<ul style="list-style-type: none"> Baseline: Bankside and canopy cover was estimated as part of FAHCE Project (1999). FY 06-07: Specific monitoring objectives have not been identified at this time. 	SCVURPPP
Permanente Creek	<i>Chemical</i>						
		S (2)		S (2)		<ul style="list-style-type: none"> Baseline: Screening level monitoring of dissolved and total metals and organophosphate pesticides concentrations was measured at two sites in FY 05-06 by SCVURPPP during dry and wet seasons. Dissolved and total metals and pesticide suite were also measured in 2002 and 2003 by RWQCB at two sites during three seasonal time periods. FY 06-07: Continue screening level monitoring of dissolved and total metals and organophosphate pesticides concentrations at two sites during dry and wet seasons. 	SCVURPPP
	General Water Quality	S (2)		S (2)	S (6)	<ul style="list-style-type: none"> Baseline: Screening level measurements of general water quality was conducted synoptically with water chemistry (2 sites) and bioassessment sampling (5 sites). General water quality sampling (both probe and continuous) was conducted in 2002 and 2003 by RWQCB at two sites during three seasonal time periods. FY 06-07: Continue screening level measurements of general water quality during water chemistry (2 sites) and bioassessment sampling (6 sites). 	SCVURPPP

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Watershed Area	Data Type ²	Quarter in FY 06-07				Rationale	Lead Agency
		1st	2nd	3rd	4th		
<i>Biological</i>							
	Toxicity - Water Quality					<ul style="list-style-type: none"> Baseline: Toxicity of water was conducted at two sites in FY 05-06 by SCVURPPP during dry and wet season. Water toxicity testing was conducted in 2002 and 2003 by RWQCB at two sites during three seasonal time periods. FY 06-07: No toxicity testing is planned. 	SCVURPPP
	Pathogen Indicator Organisms					<ul style="list-style-type: none"> Baseline: Screening level monitoring of bacterial indicators was conducted by SCVURPPP in FY 05-06 at two sites during two seasonal time periods. FY 06-07: No monitoring of bacterial indicators is planned. 	SCVURPPP
	Bioassessment - Macroinvertebrates				S (6)	<ul style="list-style-type: none"> Baseline: BMI bioassessment study was conducted at six sites in April 2006 by SCVURPPP and at seven sites by RWQCB in April 2002. FY 06-07: Conduct benthic macroinvertebrate bioassessment at six sites in April 2007. 	SCVURPPP
	Bioassessment - Fish					<ul style="list-style-type: none"> Baseline: Fish bioassessments were conducted at four sites in October 2005 by SCVURPPP. Previous fish surveys were conducted at two stream locations between 1994 and 1996 by Rob Leidy. FY 06-07: No fish bioassessment monitoring is planned. 	SCVURPPP
<i>Physical</i>							
	Physical Habitat				S (6)	<ul style="list-style-type: none"> Baseline: Visual physical habitat assessment was conducted at six sites in April 2006 by SCVURPPP and at seven sites in April 2002 by RWQCB. FY 06-07: Visual physical habitat assessment will be conducted, concurrent with macroinvertebrate sampling, at six sites. 	SCVURPPP
	Sediment Characterization				S (6)	<ul style="list-style-type: none"> Baseline: Substrate composition and embeddedness was visually estimated at five sites in April 2006 by SCVURPPP at seven sites in April 2002 by RWQCB. FY 06-07: Substrate composition and embeddedness will be visually estimated, concurrent with habitat assessment, at five sites. 	SCVURPPP
	Channel Dynamics and Hydrology					<ul style="list-style-type: none"> Baseline: Existing channel conditions downstream of Foothill Expressway described by SCVWD as part of flood planning study. FY 06-07: Monitoring objectives have not been identified at this time. 	SCVURPPP
	Riparian Vegetation					<ul style="list-style-type: none"> Baseline: No existing data sources identified. FY 06-07: Monitoring objectives have not been identified at this time. 	SCVURPPP

¹ Parameter types are listed with category of monitoring design, which include: (S) screening level, (I) investigative, and (T) status and trends. The number in parentheses represents the number of sampling locations for that sampling period. Sampling locations are described in separate table and figure attached to Plan.

