

**Western Riverside County  
Multiple Species Habitat Conservation Plan (MSHCP)  
Biological Monitoring Program**

California Red-Legged Frog (*Rana aurora draytonii*) Survey  
Report 2005



July 7, 2006  
(Revised September 19, 2006)

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**NOTE TO READER:**

This report is an account of survey activities undertaken by the Biological Monitoring Program for the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP). The MSHCP was permitted in June of 2004. The Biological Monitoring Program monitors the distribution and status of the 146 Covered Species within the Conservation Area to provide information to Permittees, land managers, the public and the Wildlife Agencies (i.e. the California Department of Fish and Game and the U.S. Fish and Wildlife Service). Monitoring Program activities are guided by the MSHCP Species Objectives for each Covered Species, the MSHCP information needs identified in Section 5.3 or elsewhere in the document, and the information needs of the Permittees.

The primary preparer of this report was the 2005 amphibian Field Crew Leader, Shirley Bartz. If there are any questions about the information provided in this report, please contact the Monitoring Program Administrator. If you have questions about the MSHCP, please contact the Executive Director of the Western Riverside County Regional Conservation Authority. For further information on the MSHCP and the RCA, go to [www.wrc-rca.org](http://www.wrc-rca.org)

Contact Info:

Executive Director  
Western Riverside County  
Regional Conservation Authority  
4080 Lemon Street, 12th Floor  
P.O. Box 1667  
Riverside, CA 92502-1667  
Ph: (951) 955-9700

Monitoring Program Administrator  
c/o Yvonne C. Moore  
California Department of Fish and Game  
4500 Glenwood Drive, Bldg. C  
Riverside, CA 92501  
Ph: (951) 248-2552

## OVERVIEW

There are four Covered stream-dependent amphibian species with species objectives requiring the determination of successful reproduction within the MSHCP Conservation Area that can be detected by visual encounter surveys: arroyo toad (*Bufo californicus*), California red-legged frog (*Rana aurora draytonii*), mountain yellow-legged frog (*Rana muscosa*), and coast range newt (*Taricha tarosa tarosa*). In 2005, the Monitoring Program coordinated with the U.S. Geological Survey (USGS) on a stream survey protocol to assess the quality of stream habitats for the above Covered amphibian species. Stream assessment surveys were conducted in accessible waterways in the Conservation Area between May and December 2005. Surveys for Covered amphibians generally used the same protocol (with the exception of night surveys for California red-legged frog), but differed in the waterways surveyed and time of year surveys took place. This report describes methodology and survey results for California red-legged frog only. Individual survey reports have been prepared for coast range newt, arroyo toad, and mountain yellow-legged frog and are not discussed further in this report.

## INTRODUCTION

The California red-legged frog (*Rana aurora draytonii*, “CRLF”) is federally listed as threatened and is a California species of special concern. This species has narrow habitat requirements and a limited distribution within the MSHCP Plan Area. CRLF is typically found in lowland streams, wetlands and pools where dense vegetation surrounds relatively deep water within small (< 300 km<sup>2</sup>) watersheds. Historically occupied locations include: Arroyo Seco, San Juan Creek, several sewage treatment pools along the Santa Ana River near Fla-Bob airport (1974 and 1980), a northwest tributary of Arroyo del Torro, an area immediately east of Lake Elsinore, and now-developed upper reaches of Murrieta Creek and Santa Gertrudis Creek. The MSHCP species account for CRLF lists Cole Creek at the Santa Rosa Plateau Ecological Reserve as the only current known location in the MSHCP Plan Area.

