California Department of Fish and Wildlife
San Mateo County
San Mateo Coastal Watersheds
Stream Habitat Assessment Reports

Pilarcitos Creek

Surveyed 2010

Report Completed in 2013

STREAM INVENTORY REPORT

Pilarcitos Creek

INTRODUCTION

A stream inventory was conducted during 9/14/2010 to 10/1/2010 on Pilarcitos Creek. The survey began at the confluence with Pacific Ocean and extended upstream 9.1 miles.

The Pilarcitos Creek inventory was conducted in two parts: habitat inventory and biological inventory. The objective of the habitat inventory was to document the habitat available to anadromous salmonids in Pilarcitos Creek. The objective of the biological inventory was to document the presence and distribution of juvenile salmonid species.

The objective of this report is to document the current habitat conditions and recommend options for the potential enhancement of habitat for coho salmon, and steelhead trout. Recommendations for habitat improvement activities are based upon target habitat values suitable for salmonids in California's north coast streams.

WATERSHED OVERVIEW

Pilarcitos Creek is a tributary to Half Moon Bay, tributary to Pacific Ocean, located in San Mateo County, California (Map 1). Pilarcitos Creek's legal description at the confluence with Pacific Ocean is T05S R05W S30. Its location is 37°28'31.0" north latitude and 122°26'53.0" west longitude, LLID number 1224481374754. Pilarcitos Creek is a fourth order stream and has approximately 54.08 miles of blue line stream according to the USGS National Hydrology Dataset (NHD) quad Half Moon Bay. Pilarcitos Creek drains a watershed of approximately 28.68 square miles. Elevations range from about 0 feet at the mouth of the creek to 2,057 feet in the headwater areas. Grasslands, evergreen forest and shrubland dominate the watershed. The watershed is primarily privately owned. Vehicle access exists via US Highway 1 then west on Venice Boulevard and south on Half Moon Bay Coastal Trail.

METHODS

The habitat inventory conducted in Pilarcitos Creek follows the methodology presented in the *California Salmonid Stream Habitat Restoration Manual* (Flosi et al, 1998). The California Conservation Corps (CCC) Technical Advisors and Watershed Stewards Project/AmeriCorps (WSP) Members that conducted the inventory were trained in standardized habitat inventory methods by the California Department of Fish and Wildlife (CDFW). This inventory was conducted by a two-person team.

SAMPLING STRATEGY

The inventory uses a method that samples approximately 10% of the habitat units within the survey reach. All habitat units included in the survey are classified according to habitat type and

their lengths are measured. All pool units are fully measured. All other habitat unit types encountered for the first time in each reach are measured for all the parameters and characteristics on the field form. Additionally, from the ten habitat units on each field form page, one is randomly selected for complete measurement.

HABITAT INVENTORY COMPONENTS

A standardized habitat inventory form has been developed for use in California stream surveys and can be found in the *California Salmonid Stream Habitat Restoration Manual*. This form was used in Pilarcitos Creek to record measurements and observations. There are eleven components to the inventory form.

1. Flow:

Flow is measured in cubic feet per second (cfs) near the bottom of the stream survey reach using a Marsh-McBirney Model 2000 flow meter.

2. Channel Type:

Channel typing is conducted according to the classification system developed and revised by David Rosgen (1994). This methodology is described in the *California Salmonid Stream Habitat Restoration Manual*. Channel typing is conducted simultaneously with habitat typing and follows a standard form to record measurements and observations. There are five measured parameters used to determine channel type: 1) water slope gradient, 2) entrenchment, 3) width/depth ratio, 4) substrate composition, and 5) sinuosity. Channel characteristics are measured using a clinometer, hand level, hip chain, tape measure, and a stadia rod.

3. Temperatures:

Both water and air temperatures are measured and recorded at every tenth habitat unit. The time of the measurement is also recorded. Both temperatures are taken in degrees Fahrenheit at the middle of the habitat unit and within one foot of the water surface.

4. Habitat Type:

Habitat typing uses the 24 habitat classification types defined by McCain and others (1990). Habitat units are numbered sequentially and assigned a type identification number selected from a standard list of 24 habitat types. Dewatered units are labeled "dry". Pilarcitos Creek habitat typing used standard basin level measurement criteria. These parameters require that the minimum length of a described habitat unit must be equal to or greater than the stream's mean wetted width. All measurements are in feet to the nearest tenth. Habitat characteristics are measured using a clinometer, hip chain, and stadia rod.

5. Embeddedness:

The depth of embeddedness of the cobbles in pool tail-out areas is measured by the percent of

the cobble that is surrounded or buried by fine sediment. In Pilarcitos Creek, embeddedness was ocularly estimated. The values were recorded using the following ranges: 0 - 25% (value 1), 26 - 50% (value 2), 51 - 75% (value 3) and 76 - 100% (value 4). Additionally, a value of 5 was assigned to tail-outs deemed unsuited for spawning due to inappropriate substrate like bedrock, log sills, boulders or other considerations.

6. Shelter Rating:

Instream shelter is composed of those elements within a stream channel that provide juvenile salmonids protection from predation, reduce water velocities so fish can rest and conserve energy, and allow separation of territorial units to reduce density related competition for prey. The shelter rating is calculated for each fully-described habitat unit by multiplying shelter value and percent cover. Using an overhead view, a quantitative estimate of the percentage of the habitat unit covered is made. All cover is then classified according to a list of nine cover types. In Pilarcitos Creek, a standard qualitative shelter value of 0 (none), 1 (low), 2 (medium), or 3 (high) was assigned according to the complexity of the cover. Thus, shelter ratings can range from 0-300 and are expressed as mean values by habitat types within a stream.

7. Substrate Composition:

Substrate composition ranges from silt/clay sized particles to boulders and bedrock elements. In all fully-described habitat units, dominant and sub-dominant substrate elements were ocularly estimated using a list of seven size classes and recorded as a one and two, respectively. In addition, the dominant substrate composing the pool tail-outs is recorded for each pool.

8. Canopy:

Stream canopy density was estimated using modified handheld spherical densiometers as described in the *California Salmonid Stream Habitat Restoration Manual*. Canopy density relates to the amount of stream shaded from the sun. In Pilarcitos Creek, an estimate of the percentage of the habitat unit covered by canopy was made from the center of approximately every third unit in addition to every fully-described unit, giving an approximate 30% sub-sample. In addition, the area of canopy was estimated ocularly into percentages of coniferous or hardwood trees.

9. Bank Composition and Vegetation:

Bank composition elements range from bedrock to bare soil. However, the stream banks are usually covered with grass, brush, or trees. These factors influence the ability of stream banks to withstand winter flows. In Pilarcitos Creek, the dominant composition type and the dominant vegetation type of both the right and left banks for each fully-described unit were selected from the habitat inventory form. Additionally, the percent of each bank covered by vegetation (including downed trees, logs, and rootwads) was estimated and recorded.

10. Large Woody Debris Count:

Large woody debris (LWD) is an important component of fish habitat and an element in channel forming processes. In each habitat unit all pieces of LWD partially or entirely below the elevation of bankfull discharge are counted and recorded. The minimum size to be considered is twelve inches in diameter and six feet in length. The LWD count is presented by reach and is expressed as an average per 100 feet.

11. Average Bankfull Width:

Bankfull width can vary greatly in the course of a channel type stream reach. This is especially true in very long reaches. Bankfull width can be a factor in habitat components like canopy density, water temperature, and pool depths. Frequent measurements taken at riffle crests (velocity crossovers) are needed to accurately describe reach widths. At the first appropriate velocity crossover that occurs after the beginning of a new stream survey page (ten habitat units), bankfull width is measured and recorded in the appropriate header block of the page. These widths are presented as an average for the channel type reach.

BIOLOGICAL INVENTORY

Biological sampling during the stream inventory is used to determine fish species and their distribution in the stream. Fish presence was observed from the stream banks in Pilarcitos Creek. In addition, two sites were electrofished using a Smith-Root Model 12 electrofisher. These sampling techniques are discussed in the *California Salmonid Stream Habitat Restoration Manual*.

DATA ANALYSIS

Data from the habitat inventory form are entered into Stream Habitat 2.0.18, a Visual Basic data entry program developed by Karen Wilson, Pacific States Marine Fisheries Commission in conjunction with the California Department of Fish and Wildlife. This program processes and summarizes the data, and produces the following ten tables:

- Riffle, Flatwater, and Pool Habitat Types
- Habitat Types and Measured Parameters
- Pool Types
- Maximum Residual Pool Depths by Habitat Types
- Mean Percent Cover by Habitat Type
- Dominant Substrates by Habitat Type
- Mean Percent Vegetative Cover for Entire Stream
- Fish Habitat Inventory Data Summary by Stream Reach (Table 8)
- Mean Percent Dominant Substrate / Dominant Vegetation Type for Entire Stream
- Mean Percent Shelter Cover Types for Entire Stream

Graphics are produced from the tables using Microsoft Excel. Graphics developed for Pilarcitos

Creek include:

- Riffle, Flatwater, Pool Habitat Types by Percent Occurrence
- Riffle, Flatwater, Pool Habitat Types by Total Length
- Total Habitat Types by Percent Occurrence
- Pool Types by Percent Occurrence
- Maximum Residual Depth in Pools
- Percent Embeddedness
- Mean Percent Cover Types in Pools
- Substrate Composition in Pool Tail-outs
- Mean Percent Canopy
- Dominant Bank Composition by Composition Type
- Dominant Bank Vegetation by Vegetation Type

HABITAT INVENTORY RESULTS

* ALL TABLES AND GRAPHS ARE LOCATED AT THE END OF THE REPORT *

The habitat inventory of 9/14/2010 to 10/1/2010 was conducted by Bell, C. and Griffin, A (WSP). The total length of the stream surveyed was 47,969 feet with an additional 119 feet of side channel.

Stream flow was measured near the bottom of the survey reach with a Marsh-McBirney Model 2000 flowmeter at 1.31 cfs on September 14, 2010.

Pilarcitos Creek is a NA channel type for 485 feet of the stream surveyed (Reach 1), a F5 channel type for 943 feet of the stream surveyed (Reach 2), a NA channel type for 2,290 feet of the stream surveyed (Reach 3), a F5 channel type for 9,369 feet of the stream surveyed (Reach 4), a NA channel type for 1,400 feet of the stream surveyed (Reach 5), a F4 channel type for 16,612 feet of the stream surveyed (Reach 6), a NA channel type for 1,010 feet of the stream surveyed (Reach 7), a F4 channel type for 4,303 feet of the stream surveyed (Reach 8), a NA channel type for 1,455 feet of the stream surveyed (Reach 9), a F4 channel type for 4,877 feet of the stream surveyed (Reach 10), a B3 channel type for 2,517 feet of the stream surveyed (Reach 11) and a A3 channel type for 2,708 feet of the stream surveyed (Reach 12).

F5 channels are entrenched, meandering, riffle/pool channels on low gradients with high width/depth ratios and sand dominant substrates. F4 channels are entrenched, meandering, riffle/pool channels on low gradients with high width/depth ratios and gravel dominant substrates. B3 channels are moderately entrenched, riffle dominated channels with infrequently spaced pools, very stable plan and profile, stable banks on moderate gradients and cobble dominant substrates. A3 channels are steep, narrow, cascading, step-pool, high energy debris transporting channels associated with depositional soils, and cobble dominant substrates.

Water temperatures taken during the survey period ranged from 55 to 62 degrees Fahrenheit. Air temperatures ranged from 52 to 71 degrees Fahrenheit.

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Table 1 summarizes the Level II riffle, flatwater, and pool habitat types. Based on frequency of occurrence there were 1% nosurvey units, 3% culvert units, 36% flatwater units, 29% riffle units and 31% pool units (Graph 1). Based on total length of Level II habitat types there were 14% nosurvey units, 1% culvert units, 42% flatwater units, 27% riffle units and 16% pool units (Graph 2).

Eighteen Level IV habitat types were identified (Table 2). The most frequent habitat types by percent occurrence were 27% Low Gradient Riffle units, 19% Run units and 12% Lateral Scour Pool - Log Enhanced units (Graph 3). The most frequent habitat types based on percent total length by percent occurrence were 24% Low Gradient Riffle units, 22% Run units and 14% Not Surveyed units.

A total of 269 pools were identified (Table 3). Scour pools were the most frequently encountered, at 64%, and comprised 62% of the total length of all pools (Graph 4).

