

## Attachment 4-1

**Table 4-1. FY 07-08 SCVURPPP monitoring plan for Santa Clara Basin Watersheds<sup>1</sup>.**

Watershed Area	Data Type <sup>2</sup>	Quarter in FY 07-08				Rationale	Lead Agency
		1st	2nd	3rd	4th		
<i>Coyote Creek</i>	<b>Chemical</b>						
	Contaminants-Sediment <sup>3</sup>				S(10)	<ul style="list-style-type: none"> <li>Baseline: Metal concentrations were measured in sediment samples in Coyote Creek during dry season in 1999 at nine stream locations 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. Metal, PCBs and pyrethroids concentrations were measured by SCVURPPP during dry and spring season in FY 06-07 at eight sites.</li> <li>FY 07-08: Conduct second year of screening level monitoring of metals, PCBs and pyrethroids at ten stream locations during spring season. TOC, percent solids and sediment grain size will be measured synoptically.</li> </ul>	SCVURPPP
	General Water Quality <sup>4</sup>				S(20)	<ul style="list-style-type: none"> <li>Baseline: General water quality sampling was measured in Coyote Creek during summer season in 1999-2001 at eight stream locations. Continuous temperature monitoring conducted by SCVWD as part of FAHCE and Mid-Coyote Flood Control Projects. General water quality was measured using probes during sediment sampling (8 sites) and bioassessment sampling (10 sites) in FY 06-07.</li> <li>FY 07-08: Conduct second year of screening level measurements of general water quality using probes during sediment sampling (ten sites) and bioassessment (ten sites). Continuous temperature monitoring will be conducted by SCVWD as part of Mid-Coyote Flood Control Project.</li> </ul>	SCVURPPP/ SCVWD
	<b>Biological</b>						
Toxicity-Sediment <sup>5</sup>				S(10)	<ul style="list-style-type: none"> <li>Baseline: Sediment toxicity testing was conducted in FY 06-07 by SCVURPPP during dry and spring season at six sites.</li> <li>FY 07-08: Conduct second year of sediment toxicity testing at ten sites during spring season, synoptically with sediment chemistry sampling.</li> </ul>	SCVURPPP	
Pathogen Indicator Organisms <sup>6</sup>	S (4)			S (4)	<ul style="list-style-type: none"> <li>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. Bacterial indicator concentrations were measured by SCVURPPP during dry and spring season in FY 06-07 at four stream sites.</li> <li>FY 07-08: Conduct second year of monitoring of bacterial indicators at four stream sites located in city and county parks during summer and spring season.</li> </ul>	SCVURPPP	

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**Table 4-1. FY 07-08 SCVURPPP monitoring plan for Santa Clara Basin Watersheds<sup>1</sup>.**

Watershed Area	Data Type <sup>2</sup>	Quarter in FY 07-08				Rationale	Lead Agency
		1st	2nd	3rd	4th		
	Bioassessment – Macroinvertebrates <sup>7</sup>				S(10)	<ul style="list-style-type: none"> <li>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. BMI bioassessment is planned by SCVURPPP in spring season during FY 06-07 at 10 sites.</li> <li>FY 07-08: Conduct second year of benthic macroinvertebrate bioassessment at ten sites synoptically with physical habitat assessment. BMI sampling will occur at all sediment sampling sites.</li> </ul>	SCVURPPP
	Bioassessment – Fish					<ul style="list-style-type: none"> <li>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.</li> <li>FY 07-08: Fish community sampling is planned during summer and fall season 2007 in the Coyote mainstem by SCVWD as part of Mid-Coyote Flood Control Project.</li> </ul>	SCVWD
<b><i>Physical</i></b>							
	Physical Habitat <sup>8</sup>				S(10)	<ul style="list-style-type: none"> <li>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. Aquatic habitat surveys were conducted in Coyote mainstem during summer 2006 by SCVWD as part of Mid-Coyote Flood Control Project.</li> <li>FY 07-08: Conduct second year visual physical habitat assessment, concurrent with macroinvertebrate sampling, at ten sites.</li> </ul>	SCVURPPP
	Sediment Characterization <sup>9</sup>				S(10)	<ul style="list-style-type: none"> <li>Baseline: Substrate composition and embeddedness was visually estimated in Coyote mainstem in 1999 as part of FAHCE Project. Collection of surface/subsurface sediment samples was conducted in Coyote mainstem in summer 2006 by SCVWD as part of Mid-Coyote Flood Control Project.</li> <li>FY 07-08: Substrate composition and embeddedness will be visually estimated, concurrent with habitat assessment, at ten sites in Coyote mainstem.</li> </ul>	SCVURPPP/ SCVWD