² Description of analyses conducted for each data type is described in the footnotes below. In some cases, partial analyses may be implemented for data types when existing data satisfies screening level target. Standard analytical methods are indicated in separate table attached to Plan; methods are intended to be congruent with SWAMP/RMAS methodology.

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- 3 Water Chemistry: Total and dissolved metals (Al, Cr, Mn, Ni, Cu, Zn, Ag, Cd, Pb, As, Se), Hg and organophosphate pesticides; sampling conducted during dry and wet seasons (summer/fall and winter/spring).
- 4 Sediment Chemistry: Total metals (Al, Cr, Mn, Ni, Cu, Zn, Ag, Cd, Pb, As, Se), Hg, PCBs and pyrethroids; sampling conducted during dry and spring seasons.
- 5 General Water Quality: Temperature, dissolved oxygen, pH and specific conductance (multiparameter probe readings and/or continuous measurements); sampling conducted during dry and wet seasons.
- 6 Sediment Toxicity: Sediment bioassays on *Hyella azteca*.
- 7 Pathogen Indicator Organisms: total and fecal coliform, *Enterococcus*, and *E. coli*; sampling conducted during dry and wet seasons.
- 8 Bioassessment - Macroinvertebrates: following CSBP methodology and conducted in the spring season.
- 9 Bioassessment – Fish: Rapid assessment of fish communities will be done using EPA Rapid Bioassessment Protocols; sampling conducted in the fall season.
- 10 Habitat survey physical habitat assessment using CSBP methodology.
- 11 Creek substrate sediment composition and embeddedness is qualitatively estimated by visual observation during bioassessment and habitat survey.
- 12 Toxicity Testing: Aquatic bioassays on three species: (1) Ceriodaphnia: 7 day survival and reproduction; (2) pimephales 7-day; and (3) selenastrum test; toxicity conducted during dry and wet seasons.

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Table 4-2. Sampling locations, frequency and data types for SCVURPPP's FY 06-07 monitoring plan.

Station Id	Station Name	Sediment Chemistry	Sediment Toxicity	Water Chemistry	Water Toxicity	General Water Quality	Pathogen Indicators	Benthic Macroinvertebrate Bioassessment	Physical Habitat Assessment
<i>Coyote Creek</i>									
COY-1	Coyote Creek at Montague Expressway	2	2			3		1	1
COY-2	Coyote Creek downstream Berryessa Rd	2		2		3		1	1
COY-3	Coyote Creek at Watson Park					1	2	1	1
COY-4	Coyote Creek at William Street Park	2	2			3	2	1	1
COY-5	Coyote Creek upstream Story Road			2		3	2	1	1
COY-6	Coyote Creek at Yerba Buena	2	2			3	2	1	1
COY-7	Coyote Creek at Silver Creek Valley Rd	2				1		1	1
COY-8	Coyote Creek at Metcalf Rd	2				1		1	1
COY-9	Coyote Creek at Miramonte	2				1		1	1
COY-10	Coyote Creek at Cochrane	2	2			3		1	1
<i>Stevens Creek</i>									
SV-1	Stevens Creek at La Avenida					1		1	1
SV-2	Stevens Creek downstream Diversion Channel					1		1	1

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Table 4-2. Sampling locations, frequency and data types for SCVURPPP's FY 06-07 monitoring plan.

Station Id	Station Name	Sediment Chemistry	Sediment Toxicity	Water Chemistry	Water Toxicity	General Water Quality	Pathogen Indicators	Benthic Macroinvertebrate Bioassessment	Physical Habitat Assessment
SV-3	Stevens Creek at Barranca			2	2	3		1	1
SV-3.5	Stevens Creek at Stevens Creek Blvd			2	2	3		1	1
SV-4	Stevens Creek at Blackberry Farm						2		
SV-5	Stevens Creek at McClellan Ranch						2		
SV-6	Stevens Creek at USGS Gage Station					1		1	1
SV-7	Stevens Creek at Mossrock					1		1	1
SV-8	Stevens Creek at Upper Stevens Cr County Park					1		1	1
<i>Permanente Creek</i>									
P-1	Permanente Creek at Charleston			2		3		1	1
P-2	Permanente Creek at Barbara Ave					1		1	1
P-3	Permanente Creek at Fremont Ave					1		1	1
P-4	Permanente Creek upstream I-280					1		1	1
P-5	Permanente Creek at Rancho San Antonio park			2		3		1	1