The species objectives for CRLF require the conservation of Core Areas identified in the MSHCP as Cole Creek, Avenoloca Mesa, Redonda Mesa, the slopes and foothills of Squaw Mountain in the Santa Rosa Plateau, the southern Santa Ana Mountains, and intervening lands including the San Mateo Wilderness Area of the Cleveland National Forest and Alamos Canyon and environs. Species objective 6 for CRLF states:

*..within the MSHCP Conservation Area, Reserve Managers will determine if successful reproduction is occurring as measured by the presence/absence of juvenile frogs, tadpoles, or egg masses populations once a year for the first five years after permit issuance and then as determined by the Reserve Management Oversight Committee. (Dudek and Associates 2003).*

### Survey Goals

The intent of our surveys in 2005 was to survey known CRLF breeding locations in Core Areas and other potentially suitable habitat in accessible areas of the Plan Area. Specifically, our surveys goals were to:

- A) Document CRLF breeding locations in Core Areas and as many other suitable habitat locations as possible within the Plan Area.
- B) Collect data to estimate occupancy in the area of inference (surveyed streams and similar habitat).
- C) Gather data on habitat characteristics preferred by CRLF present in surveyed waterways to test habitat suitability and associations between the target species and available habitat within the Conservation Area.
- D) Evaluate a protocol and provide input on changes/additions to field methodology for future surveys.
- E) Share survey data with Reserve Managers who will evaluate the information and take steps to change or maintain management strategies.

## **METHODS**

### **Protocol Development**

The USGS Western Ecological Research Center, San Diego Field Station drafted the protocol, *Aquatic Species and Habitat Assessment Protocol for Southcoast Ecoregion Rivers, Streams, and Creeks* (USGS 2005), which was used by the Monitoring Program for amphibian stream surveys in 2005. Minor revisions were made to the protocol to ensure it would meet the requirements of the MSHCP species objectives for CRLF and other Covered amphibian species. Since the protocol has not been finalized by USGS, it was not included as an Appendix to this report. A copy of the protocol can be found in the Monitoring Program office or by contacting USGS directly.

### **Personnel and Training**

All field observers took part in discussion of, and training in, the use of the USGS amphibian survey protocol on 27 July 2005. In addition, night survey techniques for CRLF were demonstrated on 7 July at San Francisquito Canyon with all field crew leaders and all crew members employed at the time. During this training, night survey techniques were introduced and tested, and live adult and larval CRLF were observed, captured, and handled for identification purposes. Lead surveyor training also included an on-site night survey session with Mark Jennings (Rana Resources, Inc.) at three of 10 historic locations in Cole Creek on 15 September 2005. No CRLF were found during this training although one adult bullfrog (*Rana catesbeiana*) was collected and distinguishing traits were noted. Surveyors conducting CRLF surveys in 2005 included:

- Adam Malisch (Regional Conservation Authority)
- Shirley Bartz (Regional Conservation Authority)
- Kimberly Oldehoeft (Regional Conservation Authority)
- Ricky Escobar (California Department of Fish and Game)
- Annie Bustamante (California Department of Fish and Game)
- Karin Cleary-Rose (U.S. Fish and Wildlife Service)
- Rosina Gallego (California Department of Fish and Game)

## Study Site Selection

Study sites were chosen using a GIS map of historic detection locations for CRLF. Surveys were conducted within accessible lands in Core Areas, as well as an additional two areas of potentially suitable habitat in Arroyo Seco and San Juan Creek (Table 1). Additional suitable habitat was identified using habitat characteristic descriptions in the MSHCP species account for CRLF. Habitat types included lowland streams, wetlands, riparian woodlands, as well as uplands near breeding areas and along intermittent drainages connecting wetlands. Selection characteristics included streams with:

- deep ponds ( $\geq 0.7\text{m}$ ) with still or slow-moving water
- ponds with dense stands of over-hanging willow (*Salix* spp.) and a fringe of cattails (*Typha latifolia*)
- plunge pools present
- no evidence of bullfrogs or exotic predatory fishes

Surveys in 2005 for CRLF were coordinated with Mark Jennings who has nearly 20 years of experience working with a wide variety of fishes, amphibians, and reptiles throughout California and is a noted authority on a number of species, including the California red-legged frog. Historic locations of CRLF populations at the Santa Rosa Plateau were surveyed by Mark Jennings while Biological Monitoring Program biologists surveyed other waterways with historic detections and areas of potentially suitable habitat.