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Watershed Area	Data Type <sup>2</sup>	Quarter in FY 07-08				Rationale	Lead Agency
		1st	2nd	3rd	4th		
	Channel Dynamics and Hydrology					<ul style="list-style-type: none"> <li>Baseline: Historical ecology study was conducted in the Coyote Creek watershed by SFEI in 2005-06. Longitudinal profiles, suspended and bedload sediment sampling and bankfull discharge measurements was measured during summer 2006 by the SCVWD as part of Mid-Coyote Flood Control Project.</li> <li>FY 07-08: Sediment sampling to determine bed load and suspended sediment rating curves will be conducted by the SCVWD as part of Mid-Coyote Flood Control Project.</li> </ul>	SCVWD
<i>Upper Penitencia Creek</i>	<b>Chemical</b>						
	Contaminants-Sediment				S (4)	<ul style="list-style-type: none"> <li>Baseline: Metals, organochlorine pesticide suite, PCB and PAH concentrations were measured in sediment samples collected at one stream location during summer season in FY 02-03.</li> <li>FY 07-08: Conduct screening level monitoring of metals, PCBs and pyrethroids at four stream locations during spring season. TOC, percent solids and sediment grain size will be measured synoptically.</li> </ul>	SCVURPPP
	General Water Quality				S(10)	<ul style="list-style-type: none"> <li>Baseline: Screening level measurements of general water quality was conducted by SCVURPPP in FY 02-03 synoptically with water chemistry (3 sites) and BMI bioassessment (6 sites). Continuous temperature monitoring conducted by SCVWD from 1999 to present.</li> <li>FY 07-08: Conduct screening level measurements of general water quality using probes during sediment sampling (four sites) and bioassessment (six sites).</li> </ul>	SCVURPPP
	<b>Biological</b>						
	Toxicity-Sediment				S (4)	<ul style="list-style-type: none"> <li>Baseline: No baseline data currently exists.</li> <li>FY 07-08: Conduct testing of sediment toxicity at four sites during spring season, synoptically with sediment chemistry sampling.</li> </ul>	SCVURPPP
	Pathogen Indicator Organisms	S (3)			S (3)	<ul style="list-style-type: none"> <li>Baseline: Screening level monitoring of bacterial indicators was conducted by SCVURPPP during three seasonal time periods in FY 02-03 at three sites.</li> <li>FY 07-08: Conduct screening level monitoring of bacterial indicators during summer and spring season at three stream sites located in city and county parks.</li> </ul>	SCVURPPP
Bioassessment - Macroinvertebrates				S (6)	<ul style="list-style-type: none"> <li>Baseline: Benthic macroinvertebrate (BMI) bioassessments were conducted at seven sites during 1997 as part of USGS study. BMI bioassessments were conducted by SCVURPPP during April 2003 at six sites.</li> <li>FY 07-08: Conduct benthic macroinvertebrate bioassessment at six sites synoptically with physical habitat assessment. BMI sampling will occur at all sediment sampling sites.</li> </ul>	SCVURPPP	

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**Table 4-1. FY 07-08 SCVURPPP monitoring plan for Santa Clara Basin Watersheds<sup>1</sup>.**