Table 4 is a summary of maximum residual pool depths by pool habitat types. Pool quality for salmonids increases with depth. Six of the 269 pools (2%) had a residual depth of three feet or greater (Graph 5).

The depth of cobble embeddedness was estimated at pool tail-outs. Of the 269 pool tail-outs measured, 11 had a value of 1 (4.1%); 82 had a value of 2 (30.5%); 52 had a value of 3 (19.3%); 49 had a value of 4 (18.2%); and 75 had a value of 5 (27.9%) (Graph 6). On this scale, a value of 1 indicates the best spawning conditions and a value of 4 the worst. Additionally, a value of 5 was assigned to tail-outs deemed unsuited for spawning due to inappropriate substrate such as bedrock, log sills, boulders, or other considerations.

A shelter rating was calculated for each habitat unit and expressed as a mean value for each habitat type within the survey using a scale of 0-300. Riffle habitat types had a mean shelter rating of 5, flatwater habitat types had a mean shelter rating of 14 and pool habitats had a mean shelter rating of 28 (Table 1). Of the pool types, the Main Channel pools had a mean shelter rating of 20 and Scour pools had a mean shelter rating of 33 (Table 3).

Table 5 summarizes mean percent cover by habitat type. Terrestrial Vegetation is the dominant cover types in Pilarcitos Creek. Graph 7 describes the pool cover in Pilarcitos Creek. Terrestrial Vegetation is the dominant pool cover type followed by small woody debris.

Table 6 summarizes the dominant substrate by habitat type. Graph 8 depicts the dominant substrate observed in pool tail-outs. The most frequent substrate types by percent of pool tail-outs were gravel observed in 70% of pool tail-outs and sand observed in 22% of pool tail-outs.

The mean percent canopy density for the surveyed length of Pilarcitos Creek was 89%. The mean percentages of hardwood and coniferous trees were 94% and 6%, respectively. Eleven percent of the canopy was open. Graph 9 describes the mean percent canopy in Pilarcitos Creek.

For the stream reach surveyed, the mean percent right bank vegetated was 85%. The mean percent left bank vegetated was 84%. The dominant elements composing the structure of the

stream banks consisted of 2% bedrock, 4% boulder, 1% cobble/gravel and 94% sand/silt/clay (Graph 10). Hardwood trees were the dominant vegetation type observed in 91.5% of the units surveyed. Additionally, 7.9% of the units surveyed had brush as the dominant vegetation type, 0.3% of the units surveyed had grass as the dominant vegetation type and 0.1% had coniferous trees as the dominant vegetation (Graph 11).

BIOLOGICAL INVENTORY RESULTS

Two sites were electrofished for species composition and distribution in Pilarcitos Creek on October 27, 2010. Water temperatures taken during the electrofishing period (11:24, 13:41, 14:46 and 16:10) ranged from 54 to 57 degrees Fahrenheit. Air temperatures ranged from 57 to 60 degrees Fahrenheit. The sites were sampled by Julie Hanson, Desiree Dela Vega, Andrew Griffin and Chris Bell (WSP), and Dan Resnik and Derek Acomb (CDFW).

A depletion survey was conducted at both sites (2 sites surveyed) with three passes made for each site for 300 feet (see tables below). Reach 10 yielded 40 steelhead/rainbow trout, 1 stickleback and 1 Californian giant salamander. Reach 4 yielded 13 steelhead/rainbow trout, 32 sculpin and 2 stickleback.

The following tables display the information yielded from these sites:

Reference Point	Larger well on LB near Road Intersection		**Reach**	10		**Length**	300 feet	
Pass 1			**Pass 2**			**Pass 3**		
Species	**Length (mm)**	**Weight (g)**	**Species**	**Length (mm)**	**Weight (g)**	**Species**	**Length (mm)**	**Weight (g)**
Stickleback	59	1.9	CGS*	115	11.6	Steelhead	111	13.7
Steelhead	95	9.1	Steelhead	107	13.9	Steelhead	94	9.2
Steelhead	128	23.7	Steelhead	124	19.6	Steelhead	150	32.9
Steelhead	114	15.1	Steelhead	115	16.3	Steelhead	113	16.1
Steelhead	130	27	Steelhead	157	43.6			
Steelhead	159	40.5	Steelhead	180	70.6			
Steelhead	143	33.6	Steelhead	89	7.1			
Steelhead	190	78.7	Steelhead	115	15.7			
Steelhead	181	66.6	Steelhead	97	11.7			
Steelhead	189	81.6	Steelhead	139	29.4			
Steelhead	100	11.6	Steelhead	82	6.1			
Steelhead	112	14.3	Steelhead	129	24.1			
Steelhead	137	24.6	Steelhead	77	5			
Steelhead	137	27						
Steelhead	108	12.5						
Steelhead	143	30.4						
Steelhead	125	20.8						
Steelhead	113	16.8						
Steelhead	102	10.2						
Steelhead	114	13.8						
Steelhead	90	9.1						
Steelhead	98	10						

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Steelhead	120	19.4						
Steelhead	125	22						
Steelhead	114	17						

* Californian giant salamander

Reference Point	Cypress Pedestrian Bridge		**Reach**	4		**Length**	300 feet	
Pass 1			**Pass 2**			**Pass 3**		
Species	**Length (mm)**	**Weight (g)**	**Species**	**Length (mm)**	**Weight (g)**	**Species**	**Length (mm)**	**Weight (g)**
Sculpin	175	96.9	Sculpin	155	69.3	Sculpin	81	5.9
Steelhead	130	25.1	Sculpin	172	83.7	Sculpin	96	12.7
Steelhead	141	30.5	Sculpin	151	48	Steelhead	202	91.9
Stickleback	52	1.4	Sculpin	52	1.2			
Steelhead	150	33.5	Sculpin	71	3.8			
Steelhead	298	98.8	Sculpin	61	3			
Steelhead	196	72.4	Steelhead	167	52.8			
Steelhead	184	72.4	Sculpin	74	4.3			
Steelhead	199	89.9	Sculpin	61	2.9			
Steelhead	168	45.1	Sculpin	63	2.7			
Stickleback	49	0.9	Sculpin	75	4.3			
Steelhead	163	44.4						
Steelhead	150	37.9						
Steelhead	162	42.7						
Sculpin	63	2						
Sculpin	60	2						
Sculpin	70	3.6						
Sculpin	89	8.3						
Sculpin	96	10.4						
Sculpin	63	2.6						

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Sculpin	57	1.6						
Sculpin	50	1.2						
Sculpin	60	2.2						
Pass 1			**Pass 2**			**Pass 3**		
Species	**Length (mm)**	**Weight (g)**	**Species**	**Length (mm)**	**Weight (g)**	**Species**	**Length (mm)**	**Weight (g)**
Sculpin	78	5.9						
Sculpin	80	5.9						
Sculpin	55	2.4						
Sculpin	57	1.8						
Sculpin	62	2.6						
Sculpin	74	4.4						
Sculpin	55	1.2						
Sculpin	80	5.7						
Sculpin	68	3						
Sculpin	61	2.4						

DISCUSSION

Pilarcitos Creek is a NA (no access) channel type for 485 feet of the stream surveyed (Reach 1), a F5 channel type for 943 feet of the stream surveyed (Reach 2), a NA channel type for 2,290 feet of the stream surveyed (Reach 3), a F5 channel type for 9,369 feet of the stream surveyed (Reach 4), a NA channel type for 1,400 feet of the stream surveyed (Reach 5), a F4 channel type for 16,612 feet of the stream surveyed (Reach 6), a NA channel type for 1,010 feet of the stream surveyed (Reach 7), a F4 channel type for 4,303 feet of the stream surveyed (Reach 8), a NA channel type for 1,455 feet of the stream surveyed (Reach 9), a F4 channel type for 4,877 feet of the stream surveyed (Reach 10), a B3 channel type for 2,517 feet of the stream surveyed (Reach 11) and a A3 channel type for 2,708 feet of the stream surveyed (Reach 12). The suitability of F5, F4, B3 and A3 channel types for fish habitat improvement structures is as follows:

F5 and F4 channel types are good for bank-placed boulders. They are fair for plunge weirs, single and opposing wing-deflectors, channel constrictors and log cover. They are poor for boulder clusters.

B3 channel type is excellent for plunge weirs, boulder clusters, bank placed boulder, single and opposing wing-deflectors and log cover.

A3 channel type is good for bank-placed boulders. It is fair for plunge weirs, opposing wing-deflectors and log cover. It is poor for boulder clusters and single wing-deflectors.

The water temperatures recorded on the survey days 9/14/2010 to 10/1/2010, ranged from 55 to 62 degrees Fahrenheit. Air temperatures ranged from 52 to 71 degrees Fahrenheit. To make any further conclusions, temperatures would need to be monitored throughout the warm summer months, and more extensive biological sampling would need to be conducted.

Flatwater habitat types comprised 42% of the total length of this survey, riffles 27% and pools 16%. The pools are relatively shallow, with only 40 of the 269 (15%) pools having a maximum residual depth greater than 2 feet. In general, pool enhancement projects are considered when primary pools comprise less than 40% of the length of total stream habitat. In third and fourth order streams, a primary pool is defined to have a maximum residual depth of at least three feet, occupy at least half the width of the low flow channel, and be as long as the low flow channel width. Installing structures that will increase or deepen pool habitat is recommended for locations where their installation will not be threatened by high stream energy, or where their installation will not conflict with the modification of the numerous log debris accumulations (LDA's) in the stream.

Ninety-three of the 269 pool tail-outs measured had embeddedness ratings of 1 or 2. One hundred and one of the pool tail-outs had embeddedness ratings of 3 or 4. Seventy-five of the pool tail-outs had a rating of 5, which is considered unsuitable for spawning. Cobble embeddedness measured to be 25% or less, a rating of 1, is considered to indicate good quality spawning substrate for salmon and steelhead. Sediment sources in Pilarcitos Creek should be mapped and rated according to their potential sediment yields, and control measures should be taken.

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One hundred and ninety-four of the 267 pool tail-outs measured had gravel or small cobble as the dominant substrate. This is generally considered good for spawning salmonids.

The mean shelter rating for pools was 28. The shelter rating in the flatwater habitats was 14. A pool shelter rating of approximately 100 is desirable. The amount of cover that now exists is being provided primarily by Terrestrial Vegetation in Pilarcitos Creek. Terrestrial Vegetation is the dominant cover type in pools followed by small woody debris. Log and root wad cover structures in the pool and flatwater habitats would enhance both summer and winter salmonid habitat. Log cover structure provides rearing fry with protection from predation, rest from water velocity, and also divides territorial units to reduce density related competition.

The mean percent canopy density for the stream was 89%. Reach 2 had a canopy density of 31.1%, Reach 4 had a canopy density of 88.6%, Reach 6 had a canopy density of 91.1%, Reach 8 had a canopy density of 91.5%, Reach 10 had a canopy density of 86.5%, Reach 11 had a canopy density of 90.5% and Reach 12 had a canopy density of 86.0%. In general, revegetation projects are considered when canopy density is less than 80%.

The percentage of right and left bank covered with vegetation was 85% and 84%, respectively. In areas of stream bank erosion or where bank vegetation is sparse, planting endemic species of coniferous and hardwood trees, in conjunction with bank stabilization, is recommended.

GENERAL RECOMMENDATIONS

Pilarcitos Creek should be managed as an anadromous, natural production stream.

Winter storms often bring down large trees and other woody debris into the stream, which increases the number and quality of pools. This woody debris, if left undisturbed, will provide fish shelter and rearing habitat, and offset channel incision. Landowners should be sensitive about the natural and positive role woody debris plays in the system, and encouraged not to remove woody debris from the stream, except under extreme buildup and only under guidance by a fishery professional.

RECOMMENDATIONS

1) Inventory and map sources of stream bank erosion and prioritize them according to present and potential sediment yield. Sites of sediment yield will include both residential and urban access road systems as well as the rural road networks that are more predominantly located in the upper reaches and headwaters of Pilarcitos Creek. Identified sites should then be treated to reduce the amount of fine sediments entering the stream. Active and potential sediment sources related to the road system need to be identified, mapped, and treated according to their potential for sediment yield to the stream and its tributaries.

2) Access for migrating salmonids should be assessed at all road crossings and dams. Sites of particular concern include the Pilarcitos Creek Road and Coastal Access Road in-stream Culverts, and the Stone Dam site which was identified as the end of anadromous fish passage. The only road bridge identified as a potential barrier was

the Highway 92 road Bridge. All fish passage assessments should be done according to Part 9 of the California Salmonid Stream Habitat Restoration Manual (Flosi et al, 1998). Where needed, crossings should be replaced or modified to improve fish passage.