## Survey Methods

Detailed survey methodology is described in *USGS Aquatic Species and Habitat Assessment Protocol for Southcoast Ecoregion Rivers, Streams, and Creeks* (USGS 2005). All waterways (main creeks and tributaries) to be surveyed were sectioned into 250m segments, with segment numbers (i.e., Reach 1, Reach 2, etc.) beginning at a downstream confluence with a larger order waterway. Daytime visual encounter surveys were conducted along stream banks and within the channel from downstream to upstream areas by at least two surveyors. Survey time per segment varied according to streambed characteristics and abundance of amphibians detected. All amphibians encountered, including common species, were sampled using visual encounter and dip-net techniques.

Within each surveyed segment, data were collected when CRLF and non-target amphibian species were detected. At the first encounter of each life stage (tadpole, juvenile, adult) for all species detected, UTM coordinates were saved as waypoints in a GPS unit. Waypoints included a creek name code, tributary number, and reach (segment) number (Example: CK1R6 = Cole Creek, trib 1, reach 6) and were linked to a time/date.

Data on habitat characteristics were collected at the beginning and end of each surveyed segment. Data collected at the beginning of each surveyed segment included: date, observer, time, general weather description, temperature in shade at 1m above ground, average wind speed, presence/absence of water, water temperature, pH, percent dissolved oxygen, mg/L dissolved oxygen, conductivity, wetted depth and width of stream channel, water velocity and number of wetted channel braids. Data collected at the end of a survey included: presence and

name of exotic plant species, percent wet length, percent shallow, medium and deep pools, presence and number of plunge pools, presence and type of aquatic refugia, type of 3 most common aquatic substrates and percent coverage of each type throughout the segment, presence and type of recent disturbance.

### ***Night Surveys***

The stream assessment surveys described above are best used to detect egg, larval, and juvenile life stages of amphibians. Because the last known records of CRLF in the Conservation Area were adult frogs (M. Jennings, field notes 2001), night surveys were also conducted to detect adult frogs at suitable locations based on the daytime stream assessment surveys. The protocol for night surveys was similar to daytime surveys (i.e., visual encounter and dip-net techniques) with the exception that flashlights were used to look for the “eyeshine” of adult frogs, and many of the stream characteristics taken during the day were not taken during the night (e.g., water velocity, upland and riparian vegetation). Night surveys for CRLF were conducted from 12 October to 1 December 2005, between 1830 and 2400 hours.

### **Data Analysis**

The intent of the 2005 survey effort was to locate breeding populations of CRLF in the MSHCP Core Areas to meet MSHCP species objectives. In subsequent years where there is budget and crew available, data analyses will include a calculation of Proportion of Area Occupied (PAO, see MacKenzie et al. 2002), assuming CRLF populations are found in the MSHCP Plan Area. Calculation of PAO requires multiple visits to survey locations. We are in the inventory stage of monitoring, so we wanted to survey as many stream segments as possible and only single visits were made to each stream segment in 2005 (although some night time surveys were conducted in reaches where daytime surveys had previously been conducted). PAO will provide us with the detection probability of CRLF in surveyed creeks, which will in turn allow us to estimate CRLF occupancy in the area of inference (i.e., surveyed streams and similar habitat).

An analysis of habitat characteristics and the association of CRLF with predicted habitat variables will be conducted as sample size allows. Habitat characteristics noted in the MSHCP as being strongly associated with presence of CRLF will be analyzed for associations between presence or non-presence of the focal species.

Raw data are housed in the USGS database at the San Diego Field Station and at the Biological Monitoring Program office in Riverside.

## **RESULTS**

Surveys were conducted within accessible lands in Core Areas, as well as an additional two areas of potentially suitable habitat. Six waterways were surveyed for a total of 63 segments (15.75 km). No CRLF adults, tadpoles or egg masses were found at any of the waterways surveyed (Table 1, Figure 1) by Monitoring Program biologists or by Mark Jennings. Detailed results are presented below.