Watershed Area	Data Type <sup>2</sup>	Quarter in FY 07-08				Rationale	Lead Agency
		1st	2nd	3rd	4th		
	<i>Physical</i>						
	Bioassessment – Fish					<ul style="list-style-type: none"> <li>Baseline: Existing fish survey data were collected in Upper Penitencia Creek by Stacy Li (2000) and Stillwater Sciences (2005).</li> <li>FY 07-08: Fish community sampling is planned during summer and fall season 2007 in Upper Penitencia Creek by SCVWD as part of Mid-Coyote Flood Control Project.</li> </ul>	SCVWD
	Physical Habitat				S (6)	<ul style="list-style-type: none"> <li>Baseline: Continuous aquatic habitat survey was conducted in 1999 as part of FAHCE Project by SCVWD.</li> <li>FY 07-08: Conduct visual physical habitat assessment, concurrent with macroinvertebrate sampling, at six sites.</li> </ul>	SCVURPPP
	Sediment Characterization				S (6)	<ul style="list-style-type: none"> <li>Baseline: Substrate composition and embeddedness was visually estimated in Coyote mainstem in 1999 as part of FAHCE Project. Collection of surface/subsurface sediment samples was conducted in 2005 as part of SCVWD geomorphic survey.</li> <li>FY 07-08: Substrate composition and embeddedness will be visually estimated, concurrent with habitat assessment, at six sites.</li> </ul>	SCVURPPP
	Channel Dynamics and Hydrology					<ul style="list-style-type: none"> <li>Baseline: Channel morphology and hydrology data collected by SCVWD as part of Upper Penitencia Creek Flood Control Project.</li> <li>FY 07-08: Monitoring channel morphology and hydrology is not planned.</li> </ul>	SCVURPPP
<i>Lower Silver -Thompson Creek</i>	<i>Chemical</i>						
	Contaminants-Sediment				S (4)	<ul style="list-style-type: none"> <li>Baseline: Metals, organochlorine pesticide, PCB and PAH concentrations were measured in sediment samples collected at one stream location during summer season in FY 02-03.</li> <li>FY 07-08: Conduct screening level monitoring of metals, PCBs and pyrethroids at four stream locations during spring season. TOC, percent solids and sediment grain size will be measured synoptically.</li> </ul>	SCVURPPP
	General Water Quality				S(10)	<ul style="list-style-type: none"> <li>Baseline: Screening level measurements of general water quality was conducted by SCVURPPP synoptically with water chemistry (3 sites) and BMI bioassessment (4 sites) in FY 02-03.</li> <li>FY 07-08: Conduct screening level measurements of general water quality using probes during sediment sampling (four sites) and bioassessment (six sites).</li> </ul>	SCVURPPP

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**Table 4-1. FY 07-08 SCVURPPP monitoring plan for Santa Clara Basin Watersheds<sup>1</sup>.**

Watershed Area	Data Type <sup>2</sup>	Quarter in FY 07-08				Rationale	Lead Agency
<b><i>Biological</i></b>							
	Toxicity-Sediment				S (4)	<ul style="list-style-type: none"> <li>Baseline: No baseline data currently exists.</li> <li>FY 07-08: Conduct testing of sediment toxicity during spring season, synoptically with sediment chemistry sampling, at four sites.</li> </ul>	SCVURPPP
	Pathogen Indicator Organisms	S (3)			S (3)	<ul style="list-style-type: none"> <li>Baseline: Screening level monitoring of bacterial indicators was conducted by SCVURPPP during three seasonal time periods in FY 02-03 at three sites.</li> <li>FY 07-08: Conduct screening level monitoring of bacterial indicators located in city and county parks during summer and spring season at three stream sites.</li> </ul>	SCVURPPP
	Bioassessment - Macroinvertebrates				S (6)	<ul style="list-style-type: none"> <li>Baseline: BMI bioassessments were conducted by SCVURPPP in Thompson Creek during April 2003 at four sites.</li> <li>FY 07-08: Conduct benthic macroinvertebrate bioassessment at six sites synoptically with physical habitat assessment. BMI sampling will occur at all sediment sampling sites.</li> </ul>	SCVURPPP
	Bioassessment – Fish					<ul style="list-style-type: none"> <li>Baseline: No existing baseline fish community data.</li> <li>FY 07-08: Fish community sampling is planned during summer and fall season 2007 in Lower Silver Creek by SCVWD as part of Mid-Coyote Flood Control Project.</li> </ul>	SCVWD
<b><i>Physical</i></b>							
	Physical Habitat				S (6)	<ul style="list-style-type: none"> <li>Baseline: No baseline data exists.</li> <li>FY 07-08: Conduct visual physical habitat assessment, concurrent with macroinvertebrate sampling, at six sites.</li> </ul>	SCVURPPP
	Sediment Characterization				S (6)	<ul style="list-style-type: none"> <li>Baseline: No baseline data exists.</li> <li>FY 07-08: Substrate composition and embeddedness will be visually estimated, concurrent with habitat assessment, at six sites.</li> </ul>	SCVURPPP
	Channel Dynamics and Hydrology					<ul style="list-style-type: none"> <li>Baseline: Channel morphology and hydrology data collected by SCVWD as part of Lake Cunningham Flood Control Project.</li> <li>FY 07-08: Monitoring channel morphology and hydrology is not planned.</li> </ul>	SCVURPPP