3) Increase woody cover in the pools and flatwater habitat units. Most of the existing cover in the pools is from Terrestrial Vegetation and Boulders. Adding high quality complexity with woody cover in the pools is desirable.

4) Where feasible, design and engineer pool enhancement structures to increase the number of pools, specifically throughout the lower reaches. This must be done where the banks are stable or in conjunction with stream bank armor to prevent erosion.

5) Increase the canopy on Pilarcitos creek particularly throughout Reaches 1 and 2, by planting appropriate native vegetation like willow, alder, redwood, and Douglas fir along the stream where shade canopy is not at acceptable levels. The reaches above this survey section should be inventoried and treated as well, since the water flowing here is affected from upstream. In many cases, planting will need to be coordinated to follow bank stabilization or upslope erosion control projects.

6) The limited water temperature data available suggest that maximum temperatures are within the acceptable range for juvenile salmonids. To establish more complete and meaningful temperature regime information, 24-hour monitoring during the July and August temperature extreme period should be performed for 3 to 5 years.

COMMENTS AND LANDMARKS

The following landmarks and possible problem sites were noted. All distances are approximate and taken from the beginning of the survey reach.

Position (ft.)	Habitat Unit #	Comments:
0	0001.00	Start of survey at Pilarcitos Creek Lagoon. N37.47451 W122.44754
485	0002.00	End of tidal influence. N37.47346W122.44662
485	0002.00	Bridge #1 is the Half Moon Bay State Park Rd. The culvert is made of wood/steel with length =11', height =11', and width= 39'. The culvert is not retaining gravel and there is no associated down cutting. The culvert is not a likely barrier.
917	0005.00	Unidentified frog/toad observed.
3781	0013.00	Unidentified fish observed
4830	0036.00	Concrete sacks used to stabilize left bank
4895	0037.00	Concrete sacks used to stabilize the left bank from units 036-038

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Position (ft.)	Habitat Unit #	Comments:
4926	0038.00	Concrete sacks used to stabilize left bank
5478	0050.00	The concrete sacks used to stabilize the bank have fallen in the stream.
5618	0053.00	Bridge #2 is a footbridge from the Pilarcitos trail. The bridge is made of wood/steel and has a length =9', height = 13', and width = 43'. The bridge is not retaining gravel and there is no associated down cutting. It is not a likely barrier. N37.46804 W122.43466
6180	0063.00	Right bank tributary #1 is unnamed and is dry, with discharge = 0 cfs and contributes 0% of flow. The water temperature upstream of the tributary = 59 F. The tributary was checked 50 ft up, has an estimated slope of 0%, and is accessible to fish. No fish were observed. N37.46674 W122.43414
6224	0064.00	Left bank staff gauge
6286	0067.00	Bridge #3 is Hwy 1 South with length = 45', height = 16', and width =70'. The bridge is made of concrete, it is not retaining gravel, and there is no associated down cutting. It is likely not a barrier. No WP was taken.
6368	0069.00	Bridge #4 is Hwy 1North with length = 42', height =16', and width =70'. The bridge is made of concrete, it is not retaining gravel, and there is no associated down cutting. It is not a likely barrier. N37.46648 W122.43372
6442	0071.00	Unidentified 6" fish observed
7901	0101.00	On the left bank there is an 18 inch culvert 35 feet into unit.
7953	0102.00	Bridge #5 is a road/ foot bridge made of concrete/ wood with length= 37', height = 18', and width = 58'. The bridge is not retaining gravel and there is no associated down cutting. It is not likely a barrier. N37.46605 W122.42877
7953	0102.00	There is a wood footbridge attached to the upstream and downstream side of the road bride. The footbridge compromises 10 feet of the total bride length. WP89 N37.46605 W122.42877
7990	0103.00	2+ salmonids observed
8204	0111.00	There is cement/ rip rap stabilizing the left bank at the top of the unit.
8766	0124.00	Left bank tributary #1 is Arroyo Leon. It is not flowing, but is wet, contributing 0% of flow to the stream. The water temperatures upstream = 60 F, downstream = 60 F, and tributary = N/A. The tributary was checked 150 ft. up. Arroyo Leon has an estimated slope = 0%, it is accessible to fish, but no fish were observed. See separate report for

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Position (ft.)	Habitat Unit #	Comments:
		more information on Arroyo Leon. N37.46517 W122.42655
9053	0131.00	Salmonid observed, approximately = 6”
10115	0154.00	Salmonid observed, approximately 6-8"
11315	0185.00	Right bank stabilization is undermined. Wood stakes/ plastic net was used.
11383	0187.00	Right bank is stabilized with 3' diameter log and 1/4" cable throughout unit.
11383	0187.00	Several 6-8" salmonids observed
11665	0193.00	Unidentified frog/ toad observed approximately 2-3"
12095	0200.00	Log Debris Accumulation (LDA) is anchored on the left bank
12150	0201.00	Bridge #6 is a road with length =15', height =9', and width =37'. The bridge is made of wood/ steel. It is not retaining gravel and there is no associated down cutting. The bridge is not a likely barrier.
12253	0203.00	Crayfish observed
12868	0216.00	Salmonid observed, approximately 8”
14487	0221.00	Dam #1 has length =4', height = 3', width (0)=10', and width (d)=23'. There is one flashboard in place, but is not obstructing the flow. There is no associated down cutting, but the dam is retaining gravel and sand. The dam is not in use. It is not likely a barrier to juveniles or adults. No WP was taken.
14556	0223.00	Old cement footings falling into stream.
14556	0223.00	Bridge # 7 is a driveway made of steel/wood, with length = 9’, height = 7’, and width = 36’. The bridge is not retaining gravel and there is no associated down cutting. It is not a likely barrier. WP104 N37.47418 W122.41692
15635	0246.00	One 6" salmonid observed
15998	0252.00	Left bank tributary #2 is Madonna Creek, which is not flowing and is dry. The discharge = 0 cfs and it contributes 0% of flow to the stream. The water temperatures upstream = 60 F, downstream = 60 F, and tributary = N/A. Madonna Creek was checked 50 ft. up and has an estimated slope = 2%. It is accessible to fish, but no fish were observed.

Pilarcitos Creek

Position (ft.)	Habitat Unit #	Comments:
		N37.47556 W122.41380
16067	0253.00	Right bank stabilized with rip rap/ cement
16115	0254.00	At the top of the unit along both banks is old cement bridge footings/ parts of dam, which is not in use.
16115	0254.00	Right bank stabilized with rip rap.
16394	0257.00	Right bank tributary #2 is Apanolio creek, which is flowing with an estimated discharge = 1 cfs, and contributes approximately 20% of flow to the stream. Apanolio was checked 100' ft. up and has an estimated slope = 3%. It is accessible to fish, but no fish were observed. N37.47612 W122.41277
16394	0257.00	One 6" salmonid observed
16710	0262.00	Right bank stabilized with cobbles and rip rap
16735	0263.00	One 1+ salmonid observed
17297	0270.00	One juvenile salmonid observed
17382	0272.00	One crayfish observed
17617	0280.00	Unidentified frog/toad observed
18265	0296.00	Salmonid and crayfish observed
19408	0315.00	Right bank tributary #3 is Corrindo Los Trancos, which is flowing with a discharge < 1 cfs, and contributes an estimated 10% of flow to the stream. The water temperatures upstream = 60 F, downstream = 60 F, and tributary = 60 F. Corrindo Los Trancos was checked 100' up and has an estimated slope = 5%. It is accessible to fish, but no fish were observed. N37.47931 W122.40570
19469	0317.00	Bridge #8 is a road with length =17', height =7', and width =32'.The bridge is made of wood/ steel. It is not retaining gravel and there is no associated down cutting. It is not a likely barrier. No WP was taken.
19518	0319.00	Unidentified fish observed, at least 8" long
20002	0326.00	Crayfish observed
20404	0332.00	Along the left bank are 6' x 3' concrete slabs armoring an erosive 8' tall bank, which is composed of fine sediment.
20531	0334.00	One 6" salmonid observed
21323	0349.00	Bridge #9 is a driveway made of wood/ steel with length =12', height =8', and width =29'. The bridge is not retaining gravel and there is no associated down cutting. It is not likely a barrier. N37.48216 W122.40084

Pilarcitos Creek

Position (ft.)	Habitat Unit #	Comments:
21423	0353.00	Possible salmonid young-of-the-year (YOY) observed
22175	0365.00	Bridge #10 is a footbridge made of wood/steel with length =9', height =11', and width = 58'. The bridge is not retaining gravel and there is no associated down cutting. It is not likely a barrier. N37.48349 W122.39858
22538	0372.00	Salmonid YOY observed
23023	0380.00	Salmonid YOY observed
23213	0383.00	Bridge #11 is a driveway made of wood/steel with length = 13', height = 10', and width = 23'. The bridge is not retaining gravel and there is no associated down cutting. It is not likely a barrier. N37.48544 W122.39700
23226	0384.00	Right bank tributary #4 is unnamed and is dry and not flowing, with discharge = 0 cfs and contributing 0% of flow to the stream. Water temperatures upstream = 59 F, downstream = 59 F, and tributary = N/A. The tributary was checked 50 ft. up with an estimated slope = 2%. It is accessible to fish, but no fish were observed. The tributary is immediately upstream of bridge # 11. N37.48544 W122.39700
23821	0398.00	1+ salmonid observed
23956	0401.00	There is erosion along the left ban 10' x10' composed of fine sediment.
24089	0405.00	1+ salmonid observed
24249	0408.00	Bridge #12 is a driveway made of wood/ steel with length =14', height =14', and width =20'. The bridge is not retaining gravel and there is no associated down cutting. It is not likely a barrier. N37.48677 W122.39565
24417	0411.00	Along the left bank there is a cinder block retaining wall tilting into the stream 6' x 3' x 120' long. It extends to unit 413.
24541	0413.00	Bridge #13 is a driveway made of wood/steel with length = 17' height =11', and width = 25'. The bridge is not retaining gravel and there is no associated down cutting. It is not likely a barrier. . N37.48705 W122.39463
24647	0417.00	Salmonid YOY observed
24921	0423.00	Log anchored in stream with rebar

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Position (ft.)	Habitat Unit #	Comments:
24956	0425.00	Along the right bank from units 424-425 there is a chain link fence being used for stabilization, but it is failing.
25009	0427.00	Along the right bank at the bottom of the unit are 2" and 4" pumps with screens, but are not operating.
25134	0428.00	Salmonid observed
25832	0442.00	On the right bank is a 2" pump, which is screened but not operating..
25948	0446.00	Salmonid observed.
26269	0451.00	Bridge #14 is a foot bridge made of wood/ steel with length = 8'. height= 10', and width = 30'. The bridge is not retaining gravel and there is no associated down cutting. It is not likely a barrier. N37.48909 W122.39027
26277	0452.00	Salmonid YOY observed
26343	0453.00	On the right bank is a 2" pump, which is screened but not operating at the time of the survey.
26607	0458.00	Crayfish observed
26796	0461.00	Bridge #15 is a driveway made of wood/ steel with length = 13', Height = 11', and width = 31'. The bridge is not retaining gravel and there is no associated down cutting. It is not likely a barrier. N37.49032 W122.38915
27032	0465.00	1+ salmonid observed
27095	0466.00	Bridge #16 is a driveway made of wood/ steel with length = 14', height = 14', and width = 45' The bridge is not retaining gravel and there is no associated down cutting. It is not likely a barrier. N37.49086 W122.38840
28204	0485.00	Left bank tributary #3 is unnamed and flowing with an estimated discharge < 1 cfs, and contributing an estimated 20% of flow to the stream. The water temperatures upstream = 59 F, downstream = 59 F, and tributary = 59 F. The tributary was checked 200 ft. up and has an estimated slope = 1%. The tributary is accessible to fish, but no fish were observed. N37.49224 W122.38506
28326	0489.00	Bridge #17 is Hwy 92 and is made of concrete with length = 39', height = 20', and width = 72'. The height from water to sill is 0 ft and there is associated down cutting. The bridge is a possible barrier to fish. N37.49263 W122.38504
28472	0492.00	Bridge #18 is a driveway made of wood/ steel with length = 19' height = 5, and width = 26'. The bridge is not retaining gravel and there is no associated down cutting. It is not likely a barrier.
28839	0503.00	The right bank is almost un-vegetated and composed of