## Results from Biological Monitoring Program Surveys

Forty-four (44) stream segments were surveyed in Core Areas including Cole Creek of the Santa Rosa Plateau, Los Alamos Creek, San Mateo Canyon and Tenaja Creek in the San Mateo Wilderness area (Table 1). Portions of the San Juan and Arroyo Seco watersheds were also surveyed for a total of 19 segments in areas of suitable habitat. Due to time constraints and low probability of water presence, we did not survey the slopes and foothills of Squaw Mountain, Redonda and Avenaloca Mesas within the Santa Rosa Plateau. We visited a historic location in Arroyo Seco and another in Santa Gertrudis Creek (which was dry). Several sites of historic detections were inaccessible or no longer suitable habitat (i.e., developed). These areas included Arroyo del Torro tributary 1 (inaccessible), sewage ponds of Santa Ana River (inaccessible), upper reaches of Murrieta Creek (developed), and immediately east of Lake Elsinore (inaccessible and developed).

According to the MSHCP, habitat characteristics especially important to CRLF include deep ( $\geq 0.7$  m) pools with dense stands of over-hanging willow and a fringe of cattails, the presence of plunge pools, and an absence of exotic predatory amphibians and fishes. Although depth was not measured at each pool encountered in the survey (see Discussion below) presence of plunge pools, riparian vegetation communities, and detections of all other vertebrates were noted. Many of the surveyed waterways included habitat characteristics noted as desirable to CRLF (Table 2).

Data on riparian and upland vegetation communities were not collected during night surveys. Approximately 25% of night surveys were conducted in segments that were previously visited for day surveys. For those segments surveyed only at night, estimations of riparian and upland vegetation communities were made using vegetation community data collected during day surveys from adjacent segments. From these estimations, upland communities were 65% oak woodland, 30% unknown, and 5% non-native grasslands, while riparian communities were 44% willow, 14% sycamore, and 39% unknown/other. In 47 segments noted for plunge pool presence or absence, 18 had plunge pools present throughout the segment. However, almost half of these surveys were conducted in November or December when many waterways had stopped flowing. Bullfrogs (*Rana catesbeiana*), catfish (*Ictalurus punctatus*), crayfish (*Procambarus clarkii*), or bluegill sunfish (*Lepomis macrochirus*) were encountered in three of six waterways surveyed. In seven segments of San Mateo Creek, estimated numbers of bullfrog larvae exceeded 1,000 (Table 1).

## Results from Mark Jennings Surveys

As part of an on-going study of CRLF at the Santa Rosa Plateau, Mark Jennings conducted a survey in 2005 of pools in the Cole Creek watershed. These pools included historic locations as well as pools in suitable CRLF habitat. These surveys yielded no detections of CRLF adults, larvae, or egg masses.



## DISCUSSION

Records of CRLF in Riverside County are some of the most current of all Covered amphibian records in the MSHCP. Significant declines in CRLF populations led to focused research by Jennings and Marc Hayes from 1986 to 1996 on the Santa Rosa Plateau. In 1998, the last known female in this small population was not relocated, and in 2001 no CRLF were observed at any of the historic locations (pers. comm. Mark Jennings).

In 2005, the Biological Monitoring Program surveyed portions of all Core Areas listed in the MSHCP species account for CRLF, plus two additional areas of suitable habitat. Species objective 6 for CRLF requires the MSHCP to document and maintain evidence of CRLF breeding activity within the Conservation Area. No CRLF were found by either the Biological Monitoring Program or Mark Jennings in 2005. Because evidence of breeding was not detected in any of the Core Areas or areas of suitable habitat within the Plan Area, the species objective was not met in 2005. The Monitoring Program will continue to conduct annual CRLF surveys for the first five years after permit issuance, as required by the MSHCP.

Although many of the waterways surveyed included habitat characteristics preferred by CRLF, half of the waterways contained at least one and often two or three species of exotic predatory fish or amphibians. Many studies (Fisher & Schafer 1996, Harrison 1991, Hayes & Jennings 1986, Jennings 1988, Lefcourt & Blaustein 1995) have put forth possible explanations for declines of CRLF and amphibians in general in southern California. The introduction of exotic predators known to prey on native amphibians is likely to have deleterious effects on CRLF.