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Watershed Area	Data Type <sup>2</sup>	Quarter in FY 07-08				Rationale	Lead Agency
<b>Lower Penitencia Creek</b>	<b>Chemical</b>						
	Contaminants-Sediment				S (5)	<ul style="list-style-type: none"> <li>Baseline: Metals, organochlorine pesticide, PCB and PAH concentrations were measured in sediment samples collected at one location in Lower Penitencia and one location in Berryessa Creek during summer season in FY 02-03.</li> <li>FY 07-08: Conduct screening level monitoring of metals, PCBs and pyrethroids at five stream locations during spring season. TOC, percent solids and sediment grain size will be measured synoptically.</li> </ul>	SCVURPPP
	General Water Quality				S(10)	<ul style="list-style-type: none"> <li>Baseline: Screening level measurements of general water quality was conducted by SCVURPPP synoptically with water chemistry (5 sites) in FY 02-03.</li> <li>FY 07-08: Conduct screening level measurements of general water quality using probes during sediment sampling (five sites) and bioassessment (five sites).</li> </ul>	SCVURPPP
	<b>Biological</b>						
	Toxicity-Sediment				S (5)	<ul style="list-style-type: none"> <li>Baseline: No baseline data currently exists.</li> <li>FY 07-08: Conduct testing of sediment toxicity at five sites during spring season, synoptically with sediment chemistry sampling.</li> </ul>	SCVURPPP
	Pathogen Indicator Organisms	S (1)			S (1)	<ul style="list-style-type: none"> <li>Baseline: Screening level monitoring of bacterial indicators was conducted by SCVURPPP at three sites during three seasonal time periods in FY 02-03.</li> <li>FY 07-08: Conduct screening level monitoring of bacterial indicators located in city and county parks during summer and spring season at one stream site.</li> </ul>	SCVURPPP
	Bioassessment - Macroinvertebrates				S (5)	<ul style="list-style-type: none"> <li>Baseline: BMI bioassessments were conducted at four sites in Thompson Creek during April 2003 by SCVURPPP.</li> <li>FY 07-08: Conduct benthic macroinvertebrate bioassessment at five sites synoptically with physical habitat assessment. BMI sampling will occur at all sediment sampling sites.</li> </ul>	SCVURPPP
	<b>Physical</b>						
	Physical Habitat				S (5)	<ul style="list-style-type: none"> <li>Baseline: No baseline data exists.</li> <li>FY 07-08: Conduct visual physical habitat assessment, concurrent with macroinvertebrate sampling, at five sites.</li> </ul>	SCVURPPP
	Sediment Characterization				S (5)	<ul style="list-style-type: none"> <li>Baseline: No baseline data exists.</li> <li>FY 07-08: Substrate composition and embeddedness will be visually estimated, concurrent with habitat assessment, at five sites.</li> </ul>	SCVURPPP
Channel Dynamics and Hydrology					<ul style="list-style-type: none"> <li>Baseline: Channel morphology and hydrology data collected by SCVWD as part of Lower Penitencia and Berryessa Creek Flood Control Projects.</li> <li>FY 07-08: Monitoring channel morphology and hydrology is not planned.</li> </ul>	SCVURPPP	

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### Table 4-1. FY 07-08 SCVURPPP monitoring plan for Santa Clara Basin Watersheds<sup>1</sup>.

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.

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

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

5 Sediment Toxicity: Sediment bioassays on *Hyella azteca*.

6 Pathogen Indicator Organisms: total and fecal coliform, *Enterococcus*, and *E. coli*; sampling conducted during dry and spring seasons.

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

8 Habitat survey physical habitat assessment using CSBP methodology.

9 Creek substrate sediment composition and embeddedness is qualitatively estimated by visual observation during bioassessment and habitat survey.