Pilarcitos Creek

Position (ft.)	Habitat Unit #	Comments:
		fine sediment. It is 8 ft. tall and is the entire length of the unit. The road is adjacent.
28879	0504.00	Boulders armor the right bank
29809	0521.00	Crayfish Observed and one 4"-6" salmonid observed.
29829	0522.00	Culvert #1 is under a driveway and has one associated culvert. It is made of an old metal tank with the ends removed. The culvert has a length = 21', height = 8', width = 8', and a diameter = 8'. There is a plunge height = 3' and the maximum depth within 5 ft. = 5'. The culvert has an estimated slope = 1-2%. It is dented and rusted and likely a barrier to juveniles and adults. N37.49603 W122.38497
30042	0528.00	1+ salmonid observed.
30461	0540.00	1+ salmonid observed
31020	0547.00	Bridge #19 is Pilarcitos Rd and it is made of concrete with a length = 29', height = 10', and width = 19'. The bridge is not retaining gravel and there is no associated down cutting. It is not likely a barrier.
31049	0548.00	Salmonid YOY observed
31077	0549.00	California Red-legged frog observed
32109	0551.00	Garter Snake observed.
32216	0553.00	Salmonid YOY observed
32334	0555.00	Bridge #20 is a road and it is made of wood/ steel with length = 14', height = 3', and width = 35'. The bridge is not retaining gravel and there is no associated down cutting. It is not likely a barrier. N37.50171 W122.38580
33276	0574.00	Bridge #21 is a footbridge made of wood with length = 6', height = 5', and width = 27'. The bridge is not retaining gravel and there is no associated down cutting. It is not likely a barrier. N37.50405 W122.38554
33311	0576.00	Along the right bank is loose substrate that range from fines to cobble. It is recently placed and is 8' tall. There is a high potential for failure.
33648	0586.00	Salmonid YOY observed.
33986	0600.00	Exposed roots cross above the streambed. The channel is incised.

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Position (ft.)	Habitat Unit #	Comments:
35101	0620.00	On the right bank there is a buried steel pipe, one foot in diameter, that is exposed.
35201	0622.00	At the top of the unit is a once buried pipe that crosses the stream one foot above the stream bed.
35281	0623.00	Salmonid YOY observed
35638	0634.00	Bridge #22 is Coastside Access Rd, with is made of cement with length = 28', height = 7', and width = 12'. The bridge is not retaining gravel and there is no associated down cutting. It is not likely a barrier.
37867	0657.00	Culvert #2 is Coastside Access Rd, which has two associated culverts made of plastic. The culverts have a length = 23', height = 4', width = 4', and a diameter = 4'. The maximum depth within 5 ft = 1' and the plunge height is N/A. The culvert has a slop of 1-2%. It is dented and a possible barrier to juveniles and adults.
40521	0721.00	Salmonid YOY and 1+ observed.
42641	0773.00	Salmonid YOY observed.
43344	0787.00	Right bank tributary #5 is unnamed and is flowing with an estimated discharge < 1 cfs and contributing approximately 5% of flow to the stream. The water temperatures upstream = 59 F, downstream = 59 F, and tributary = 57 F. The tributary was checked up 50; and has an estimated slope = 10%. It is not accessible to fish and no fish were observed. WP182 N37.52068 W122.39248
44196	0800.00	Left bank tributary #4 is unnamed and flowing with an estimated discharge < 1cfs and contributing an estimated < 5% of flow to the stream. The water temperatures upstream = 60 F, downstream = 60 F, and tributary = 60 F. The tributary was checked 100' up and has an estimated slope of 2 %. It is accessible to fish, but no fish were observed. WP184 N37.52262 W122.39319
44196	0800.00	Several 2" – 8" inch salmonids observed.
45090	0818.00	One 8 inch salmonid observed.
45127	0819.00	Left bank tributary #5 is unnamed and dry with a discharge = 0 cfs and contributing 0% of flow to the stream. The water temperatures upstream = 60 F, downstream = 60 F, and the tributary is N/A. The tributary was checked 100' up and has an estimated slope of 2%. It is accessible to fish, but no fish were observed. WP186 N37.52466 W122.39514
45974	0829.00	Salmonid YOY observed.
46546	0837.00	Gauge station on the right bank.
46546	0837.00	Salmonid YOY observed.

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Position (ft.)	Habitat Unit #	Comments:
47052	0846.00	Right bank tributary #6 is unnamed and is flowing with an estimated discharge < 1 cfs and contributing approximately 5% of flow to the stream. The water temperatures upstream = 61 F, downstream = 61 F, and tributary = 58 F. The tributary was checked 100' up and has a slope = 5%. It is accessible to fish, but no fish were observed.
47705	0857.00	One salmonid YOY and one 4" inch salmonid observed.
47749	0858.00	Unidentified frog observed.
47964	0863.00	General Comment: Stone Dam. Stone/mortar construction.
47964	0863.00	Dam #2 is stone with stone/ mortar construction. The dam has a length = 5', height = 30', width (o) = 20, and width (d) = 130'. There is associated down cutting with a down cut height= 30'. There are no flashboards on the dam and it is retaining gravel and silt. The water to sill height is N/A, The dam is a total barrier to juvenile and adult salmonids. WP191 N37.52567 W122.39783
47969	0863.00	End of survey due to end of anadromy.

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McCain, M., D. Fuller, L. Decker and K. Overton. 1990. Stream habitat classification and inventory procedures for northern California. FHC Currents. No.1. U.S. Department of Agriculture. Forest Service, Pacific Southwest Region.

Rosgen, D.L., 1994. A Classification of Natural Rivers. Catena, Vol 22: 169-199, Elsevier Science, B. V. Amsterdam.

Pilarcitos Creek

LEVEL III and LEVEL IV HABITAT TYPES

RIFFLE			
Low Gradient Riffle	(LGR)	[1.1]	{ 1}
High Gradient Riffle	(HGR)	[1.2]	{ 2}
CASCADE			
Cascade	(CAS)	[2.1]	{ 3}
Bedrock Sheet	(BRS)	[2.2]	{24}
FLATWATER			
Pocket Water	(POW)	[3.1]	{21}
Glide	(GLD)	[3.2]	{14}
Run	(RUN)	[3.3]	{15}
Step Run	(SRN)	[3.4]	{16}
Edgewater	(EDW)	[3.5]	{18}
MAIN CHANNEL POOLS			
Trench Pool	(TRP)	[4.1]	{ 8 }
Mid-Channel Pool	(MCP)	[4.2]	{17}
Channel Confluence Pool	(CCP)	[4.3]	{19}
Step Pool	(STP)	[4.4]	{23}
SCOUR POOLS			
Corner Pool	(CRP)	[5.1]	{22}
Lateral Scour Pool - Log Enhanced	(LSL)	[5.2]	{10}
Lateral Scour Pool - Root Wad Enhanced	(LSR)	[5.3]	{11}
Lateral Scour Pool - Bedrock Formed	(LSBk)	[5.4]	{12}
Lateral Scour Pool - Boulder Formed	(LSBo)	[5.5]	{20}
Plunge Pool	(PLP)	[5.6]	{ 9 }
BACKWATER POOLS			
Secondary Channel Pool	(SCP)	[6.1]	{ 4 }
Backwater Pool - Boulder Formed	(BPB)	[6.2]	{ 5 }
Backwater Pool - Root Wad Formed	(BPR)	[6.3]	{ 6 }
Backwater Pool - Log Formed	(BPL)	[6.4]	{ 7 }
Dammed Pool	(DPL)	[6.5]	{13}
ADDITIONAL UNIT DESIGNATIONS			
Dry	(DRY)	[7.0]	
Culvert	(CUL)	[8.0]	
Not Surveyed	(NS)	[9.0]	
Not Surveyed due to a marsh	(MAR)	[9.1]	

Pilarcitos Creek

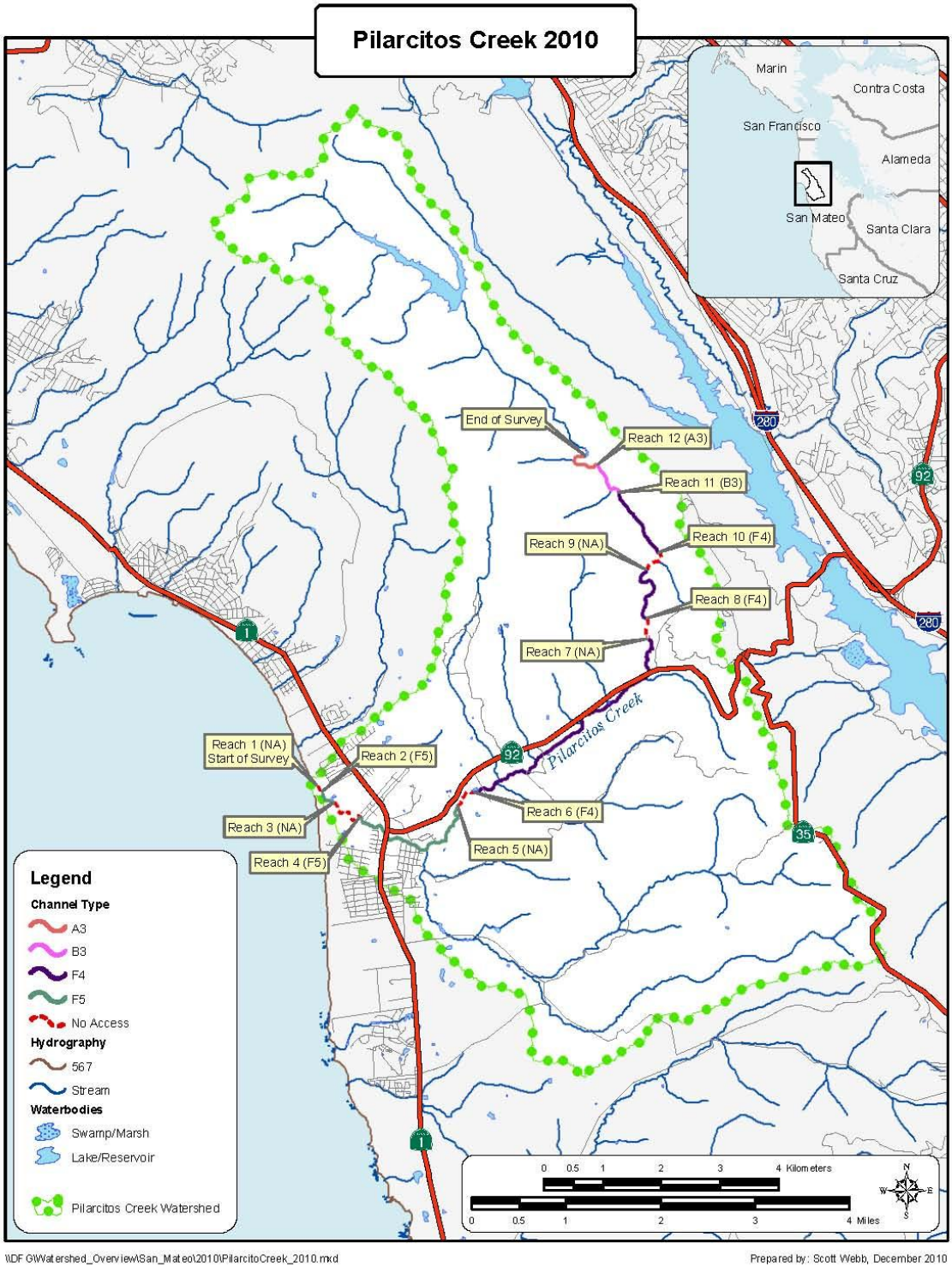


Table 1 - Summary of Riffle, Flatwater, and Pool Habitat Types

Stream Name: Pilarcitos Creek **LLID:** 1224481374754 **Drainage:** San Mateo Coastal

Survey 9/14/2010 to 10/1/2010

Confluence Location: **Quad:** HALF MOON BAY **Legal Description:** T05SR05WS30 **Latitude:** 37:28:31.0N **Longitude:** 122:26:53.0W