### Recommendations for Future Surveys

Below is a list of recommendations for future surveys for CRLF in western Riverside County.

1. Since surveys for adult CRLF were conducted at night, many of the habitat characteristic data were not collected because they were not visible. Initial plans for these surveys assumed that all night survey locations had been visited earlier in the season and habitat characteristic data had been collected at that time. In actuality, many of the night surveys occurred at locations that had not been previously surveyed. Thus, data on vegetation community types are largely unknown at many night survey locations. Future crew leaders should ensure that sites where night surveys are to take place have been visited during the day and habitat variables collected so that these characteristics may be associated with presence/non-presence of CRLF.
2. Begin hiring crew earlier in season. Hiring and time constraints resulted in a reduction in the number of waterways surveyed. Amphibian surveys conducted in 2005 included four species with overlapping activity schedules such that the start date for CRLF surveys was delayed until the bulk of arroyo toad and mountain yellow-legged frog surveys were completed. The MSHCP species account for CRLF suggests that surveys for CRLF begin 1 May and end 1 November. It is possible that completion of CRLF surveys within this

suggested time frame would have enhanced our ability of measuring desirable habitat characteristics.

3. Hire more field crew members. An increase in the number of crew available for teams of surveyors would improve preparation survey timing described above.
4. Prioritize visits to waterways by creek size. Although 2005 proved to be a year of high water levels in Plan Area waterways, small creeks were still noted as dry late in the field season. By visiting smaller order creeks earlier in the field season, chances of missing breeding activity due to loss of habitat (i.e., evaporation of water) will be reduced.
5. Collect data on microhabitat characteristics of pools including presence and species of emergent vegetation and measured depth of each pool encountered within the medium or deep category. Depth of pools available in a waterway has been noted as important in terms of providing overwintering habitat for frogs. Fields for these variables need to be added to the data sheet.
6. Incorporate landscape/vegetation communities that apply specifically to the MSHCP. Many of the upland and riparian vegetation communities available for selection on the datasheet were not found in the Plan Area (San Diegan Sage Scrub). Amphibian surveyors would benefit from several pre-survey visits (accompanied by a botanist) with the express purpose of identifying and categorizing communities common to CRLF habitat.
7. Estimate canopy cover consistently. Since “open streams and lake margins” have been identified as a key habitat characteristic preferred by CRLF, it is important to estimate canopy cover above waterways in a manner that is both consistent among all surveyors and relevant to the species in question. Canopy/openness may affect water temperature, refuge for/from predators, water pH, and other elements of CRLF habitat. In all cases, canopy cover should be collected at a level that impacts frogs in the waterway. We suggest that cover estimates include any vegetative or fallen log material that obscures the line of sight from the top of the bank to the highest tree top. In this way, estimates of cover include the area inhabited by most terrestrial predators, as well as shrubs and small trees that may contribute to shade and organic material decomposing in the creek bed.

### **Data Sharing with Reserve Managers**

Extreme winter precipitation in 2004-05 led to higher than average water levels in rivers and creeks of western Riverside County in 2005. It is highly probable that amphibian populations were affected by these high water levels. Increased water levels from March to July may have provided extended time for breeding and larval development, as well as greater food and cover availability for adult and juvenile amphibians. It is also possible that high water levels resulted in increased flow and scouring in channels where amphibians had previously bred or developed into adult life stages.

The results of our surveys for CRLF in 2005 indicate that CRLF populations are not breeding at levels high enough to satisfy the species goals of the MSHCP. The preparation of this report is the first step in a process by which survey data and management recommendations will be made available by the Reserve Managers. Depending on climatic and other variables in this year and the next, comparisons of breeding activity to be reported in 2006 may provide Reserve Managers with further indication of population levels.

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**Table 1.** California red-legged frog survey results in 2005. Non target species encountered during surveys included coast range newt (*Taricha tarosa tarosa*), garden slender salamander (*Batrachoseps major*), western toad (*Bufo boreas*), pacific treefrog (*Hyla regila*), California treefrog (*H. cadaverina*), bullfrog (*Rana catesbeiana*), bluegill sunfish (*Lepomis macrochirus*), catfish (*Ictalurus punctatus*), crayfish (*Procambarus clarkii*).