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**Table 4-2. Sampling locations, frequency and data types for SCVURPPP's FY 07-08 monitoring plan.**

Station Id	Station Name	Sediment Chemistry	Sediment Toxicity	General Water Quality	Pathogen Indicators	Benthic Macroinvertebrate Bioassessment	Physical Habitat Assessment
<b>Coyote Creek</b>							
COY-1	Coyote Creek at Montague Expressway	1	1	2		1	1
COY-2	Coyote Creek at Oakland Ave (North Coyote Park)	1	1	2		1	1
COY-3	Coyote Creek at Watson Park	1	1	2		1	1
COY-4	Coyote Creek at William Street (William City Park)	1	1	2	2	1	1
COY-5	Coyote Creek at Story Road (Kelley City Park)	1	1	2	2	1	1
COY-6	Coyote Creek at Yerba Buena (Hellyer County Park)	1	1	2	2	1	1
COY-7	Coyote Creek at Coyote Rd (Shady Oaks City Park)	1	1	2		1	1
COY-7.5	Coyote Creek at Forsum Rd (Metcalf Ponds)				2		
COY-8	Coyote Creek upstream Metcalf Rd (at powerstation)	1	1	2		1	1
COY-9	Coyote Creek above Osier Ponds (Model Airplane Park)	1	1	2		1	1
COY-10	Coyote Creek at Cochrane	1	1	2		1	1
UP-1	Upper Penitencia Creek at Flea Market	1	1	2		1	1

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**Table 4-2. Sampling locations, frequency and data types for SCVURPPP's FY 07-08 monitoring plan.**

Station Id	Station Name	Sediment Chemistry	Sediment Toxicity	General Water Quality	Pathogen Indicators	Benthic Macroinvertebrate Bioassessment	Physical Habitat Assessment
UP-2	Upper Penitencia Creek at Jackson Rd (Penitencia Creek Park)	1	1	2	2	1	1
UP-3	Upper Penitencia Creek at Kyle Street (Penitencia Creek Park)	1	1	2	2	1	1
UP-4	Upper Penitencia Creek at Talent Drive			1		1	1
UP-5	Upper Penitencia Creek at Alum Rock Park at Quail Hollow Bridge	1	1	2	2	1	1
UP-6	Upper Penitencia Creek at Alum Rock Park at Live Oak Bridge			1		1	1
LS-1	Lower Silver Creek at Wooster Ave	1	1	2		1	1
LS-1.5	Lower Silver Creek at McKee (Plata Arroyo Park)				2		
LS-1.75	Lower Silver Creek at San Antonio (Mayfair Park)	1	1	2	2	1	1
LS-2	Lower Silver Creek at Murtha Dr	1	1	2		1	1
T-1	Thompson Creek at Quimby	1	1	2		1	1
T-2	Thompson Creek at Villages Parkway			1		1	1
T-3	Thompson Creek at Meadowlands Lane			1		1	1
<b>Lower Penitencia Creek</b>							
LP-1	Lower Penitencia Creek at Corning Ave.	1	1	2		1	1

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**Table 4-2. Sampling locations, frequency and data types for SCVURPPP's FY 07-08 monitoring plan.**

Station Id	Station Name	Sediment Chemistry	Sediment Toxicity	General Water Quality	Pathogen Indicators	Benthic Macroinvertebrate Bioassessment	Physical Habitat Assessment
B-1	Berryessa Creek at Milpitas Blvd	1	1	2		1	1
B-2	Berryessa Creek at Cropley Ave	1	1	2		1	1
B-3	Berryessa Creek at Messina Dr (Berryessa Creek Park)				2		
CA-1	Calera Creek at Milpitas Blvd	1	1	2		1	1
LC-1	Los Coches Creek along Los Coches Street	1	1	2		1	1
<b>Total Number Samples</b>		<b>23</b>	<b>23</b>	<b>50</b>	<b>20</b>	<b>27</b>	<b>27</b>