Habitat Units	Units Fully Measured	Habitat Type	Habitat Occurrence (%)	Mean Length (ft.)	Total Length (ft.)	Total Length (%)	Mean Width (ft.)	Mean Depth (ft.)	Mean Max Depth (ft.)	Mean Area (sq.ft.)	Estimated Total Area (sq.ft.)	Mean Volume (cu.ft.)	Estimated Total Volume (cu.ft.)	Mean Residual Pool Vol (cu.ft.)	Mean Shelter Rating
26	0	CULVERT	3.0	18	473	1.0									
313	313	FLATWATER	36.2	65	20226	42.1	10.4	0.6	1.1	637	199357	395	123482		14
6	0	NOSURVEY	0.7	1137	6820	14.2									
269	269	POOL	31.1	29	7791	16.2	11.4	0.6	1.5	330	88893	377	101404	221	28
250	250	RIFFLE	28.9	51	12778	26.6	10.9	0.4	0.7	491	122846	201	50327		5

Total Units	Total Units Fully Measured	Total Length (ft.)	Total Area (sq.ft.)	Total Volume (cu.ft.)
864	832	48088	411097	275214

Table 2 - Summary of Habitat Types and Measured Parameters

Stream Name: Pilarcitos Creek **LLID:** 1224481374754 **Drainage:** San Mateo Coastal

Survey 9/14/2010 to 10/1/2010

Confluence Location: Quad: HALF MOON BAY **Legal Description:** T05SR05WS30 **Latitude:** 37:28:31.0N **Longitude:** 122:26:53.0W

Habitat Units	Units Fully Measured	Habitat Type	Habitat Occurrence (%)	Mean Length (ft.)	Total Length (ft.)	Total Length (%)	Mean Width (ft.)	Mean Depth (ft.)	Mean Max Depth (ft.)	Mean Area (sq.ft.)	Estimated Total Area (sq.ft.)	Mean Volume (cu.ft.)	Estimated Total Volume (cu.ft.)	Mean Residual Pool Vol (cu.ft.)	Mean Shelter Rating	Mean Canopy (%)
229	229	LGR	26.5	50	11380	23.7	11.0	0.4	1.5	473	108409	186	42521		3	90
15	15	HGR	1.7	79	1184	2.5	15.0	0.6	1.2	775	11629	452	6773		28	88
6	6	BRS	0.7	36	214	0.4	13.0	0.3	1.0	468	2809	172	1033		17	83
13	13	POW	1.5	50	647	1.3	12.0	0.7	1.7	577	7506	413	5374		28	89
83	83	GLD	9.6	45	3771	7.8	12.0	0.7	2.0	521	43272	362	30010		14	87
164	164	RUN	19.0	63	10400	21.6	10.0	0.6	2.3	621	101791	372	60960		14	87
52	52	SRN	6.0	103	5341	11.1	9.0	0.6	1.7	875	45522	510	26505		14	88
1	1	EDW	0.1	67	67	0.1	21.0	0.5	1.4	1266	1266	633	633		10	88
1	1	TRP	0.1	41	41	0.1	8.0	0.6	1.6	328	328	328	328	197	20	96
89	89	MCP	10.3	30	2672	5.6	11.0	0.6	2.5	334	29735	375	33340	214	19	90
2	2	CCP	0.2	18	37	0.1	12.0	0.5	1.4	211	421	215	429	108	0	96
5	5	STP	0.6	48	241	0.5	12.0	0.4	2.2	539	2693	509	2546	200	40	89
9	9	CRP	1.0	34	306	0.6	10.0	0.6	1.8	337	3031	352	3167	227	28	89
104	104	LSL	12.0	27	2811	5.8	12.0	0.6	3.6	337	35040	372	38721	218	39	90
14	14	LSR	1.6	28	397	0.8	10.0	0.6	2.1	300	4197	304	4254	168	30	95
15	15	LSBk	1.7	29	428	0.9	10.0	0.8	2.6	274	4117	355	5323	229	13	90
26	26	LSBo	3.0	29	766	1.6	10.0	0.5	1.9	283	7363	276	7177	134	22	90
4	4	PLP	0.5	23	92	0.2	19.0	1.6	5.0	492	1969	1529	6117	1245	48	84
26	0	CUL	3.0	18	473	1.0										
6	0	NS	0.7	1137	6820	14.2										

Total Units	Total Units Fully Measured	Total Length (ft.)	Total Area (sq.ft.)	Total Volume
864	832	48088	411097	275214

Table 3 - Summary of Pool Habitat Types

Stream Name: Pilarcitos Creek **LLID:** 1224481374754 **Drainage:** San Mateo Coastal

Survey 9/14/2010 to 10/1/2010

Confluence Location: **Quad:** HALF MOON BAY **Legal Description:** T05SR05WS30 **Latitude:** 37:28:31.0N **Longitude:** 122:26:53.0W

Habitat Units	Units Fully Measured	Habitat Type	Habitat Occurrence (%)	Mean Length (ft.)	Total Length (ft.)	Total Length (%)	Mean Width (ft.)	Mean Residual Depth (ft.)	Mean Area (sq.ft.)	Estimated Total Area (sq.ft.)	Mean Residual Pool Vol (cu.ft.)	Estimated Total Resid. Vol (cu.ft.)	Mean Shelter Rating
97	97	MAIN	36	31	2991	38	10.9	0.6	342	33177	210	20207	20
172	172	SCOUR	64	28	4800	62	11.7	0.6	324	55716	227	38748	33

Total Units	Total Units Fully Measured	Total Length (ft.)	Total Area (sq.ft.)	Total Volume (cu.ft.)
269	269	7791	88893	58955

Table 4 - Summary of Maximum Residual Pool Depths By Pool Habitat Types

Stream Name: Pilarcitos Creek **LLID:** 1224481374754 **Drainage:** San Mateo Coastal

Survey 9/14/2010 to 10/1/2010

Confluence Location: Quad: HALF MOON BAY **Legal Description:** T05SR05WS30 **Latitude:** 37:28:31.0N **Longitude:** 122:26:53.0W

Habitat Units	Habitat Type	Habitat Occurrence (%)	< 1 Foot Maximum Residual Depth	< 1 Foot Percent Occurrence	1 < 2 Feet Maximum Residual Depth	1 < 2 Feet Percent Occurrence	2 < 3 Feet Maximum Residual Depth	2 < 3 Feet Percent Occurence	3 < 4 Feet Maximum Residual Depth	3 < 4 Feet Percent Occurrence	>= 4 Feet Maximum Residual Depth	>= 4 Feet Percent Occurrence
1	TRP	0	0	0	1	100	0	0	0	0	0	0
89	MCP	33	12	13	70	79	7	8	0	0	0	0
2	CCP	1	0	0	2	100	0	0	0	0	0	0
5	STP	2	2	40	1	20	2	40	0	0	0	0
9	CRP	3	2	22	7	78	0	0	0	0	0	0
104	LSL	39	9	9	72	69	19	18	4	4	0	0
14	LSR	5	2	14	9	64	3	21	0	0	0	0
15	LSBk	6	2	13	10	67	3	20	0	0	0	0
26	LSBo	10	5	19	21	81	0	0	0	0	0	0
4	PLP	1	0	0	2	50	0	0	0	0	2	50

Total Units	Total < 1 Foot Max Resid. Depth	Total < 1 Foot % Occurrence	Total 1< 2 Feet Max Resid. Depth	Total 1< 2 Feet % Occurrence	Total 2< 3 Feet Max Resid. Depth	Total 2< 3 Feet % Occurrence	Total 3< 4 Feet Max Resid. Depth	Total 3< 4 Feet % Occurrence	Total >= 4 Feet Max Resid. Depth	Total >= 4 Feet % Occurrence
269	34	13	195	72	34	13	4	1	2	1

Mean Maximum Residual Pool Depth (ft.): 1

Table 5 - Summary of Mean Percent Cover By Habitat Type

Stream Name: Pilarcitos Creek **Dry Units:** **LLID:** 1224481374754 **Drainage:** San Mateo Coastal

Survey 9/14/2010 to 10/1/2010

Confluence Location: **Quad:** HALF MOON BAY **Legal Description:** T05SR05WS30 **Latitude:** 37:28:31.0N **Longitude:** 122:26:53.0W

Habitat Units	Units Fully Measured	Habitat Type	Mean % Undercut Banks	Mean % SWD	Mean % LWD	Mean % Root Mass	Mean % Terr. Vegetation	Mean % Aquatic Vegetation	Mean % White Water	Mean % Boulders	Mean % Bedrock Ledges
229	229	LGR	0	4	3	0	11	0	0	6	0
15	15	HGR	0	9	4	0	1	0	11	74	0
6	6	BRS	0	0	0	0	0	0	40	10	0
250	250	TOTAL RIFFLE	0	4	3	0	11	0	2	10	0
13	13	POW	1	36	8	7	32	0	0	0	0
83	83	GLD	3	14	4	3	38	0	0	4	1
164	164	RUN	2	18	4	2	35	0	0	10	1
52	51	SRN	5	18	1	2	27	2	0	21	1
1	1	EDW	0	0	0	0	70	0	0	30	0
313	312	TOTAL FLAT	2	17	4	2	35	0	0	10	1
1	1	TRP	0	60	0	0	40	0	0	0	0
89	87	MCP	11	20	1	9	29	0	1	11	0
2	2	CCP	0	0	0	0	0	0	0	0	0
5	5	STP	0	28	10	0	6	0	22	34	0
9	9	CRP	6	28	2	9	49	0	0	7	0
104	103	LSL	2	36	19	4	27	1	1	2	0
14	14	LSR	25	20	2	29	24	0	0	0	0
15	15	LSBk	0	9	2	1	23	0	0	27	18
26	26	LSBo	2	15	3	0	16	0	0	57	0
4	4	PLP	0	5	3	8	5	0	45	25	10
269	266	TOTAL POOL	6	25	9	6	26	0	2	12	1
26	0	CUL									
6	0	NS									
864	828	TOTAL	3	16	5	3	25	0	1	11	1

Table 6 - Summary of Dominant Substrates By Habitat Type

Stream Name: Pilarcitos Creek **Dry Units:** **LLID:** 1224481374754 **Drainage:** San Mateo Coastal

Survey 9/14/2010 to 10/1/2010

Confluence Location: **Quad:** HALF MOON BAY **Legal Description:** T05SR05WS30 **Latitude:** 37:28:31.0N **Longitude:** 122:26:53.0W

Habitat Units	Units Fully Measured	Habitat Type	% Total Silt/Clay Dominant	% Total Sand Dominant	% Total Gravel Dominant	% Total Small Cobble Dominant	% Total Large Cobble Dominant	% Total Boulder Dominant	% Total Bedrock Dominant
229	229	LGR	0	3	95	2	0	0	0
15	15	HGR	0	0	0	13	27	60	0
6	6	BRS	0	0	0	0	0	0	100
13	13	POW	0	100	0	0	0	0	0
83	83	GLD	10	81	10	0	0	0	0
164	164	RUN	0	21	75	2	0	1	0
52	52	SRN	0	6	83	6	4	2	0
1	1	EDW	0	100	0	0	0	0	0
1	1	TRP	0	100	0	0	0	0	0
89	89	MCP	22	67	8	1	0	1	0
2	2	CCP	0	100	0	0	0	0	0
5	5	STP	0	60	0	20	0	20	0
9	9	CRP	33	67	0	0	0	0	0
104	104	LSL	20	79	1	0	0	0	0
14	14	LSR	7	93	0	0	0	0	0
15	15	LSBk	20	53	20	0	0	0	7
26	26	LSBo	15	58	12	4	0	12	0
4	4	PLP	0	50	0	0	0	50	0
26	0	CUL	0	0	0	0	0	0	0
6	0	NS	0	0	0	0	0	0	0

Table 7 - Summary of Mean Percent Canopy for Entire Stream

Stream Name: Pilarcitos Creek **LLID:** 1224481374754 **Drainage:** San Mateo Coastal

Survey 9/14/2010 to 10/1/2010

Confluence Location: **Quad:** HALF MOON BAY **Legal Description:** T05SR05WS30 **Latitude:** 37:28:31.0N **Longitude:** 122:26:53.0W

Mean Percent Canopy	Mean Percent Conifer	Mean Percent Hardwood	Mean Percent Open Units	Mean Right Bank % Cover	Mean Left Bank % Cover
89	6	94	0	85	84

Note: Mean percent conifer and hardwood for the entire reach are means of canopy components from units with canopy values greater than zero.

Open units represent habitat units with zero canopy cover.