<b>Creek Name</b>	<b>MSHCP Status</b>	<b>Survey Date</b>	<b>Observers<sup>1,2</sup></b>	<b># Segs</b>	<b>CRLF</b>	<b>Other Spp</b>
San Mateo	Core Area	12-18 Oct	1, 3, 4, 5,	7	No	H. regila, H. cadaverina, T. tarosa, R. catesbeiana
Los Alamos	Core Area	12-Oct-05	2, 3	4	No	H. regila, H. cadaverina
Tenaja	Core Area	19-Oct-05	1, 2, 3, 10	3	No	B. major, H. regila, H. cadaverina
Cole Creek	Core Area	15 Sept - 1 Dec	1, 2, 3, 4, 5	30	No	H. regila, T. tarosa, R. catesbeiana
Arroyo Seco	Potential Habitat	19-Oct-05	1, 5	6	No	H. regila, H. cadaverina, I. punctatus, P. clarkii, L. macrochirus
San Juan	Potential Habitat	28 Oct - 9 Nov	1- 6, 9, 10	13	No	H. regila, H. cadaverina, T. tarosa
Total Segments Surveyed				63		

<sup>1</sup> Observers: 1: S. Bartz, 2: R. Escobar, 3: A Malisch, 4: A. Bustamante, 5: Rosina Gallego, 6: Karin Cleary-Rose, 7: Debbie De La Torre, 8: Brian Root

<sup>2</sup> Mark Jennings conducted 16 surveys in the Cole Creek watershed. These surveys focused on pools rather than entire creek-bottoms

**Table 2.** Habitat characteristics noted on night surveys for California red-legged frogs. This species has been noted to favor deep pools with still or slow-moving water, with dense stands of over-hanging willow and a fringe of cattails. Nocturnal conditions prevented crews from collecting data on water velocity, as well as reducing observers' ability to determined upland and riparian vegetation communities. Partial data on vegetation communities as wells as presence of plunge pools is presented below. Upland and riparian communities in bold type represent data collected in the field, whereas non-bold vegetation data are estimates based on adjacent community types.