**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*.

**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.

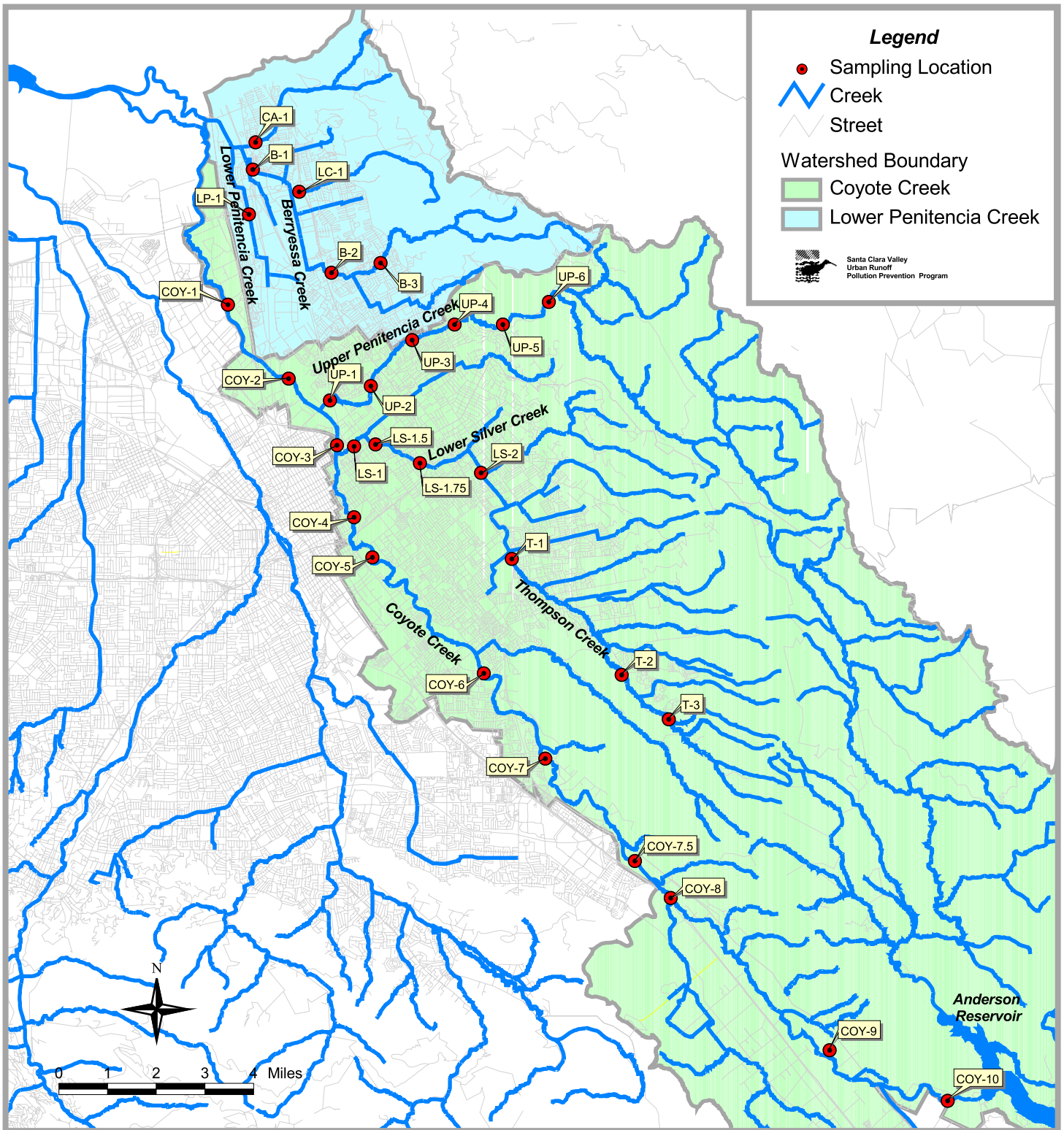
**Bioassessment - Macroinvertebrates:** following CSBP methodology and conducted in the spring season.

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

## Attachment 4-1

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

Description of data parameters	Analytical Methods
<b><i>Sediment Chemistry</i></b>	
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
<b><i>Bacterial Indicators</i></b>	
Total coliform	SM 9221B&E
Fecal coliform	SM 9221B&E
<i>E. coli</i>	SM 9221B&E
<i>Enterococcus</i>	EPA 1600
<b><i>Toxicity Testing</i></b>	
<i>Hyella azteca</i> (10 day Survival & Growth)	EPA-600-R-99-064



Attachment 4-1 Figure 4-1. SCVURPPP FY 07-08 Sampling Site Locations in Coyote and Lower Penitencia Creek Watersheds.