Pilarcitos Creek

Table 8 - Fish Habitat Inventory Data Summary

Stream Pilarcitos Creek LLID: 1224481374754 Drainage San Mateo Coastal

Survey Dates: 9/14/2010 to 10/1/2010 Survey Length (ft.): 48088 Main Channel (ft.): 47969 Side Channel (ft.): 119

Confluence Location: Quad MONTARA Legal Description: T05SR05WS30 Latitude: 37:28:31.0N Longitude: 122:26:53.0W

Summary of Fish Habitat Elements By Stream Reach

STREAM REACH: 1

Channel Type: NA
Reach Length (ft.): 485
Riffle/Flatwater Mean Width (ft.):
BFW:
Range (ft.): 32.00 to 32.00
Mean (ft.): 32.00
Std. Dev.: 0.00
Base Flow (cfs): 1.31
Water (F): 60 - 60 Air (F): 68 - 68
Dry Channel (ft.): 0

Canopy Density (%):
Coniferous Component (%):
Hardwood Component
Dominant Bank
Vegetative Cover (%): 0.0
Dominant
Dominant Bank Substrate
Occurrence of LWD (%):
LWD per 100 ft.:
Riffles:
Pools:
Flat:

Pools by Stream Length
Pool Frequency (%):
Residual Pool Depth (%):
< 2 Feet Deep:
2 to 2.9 Feet Deep:
3 to 3.9 Feet Deep:
>= 4 Feet Deep:
Mean Max Residual Pool Depth
Mean Pool Shelter

Pool Tail Substrate (%): Silt/Clay: Sand: Gravel: Sm Cobble: Lg Cobble: Boulder Bedrock:
Embeddedness Values (%): 1. 2. 3. 4. 5.

STREAM REACH: 2

Channel Type: F5
Reach Length (ft.): 943
Riffle/Flatwater Mean Width (ft.): 10.4
BFW:
Range (ft.): 32.00 to 32.00
Mean (ft.): 32.00
Std. Dev.: 0.00
Base Flow (cfs): 1.31
Water (F): 60 - 60 Air (F): 68 - 68
Dry Channel (ft.): 0

Canopy Density (%): 31.1
Coniferous Component (%): 0.0
Hardwood Component 100.0
Dominant Bank Hardwood Trees
Vegetative Cover (%): 76.3
Dominant Terrestrial Veg.
Dominant Bank Substrate Sand/Silt/Clay
Occurrence of LWD (%): 0.0
LWD per 100 ft.:
Riffles: 0
Pools: 0
Flat: 0

Pools by Stream Length 3.6
Pool Frequency (%): 11.1
Residual Pool Depth (%):
< 2 Feet Deep: 100.0
2 to 2.9 Feet Deep: 0.0
3 to 3.9 Feet Deep: 0.0
>= 4 Feet Deep: 0.0
Mean Max Residual Pool Depth 0.9
Mean Pool Shelter 10

Pool Tail Substrate (%): Silt/Clay: 100. Sand: 0.0 Gravel: 0.0 Sm Cobble: 0.0 Lg Cobble: 0.0 Boulder 0.0 Bedrock: 0.0
Embeddedness Values (%): 1. 0.0 2. 0.0 3. 0.0 4. 0.0 5. 100.0

Pilarcitos Creek

Summary of Fish Habitat Elements By Stream Reach

STREAM REACH: 3

Channel Type: NA
Reach Length (ft.): 2290
Riffle/Flatwater Mean Width (ft.):
BFW:
Range (ft.): 23.00 to 23.00
Mean (ft.): 23.00
Std. Dev.: 0.00
Base Flow (cfs): 1.31
Water (F): 60 - 60 Air (F): 65 - 65
Dry Channel (ft.): 0

Canopy Density (%):
Coniferous Component (%):
Hardwood Component
Dominant Bank
Vegetative Cover (%):
Dominant
Dominant Bank Substrate
Occurrence of LWD (%):
LWD per 100 ft.:
Riffles:
Pools:
Flat:

Pools by Stream Length
Pool Frequency (%):
Residual Pool Depth (%):
< 2 Feet Deep:
2 to 2.9 Feet Deep:
3 to 3.9 Feet Deep:
>= 4 Feet Deep:
Mean Max Residual Pool Depth
Mean Pool Shelter

Pool Tail Substrate (%): Silt/Clay: Sand: Gravel: Sm Cobble: Lg Cobble: Boulder Bedrock:
Embeddedness Values (%): 1. 2. 3. 4. 5.

STREAM REACH: 4

Channel Type: F5
Reach Length (ft.): 9369
Riffle/Flatwater Mean Width (ft.): 13.0
BFW:
Range (ft.): 3.00 to 32.00
Mean (ft.): 20.23
Std. Dev.: 5.05
Base Flow (cfs): 1.31
Water (F): 57 - 62 Air (F): 59 - 67
Dry Channel (ft.): 0

Canopy Density (%): 88.6
Coniferous Component (%): 0.8
Hardwood Component 99.2
Dominant Bank Hardwood Trees
Vegetative Cover (%): 86.2
Dominant Terrestrial Veg.
Dominant Bank Substrate Sand/Silt/Clay
Occurrence of LWD (%): 5.7
LWD per 100 ft.:
Riffles: 0
Pools: 2
Flat: 1

Pools by Stream Length 22.0
Pool Frequency (%): 34.0
Residual Pool Depth (%):
< 2 Feet Deep: 76.1
2 to 2.9 Feet Deep: 22.5
3 to 3.9 Feet Deep: 1.4
>= 4 Feet Deep: 0.0
Mean Max Residual Pool Depth 1.54
Mean Pool Shelter 38

Pool Tail Substrate (%): Silt/Clay: 1.4 Sand: 59.2 Gravel: 39.4 Sm Cobble: 0.0 Lg Cobble: 0.0 Boulder 0.0 Bedrock: 0.0
Embeddedness Values (%): 1. 1.4 2. 11.3 3. 7.0 4. 19.7 5. 60.6

Pilarcitos Creek

Summary of Fish Habitat Elements By Stream Reach

STREAM REACH: 5

Channel Type: NA
Reach Length (ft.): 1400
Riffle/Flatwater Mean Width (ft.):
BFW:
Range (ft.): 20.00 to 20.00
Mean (ft.): 20.00
Std. Dev.: 0.00
Base Flow (cfs): 1.31
Water (F): 58 - 58 Air (F): 60 - 60
Dry Channel (ft.): 0

Canopy Density (%):
Coniferous Component (%):
Hardwood Component
Dominant Bank
Vegetative Cover (%):
Dominant
Dominant Bank Substrate
Occurrence of LWD (%):
LWD per 100 ft.:
Riffles:
Pools:
Flat:

Pools by Stream Length
Pool Frequency (%):
Residual Pool Depth (%):
< 2 Feet Deep:
2 to 2.9 Feet Deep:
3 to 3.9 Feet Deep:
>= 4 Feet Deep:
Mean Max Residual Pool Depth
Mean Pool Shelter

Pool Tail Substrate (%): Silt/Clay: Sand: Gravel: Sm Cobble: Lg Cobble: Boulder Bedrock:
Embeddedness Values (%): 1. 2. 3. 4. 5.

STREAM REACH: 6

Channel Type: F4
Reach Length (ft.): 16612
Riffle/Flatwater Mean Width (ft.): 9.6
BFW:
Range (ft.): 9.00 to 22.00
Mean (ft.): 14.53
Std. Dev.: 2.84
Base Flow (cfs): 1.31
Water (F): 55 - 61 Air (F): 57 - 71
Dry Channel (ft.): 0

Canopy Density (%): 91.1
Coniferous Component (%): 4.6
Hardwood Component 95.4
Dominant Bank Hardwood Trees
Vegetative Cover (%): 86.4
Dominant Terrestrial Veg.
Dominant Bank Substrate Sand/Silt/Clay
Occurrence of LWD (%): 2.3
LWD per 100 ft.:
Riffles: 0
Pools: 1
Flat: 0

Pools by Stream Length 14.3
Pool Frequency (%): 24.6
Residual Pool Depth (%):
< 2 Feet Deep: 88.9
2 to 2.9 Feet Deep: 9.9
3 to 3.9 Feet Deep: 0.0
>= 4 Feet Deep: 1.2
Mean Max Residual Pool Depth 1.44
Mean Pool Shelter 24

Pool Tail Substrate (%): Silt/Clay: 7.3 Sand: 18.3 Gravel: 73.2 Sm Cobble: 1.2 Lg Cobble: 0.0 Boulder 0.0 Bedrock: 0.0
Embeddedness Values (%): 1. 0.0 2. 25.6 3. 26.8 4. 20.7 5. 26.8

Pilarcitos Creek

Summary of Fish Habitat Elements By Stream Reach

STREAM REACH: 7

Channel Type: NA
Reach Length (ft.): 1010
Riffle/Flatwater Mean Width (ft.):
BFW:
Range (ft.): 12.00 to 12.00
Mean (ft.): 12.00
Std. Dev.: 0.00
Base Flow (cfs): 1.31
Water (F): 59 - 59 Air (F): 64 - 64
Dry Channel (ft.): 0

Canopy Density (%):
Coniferous Component (%):
Hardwood Component
Dominant Bank
Vegetative Cover (%):
Dominant
Dominant Bank Substrate
Occurrence of LWD (%):
LWD per 100 ft.:
Riffles:
Pools:
Flat:

Pools by Stream Length
Pool Frequency (%):
Residual Pool Depth (%):
< 2 Feet Deep:
2 to 2.9 Feet Deep:
3 to 3.9 Feet Deep:
>= 4 Feet Deep:
Mean Max Residual Pool Depth
Mean Pool Shelter

Pool Tail Substrate (%): Silt/Clay: Sand: Gravel: Sm Cobble: Lg Cobble: Boulder Bedrock:
Embeddedness Values (%): 1. 2. 3. 4. 5.

STREAM REACH: 8

Channel Type: F4
Reach Length (ft.): 4303
Riffle/Flatwater Mean Width (ft.): 8.0
BFW:
Range (ft.): 9.00 to 15.00
Mean (ft.): 11.77
Std. Dev.: 1.61
Base Flow (cfs): 1.31
Water (F): 58 - 60 Air (F): 54 - 69
Dry Channel (ft.): 0

Canopy Density (%): 91.5
Coniferous Component (%): 3.6
Hardwood Component 96.4
Dominant Bank Hardwood Trees
Vegetative Cover (%): 81.0
Dominant Small Woody Debris
Dominant Bank Substrate Sand/Silt/Clay
Occurrence of LWD (%): 2.7
LWD per 100 ft.:
Riffles: 0
Pools: 2
Flat: 0

Pools by Stream Length 23.2
Pool Frequency (%): 40.0
Residual Pool Depth (%):
< 2 Feet Deep: 88.1
2 to 2.9 Feet Deep: 9.5
3 to 3.9 Feet Deep: 2.4
>= 4 Feet Deep: 0.0
Mean Max Residual Pool Depth 1.50
Mean Pool Shelter 23

Pool Tail Substrate (%): Silt/Clay: 0.0 Sand: 0.0 Gravel: 100. Sm Cobble: 0.0 Lg Cobble: 0.0 Boulder 0.0 Bedrock: 0.0
Embeddedness Values (%): 1. 2.4 2. 31.0 3. 33.3 4. 33.3 5. 0.0

Pilarcitos Creek

Summary of Fish Habitat Elements By Stream Reach

STREAM REACH: 9

Channel Type: NA
Reach Length (ft.): 1455
Riffle/Flatwater Mean Width (ft.):
BFW:
Range (ft.): 13.00 to 13.00
Mean (ft.): 13.00
Std. Dev.: 0.00
Base Flow (cfs): 1.31
Water (F): 59 - 59 Air (F): 62 - 62
Dry Channel (ft.): 0

Canopy Density (%):
Coniferous Component (%):
Hardwood Component
Dominant Bank
Vegetative Cover (%):
Dominant
Dominant Bank Substrate
Occurrence of LWD (%):
LWD per 100 ft.:
Riffles:
Pools:
Flat:

Pools by Stream Length
Pool Frequency (%):
Residual Pool Depth (%):
< 2 Feet Deep:
2 to 2.9 Feet Deep:
3 to 3.9 Feet Deep:
>= 4 Feet Deep:
Mean Max Residual Pool Depth
Mean Pool Shelter

Pool Tail Substrate (%): Silt/Clay: Sand: Gravel: Sm Cobble: Lg Cobble: Boulder Bedrock:
Embeddedness Values (%): 1. 2. 3. 4. 5.