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Station Id	Station Name	Sediment Chemistry	Sediment Toxicity	Water Chemistry	Water Toxicity	General Water Quality	Pathogen Indicators	Benthic Macroinvertebrate Bioassessment	Physical Habitat Assessment
P-6	West Branch Permanente Creek at Open Space					1		1	1
Total Number Samples		16	8	12	4	43	12	23	23

Sediment Chemistry: Total metals (Al, Cr, Mn, Ni, Cu, Zn, Ag, Cd, Pb, As, Se), Hg, PCBs and pyrethroids; sampling conducted during dry and spring seasons.

Sediment Toxicity: Sediment bioassays on *Hyella azteca*.

Water Chemistry: Total and dissolved metals (Al, Cr, Mn, Ni, Cu, Zn, Ag, Cd, Pb, As, Se), Hg and organophosphate pesticides; sampling conducted during dry and wet seasons (summer/fall and winter/spring).

Water Toxicity: Aquatic bioassays on three species: (1) *Ceriodaphnia*: 7 day survival and reproduction; (2) pimephales 7-day; and (3) selenastrum test; toxicity conducted during dry and wet seasons.

General Water Quality: Temperature, dissolved oxygen, pH and specific conductance (multiparameter probe readings and/or continuous measurements); sampling conducted during dry and wet seasons.

Pathogen Indicators: total and fecal coliform, *Enterococcus*, and *E. coli*; sampling conducted during dry and wet seasons.

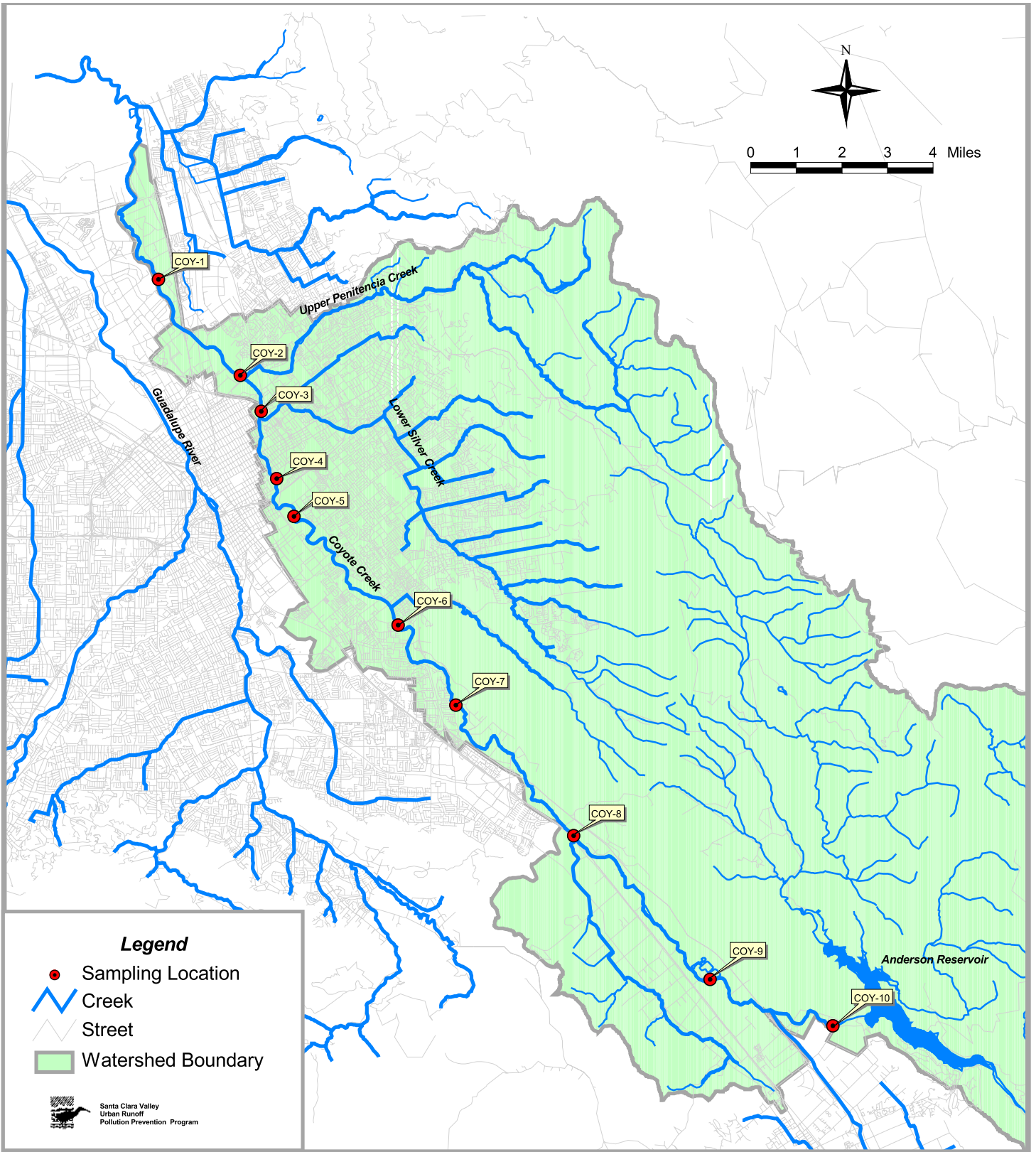
Bioassessment - Macroinvertebrates: following CSBP methodology and conducted in the spring season.