STREAM REACH: 10

Channel Type: F4
Reach Length (ft.): 4877
Riffle/Flatwater Mean Width (ft.): 10.3
BFW:
Range (ft.): 10.00 to 27.00
Mean (ft.): 15.97
Std. Dev.: 5.00
Base Flow (cfs): 1.31
Water (F): 55 - 61 Air (F): 52 - 70
Dry Channel (ft.): 0

Canopy Density (%): 86.5
Coniferous Component (%): 12.3
Hardwood Component 87.7
Dominant Bank Hardwood Trees
Vegetative Cover (%): 82.0
Dominant Terrestrial Veg.
Dominant Bank Substrate Sand/Silt/Clay
Occurrence of LWD (%): 10.1
LWD per 100 ft.:
Riffles: 1
Pools: 3
Flat: 1

Pools by Stream Length 24.2
Pool Frequency (%): 35.3
Residual Pool Depth (%):
< 2 Feet Deep: 88.1
2 to 2.9 Feet Deep: 7.1
3 to 3.9 Feet Deep: 4.8
>= 4 Feet Deep: 0.0
Mean Max Residual Pool Depth 1.52
Mean Pool Shelter 21

Pool Tail Substrate (%): Silt/Clay: 0.0 Sand: 0.0 Gravel: 92.7 Sm Cobble: 7.3 Lg Cobble: 0.0 Boulder 0.0 Bedrock: 0.0
Embeddedness Values (%): 1. 14.3 2. 66.7 3. 14.3 4. 4.8 5. 0.0

Pilarcitos Creek

Summary of Fish Habitat Elements By Stream Reach

STREAM REACH: 11

Channel Type: B3
Reach Length (ft.): 2517
Riffle/Flatwater Mean Width (ft.): 12.5
BFW:
Range (ft.): 10.00 to 27.00
Mean (ft.): 15.18
Std. Dev.: 5.17
Base Flow (cfs): 1.31
Water (F): 59 - 60 Air (F): 63 - 70
Dry Channel (ft.): 0

Canopy Density (%): 90.5
Coniferous Component (%): 15.7
Hardwood Component 84.3
Dominant Bank Hardwood Trees
Vegetative Cover (%): 82.6
Dominant Boulders
Dominant Bank Substrate Sand/Silt/Clay
Occurrence of LWD (%): 8.4
LWD per 100 ft.:
Riffles: 2
Pools: 3
Flat: 1

Pools by Stream Length 19.8
Pool Frequency (%):36.4
Residual Pool Depth (%):
< 2 Feet Deep: 93.8
2 to 2.9 Feet Deep: 6.3
3 to 3.9 Feet Deep: 0.0
>= 4 Feet Deep: 0.0
Mean Max Residual Pool Depth 1.13
Mean Pool Shelter 24

Pool Tail Substrate (%): Silt/Clay: 0.0 Sand: 0.0 Gravel: 64.3 Sm Cobble: 14.3 Lg Cobble: 0.0 Boulder 0.0 Bedrock: 21.4
Embeddedness Values (%): 1. 13.3 2. 46.7 3. 13.3 4. 6.7 5. 20.0

STREAM REACH: 12

Channel Type: A3
Reach Length (ft.): 2708
Riffle/Flatwater Mean Width (ft.): 12.7
BFW:
Range (ft.): 16.00 to 24.00
Mean (ft.): 19.86
Std. Dev.: 2.49
Base Flow (cfs): 1.31
Water (F): 60 - 62 Air (F): 59 - 63
Dry Channel (ft.): 0

Canopy Density (%): 86.0
Coniferous Component (%): 24.8
Hardwood Component 75.2
Dominant Bank Hardwood Trees
Vegetative Cover (%): 79.6
Dominant Boulders
Dominant Bank Substrate Sand/Silt/Clay
Occurrence of LWD (%): 11.2
LWD per 100 ft.:
Riffles: 4
Pools: 6
Flat: 2

Pools by Stream Length 23.7
Pool Frequency (%): 36.4
Residual Pool Depth (%):
< 2 Feet Deep: 81.3
2 to 2.9 Feet Deep: 12.5
3 to 3.9 Feet Deep: 0.0
>= 4 Feet Deep: 6.3
Mean Max Residual Pool Depth 1.68
Mean Pool Shelter 46

Pool Tail Substrate (%): Silt/Clay: 0.0 Sand: 6.3 Gravel: 56.3 Sm Cobble: 12.5 Lg Cobble: 12.5 Boulder 12.5 Bedrock: 0.0
Embeddedness Values (%): 1. 6.3 2. 31.3 3. 18.8 4. 6.3 5. 37.5

Table 9 -Mean Percentage of Dominant Substrate and Vegetation

Stream Name: Pilarcitos Creek **LLID:** 1224481374754 **Drainage:** San Mateo Coastal
Survey 9/14/2010 to 10/1/2010

Confluence Location: **Quad:** HALF MOON BAY **Legal Description:** T05SR05WS30 **Latitude:** 37:28:31.0N **Longitude:** 122:26:53.0W

Mean Percentage of Dominant Stream Bank Substrate

Dominant Class of Substrate	Number of Units Right Bank	Number of Units Left Bank	Total Mean Percentage (%)
Bedrock	15	17	1.9
Boulder	34	29	3.8
Cobble/Gravel	8	1	0.5
Sand/Silt/Clay	775	785	93.8

Mean Percentage of Dominant Stream Bank Vegetation

Dominant Class of Vegetation	Number of Units Right Bank	Number of Units Left Bank	Total Mean Percentage
Grass	1	4	0.3
Brush	64	68	7.9
Hardwood	766	757	91.5
Coniferous	0	2	0.1
No Vegetation	0	0	0.0

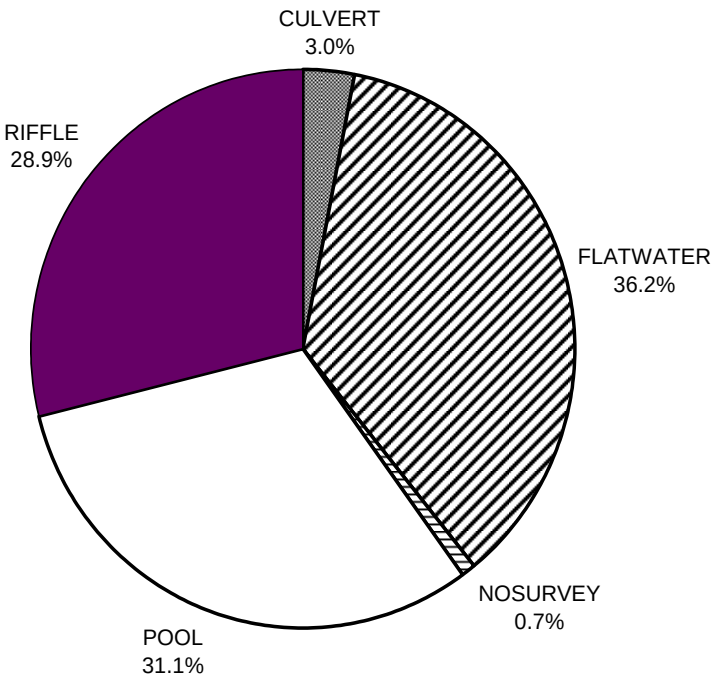
Total Stream Cobble Embeddedness Values: 3

Table 10 - Mean Percent of Shelter Cover Types For Entire Stream

Stream Name: Pilarcitos Creek **LLID:** 1224481374754 **Drainage:** San Mateo Coastal
Survey 9/14/2010 to 10/1/2010
Confluence Location: **Quad:** HALF MOON BAY **Legal Description:** T05SR05WS30 **Latitude:** 37:28:31.0N **Longitude:** 122:26:53.0W

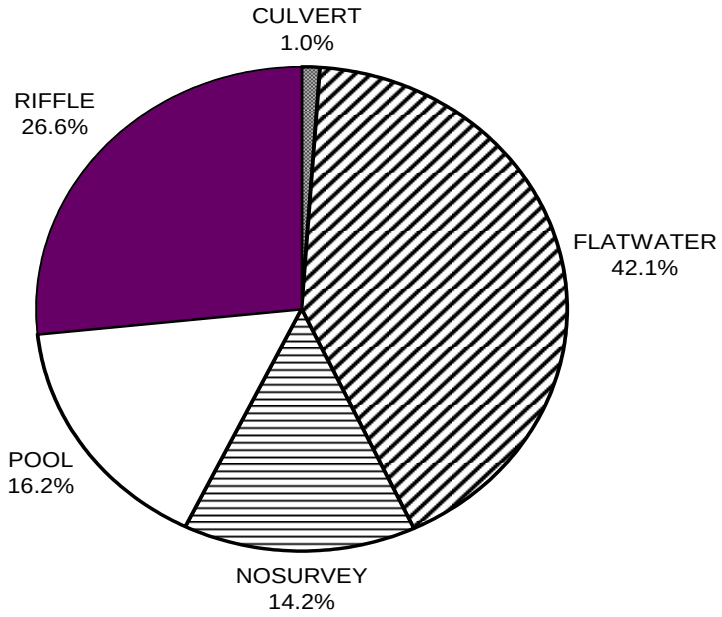
	Riffles	Flatwater	Pools
UNDERCUT BANKS (%)	0	2	6
SMALL WOODY DEBRIS (%)	4	17	25
LARGE WOODY DEBRIS (%)	3	4	9
ROOT MASS (%)	0	2	6
TERRESTRIAL VEGETATION	11	35	26
AQUATIC VEGETATION (%)	0	0	0
WHITEWATER (%)	2	0	2
BOULDERS (%)	10	10	12
BEDROCK LEDGES (%)	0	1	1