Physical Habitat Assessment: survey physical habitat assessment using CSBP methodology.

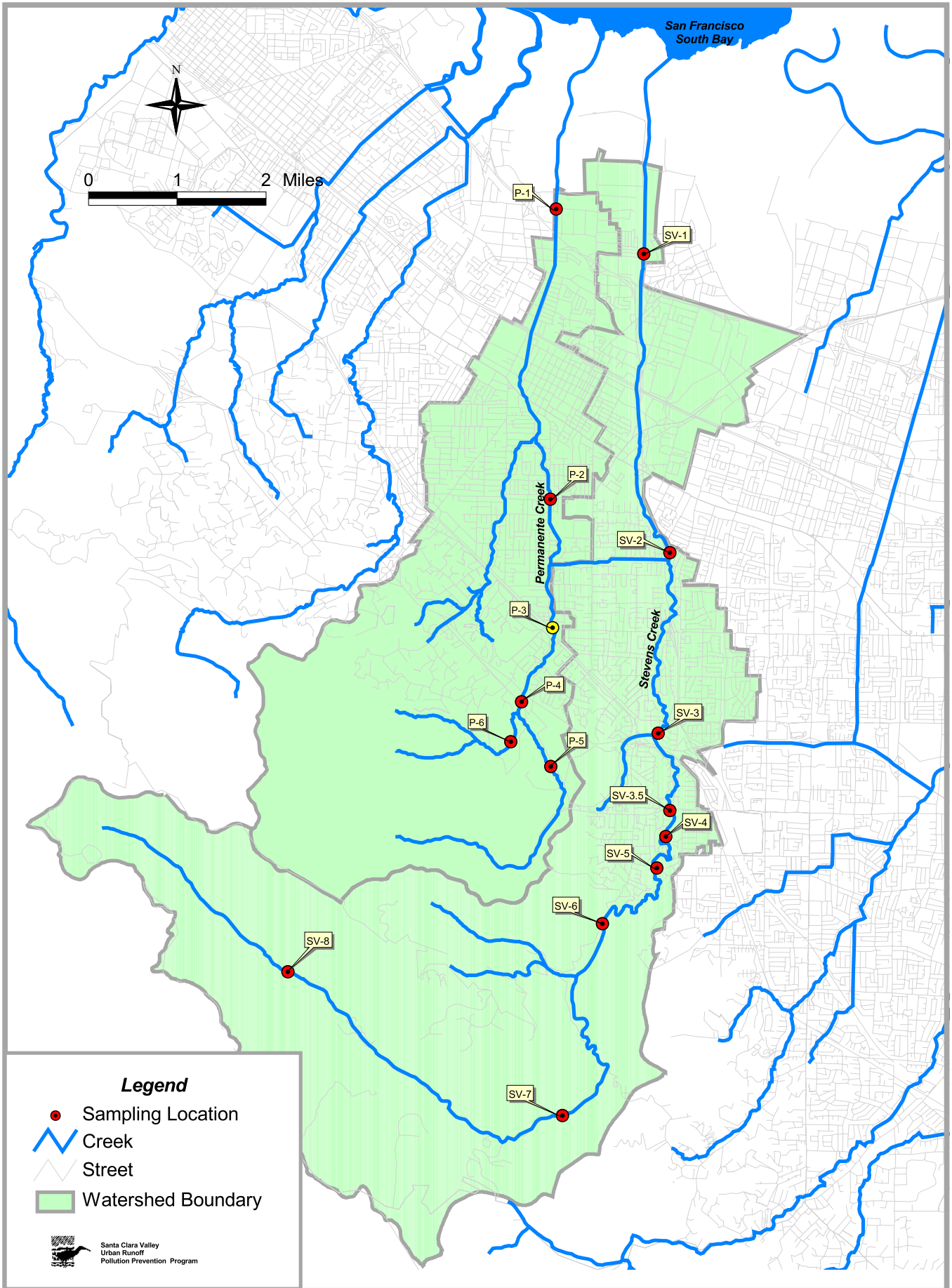
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Table 4-3. Analytical methods used in SCVURPPP Multi-Year Monitoring Plan.