PILARCITO CREEK 2010
HABITAT TYPES BY PERCENT OCCURRENCE



GRAPH 1

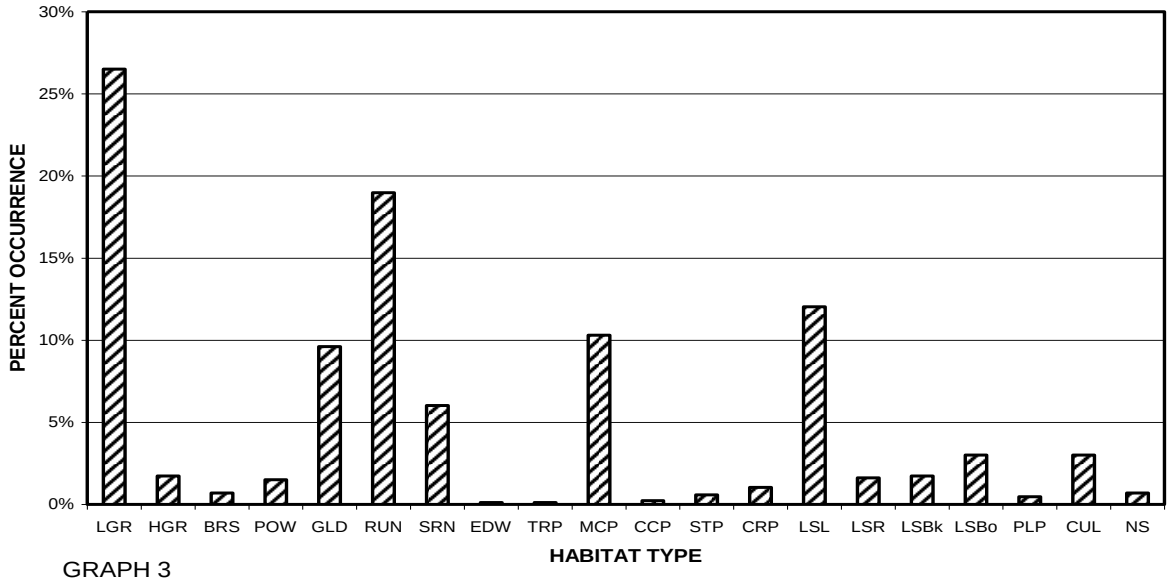
PILARCITO CREEK 2010
HABITAT TYPES BY PERCENT TOTAL LENGTH



GRAPH 2

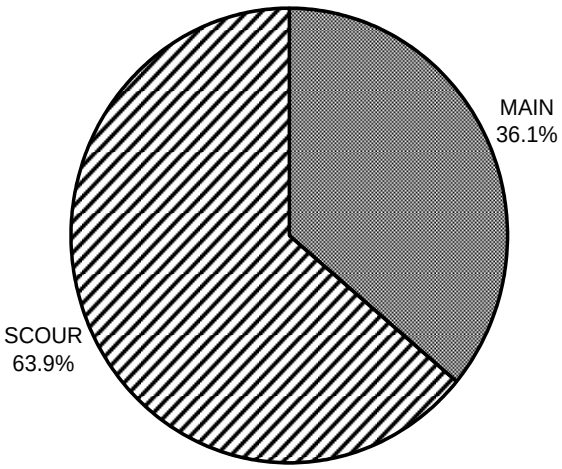
Pilarcitos Creek

PILARCITO CREEK 2010
HABITAT TYPES BY PERCENT OCCURRENCE



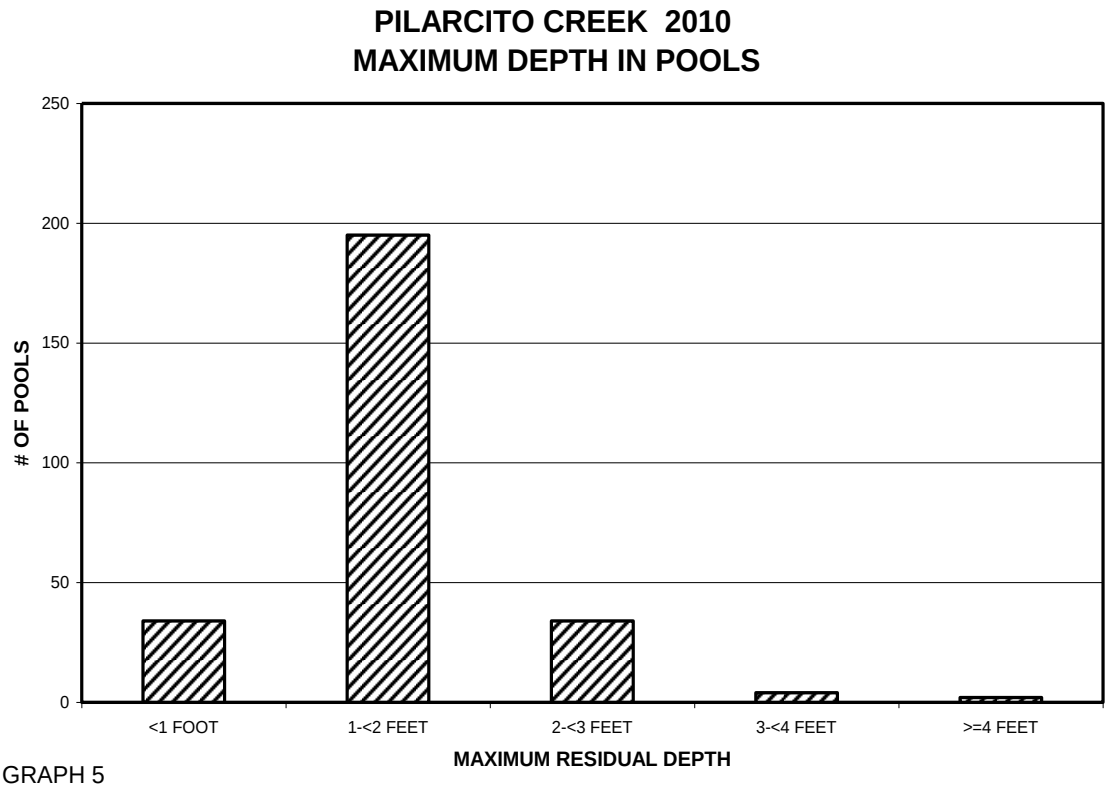
GRAPH 3

PILARCITO CREEK 2010
POOL TYPES BY PERCENT OCCURRENCE

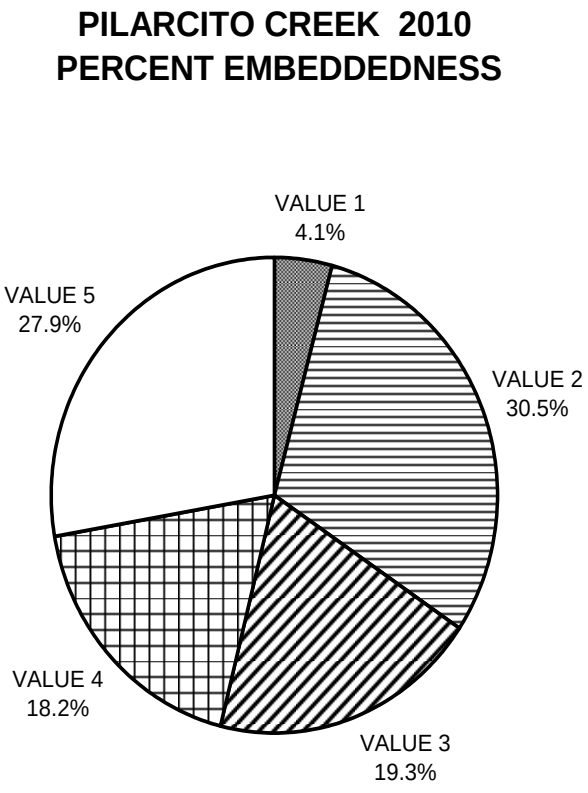


GRAPH 4

Pilarcitos Creek

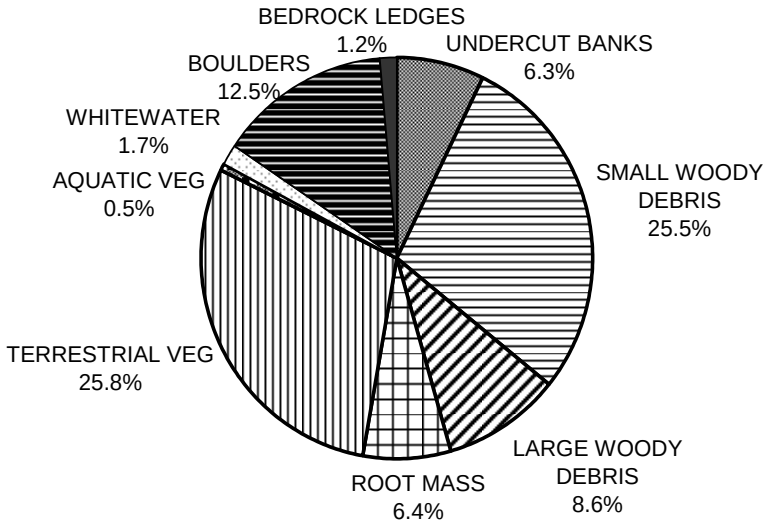


GRAPH 5



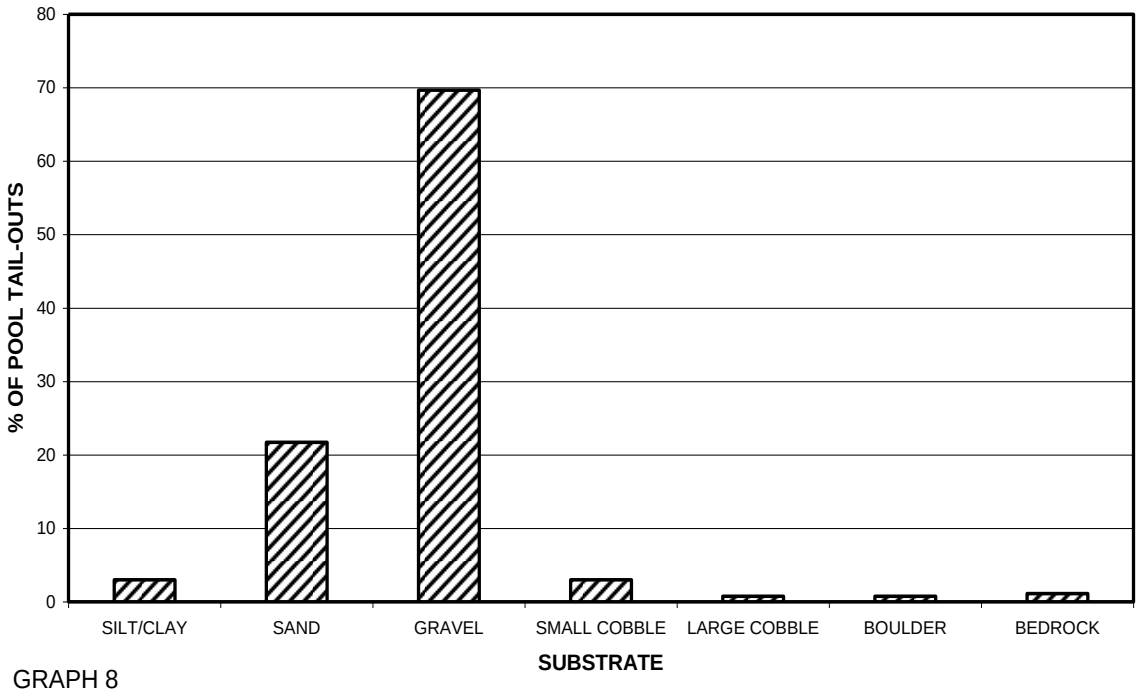
GRAPH 6

PILARCITO CREEK 2010
MEAN PERCENT COVER TYPES IN POOLS



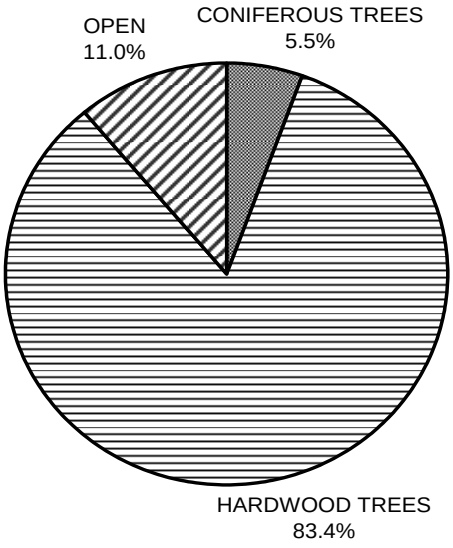
GRAPH 7

PILARCITO CREEK 2010
SUBSTRATE COMPOSITION IN POOL TAIL-OUTS



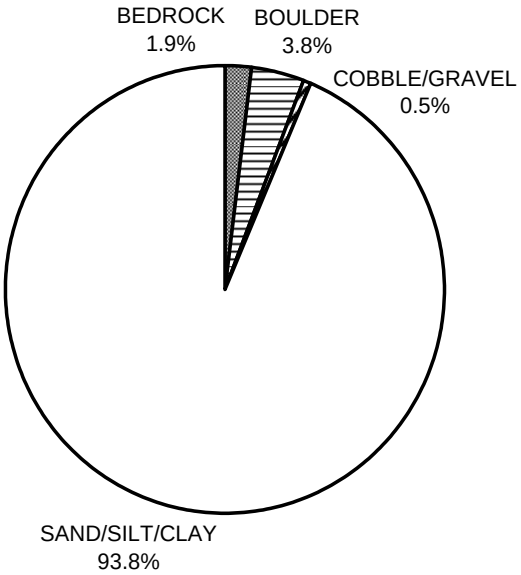
GRAPH 8

PILARCITO CREEK 2010
MEAN PERCENT CANOPY



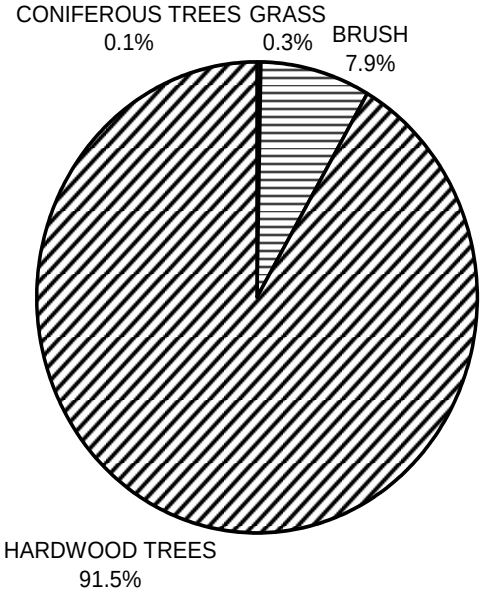
GRAPH 9

PILARCITO CREEK 2010
DOMINANT BANK COMPOSITION IN SURVEY REACH



GRAPH 10

PILARCITO CREEK 2010
DOMINANT BANK VEGETATION IN SURVEY REACH



GRAPH 11