Description of data parameters	Analytical Methods
<i>Water Chemistry</i>	
Pesticides (water) - Organophosphate suite	EPA 8141A
ICPMS metals suite (water)--unfiltered "total" (Includes Al, Cr, Mn, Ni, Cu, Zn, Ag, Cd, Pb, As, Se)	EPA 200.8, 206.3TR, 270.3
ICPMS metals suite (water)--filtered "dissolved" (Includes Al, Cr, Mn, Ni, Cu, Zn, Ag, Cd, Pb, As, Se)	EPA 200.8, 206.3D, 270.3
Total mercury (water)	EPA 245.7
Boron	EPA 200.8
Hardness	EPA 130.2
<i>Sediment Chemistry</i>	
Pyrethroid Pesticides (sediment)	EPA 8270C(SIM)
PCBs (sediment) - Congeners	EPA 8270C(m)
PBDEs (sediment)	EPA 8270C(m)
ICPMS metals suite (sediment) (Includes Al, Cr, Mn, Ni, Cu, Zn, Ag, Cd, Pb, As)	EPA 6020
Total mercury (sediment)	EPA 245.7/1631M
Percent moisture (sediment)	EPA 160.3
TOC (sediment)	EPA 9060
Sediment grain size - full analysis (phi scale)	Plumb/PSEP
<i>Bacterial Indicators</i>	
Total coliform	SM 9221B&E
Fecal coliform	SM 9221B&E
<i>E. coli</i>	SM 9221B&E
<i>Enterococcus</i>	EPA 1600
<i>Toxicity Testing</i>	
<i>Ceriodaphnia 7-day Survival & Reproduction</i>	EPA-821-R-02-013
<i>Pimephales (fathead minnow) 7 - day</i>	EPA-821-R-02-013
<i>Selenastrum (algae) test</i>	EPA-821-R-02-013
<i>Hyella azteca (10 day Survival & Growth)</i>	EPA-600-R-99-064



Attachment 4-1 Figure 4-1. SCVURPPP FY 06-07 Sampling Site Locations in Coyote Creek Watershed.



Attachment 4-1 Figure 4-2. SCVURPPP FY 06-07 Sampling Site Locations in Stevens and Permanente Creek Watersheds