<b>Created</b>	<b>Block</b>	<b>Reach</b>	<b>Easting</b>	<b>Northing</b>	<b>Shallow</b>	<b>Medium</b>	<b>Deep</b>	<b>#Pools</b>	<b>Upland</b>	<b>Riparian</b>
20-Oct-05	Arroyo Seco Creek	10	502539	3702519	dry	dry	dry			
20-Oct-05	Arroyo Seco Creek	11	502545	3702274	dry	dry	dry			
20-Oct-05	Arroyo Seco Creek	12	502659	3702068				1-5	<b>Oak Woodland</b>	<b>Cottonwood-Willow</b>
20-Oct-05	Arroyo Seco Creek	13	502785	3701868	1-10%	1-10%	0%	0	<b>Oak Woodland</b>	<b>Cottonwood-Willow</b>
20-Oct-05	Arroyo Seco Creek	14	502848	3701642	51-75%	1-10%	0%	1 - 5	Oak Woodland	Cottonwood-Willow
20-Oct-05	Arroyo Seco Creek	15	502800	3701493	1-10%	76-100%	0%	1 - 5	Oak Woodland	Cottonwood-Willow
1-Dec-05	Cole Creek	10	475805	3712000	11-25%	1-10%	0%	0	<b>Oak Woodland</b>	<b>Sycamore-Alder Woodland</b>
18-Nov-05	Cole Creek	11	475660	3711800	1-10%	1-10%	0%	0	Oak Woodland	Sycamore-Alder Woodland
18-Nov-05	Cole Creek	12	475495	3711636	1-10%	1-10%	0%	0	Oak Woodland	Sycamore-Alder Woodland
18-Nov-05	Cole Creek	14	475500	3711170	11-25%	1-10%	1-10%	0	Oak Woodland	Sycamore-Alder Woodland
18-Nov-05	Cole Creek	22	474509	3709700	1-10%	0%	0%		Oak Woodland	Southern Willow Scrub
18-Nov-05	Cole Creek	23	474337	3709520					Oak Woodland	Southern Willow Scrub
18-Nov-05	Cole Creek	24	474268	3709287					Oak Woodland	Southern Willow Scrub
18-Nov-05	Cole Creek	25	474086	3709141					Oak Woodland	Southern Willow Scrub
18-Nov-05	Cole Creek	26	474068	3708893	76-100%	0%	0%		Oak Woodland	Southern Willow Scrub
18-Nov-05	Cole Creek TRIB 4	1	475470	3710803	1-10%	0%	0%		<b>Oak Woodland</b>	<b>Oak Woodland</b>
18-Nov-05	Cole Creek TRIB 4	2	475662	3710662	1-10%	0%	0%		<b>Oak Woodland</b>	<b>Oak Woodland</b>
18-Nov-05	Cole Creek TRIB 4	3	475887	3710598					<b>Grassland</b>	<b>Oak Woodland</b>
18-Nov-05	Cole Creek TRIB 4	4	476108	3710515					<b>Grassland</b>	<b>Non-Native Annual Grassland</b>
18-Nov-05	Cole Creek TRIB 4	5	476353	3710476					<b>Grassland</b>	<b>Non-Native Annual Grassland</b>
18-Nov-05	Cole Creek TRIB 4	6	476525	3710317					<b>Grassland</b>	<b>Non-Native Annual Grassland</b>
12-Oct-05	Los Alamos Canyon	2	463886	3712508	0%	0%	0%		Oak Woodland	Southern Willow Scrub
12-Oct-05	Los Alamos Canyon	3	464132	3712482	1-10%	1-10%	0%		Oak Woodland	Southern Willow Scrub
12-Oct-05	Los Alamos Canyon	4	464345	3712390	51-75%	26-50%	11-25%	1 - 5	<b>Oak Woodland</b>	<b>Southern Willow Scrub</b>
12-Oct-05	Los Alamos Canyon	5	464523	3712220	51-75%	26-50%	0%		Oak Woodland	Southern Willow Scrub

**Table 2.** Continued from the previous page.

Created	Block	Reach	Easting	Northing	Shallow	Medium	Deep	#Pools	Upland	Riparian
1-Nov-05	San Juan Crk	3	459377	3719094					Oak Woodland	Southern Willow Scrub
21-Oct-05	San Juan Crk	5	459018	3718770	1-10%	0%	0%			
21-Oct-05	San Juan Crk	6	458785	3718702						
9-Nov-05	San Juan Crk Trib 2	2	459776	3719106					Oak Woodland	Southern Willow Scrub
1-Nov-05	San Juan Crk Trib 2	3	459822	3718862	76-100%	1-10%	0%	0	Oak Woodland	Southern Willow Scrub
9-Nov-05	San Juan Crk Trib 2A	1	459940	3718589					Oak Woodland	Southern Willow Scrub
9-Nov-05	San Juan Crk Trib 2A	2	460121	3718432	26-50%	1-10%	0%	0	Oak Woodland	Southern Willow Scrub
9-Nov-05	San Juan Crk Trib 2A	3	460352	3718432	26-50%	11-25%	0%	0	Oak Woodland	Southern Willow Scrub
9-Nov-05	San Juan Crk Trib 2A	4	460545	3718345	11-25%	1-10%	0%	0	Oak Woodland	Southern Willow Scrub
8-Nov-05	San Juan Crk Trib 3	1	459671	3719672	1-10%	0%	0%	0	Oak Woodland	Southern Willow Scrub
8-Nov-05	San Juan Crk Trib 3	2	459611	3719909	76-100%	0%	0%	0	<b>Oak Woodland</b>	<b>Southern Willow Scrub</b>
8-Nov-05	San Juan Crk Trib 3	4	459503	3720392					Oak Woodland	Southern Willow Scrub
8-Nov-05	San Juan Crk Trib 3	5	459473	3720639	76-100%	1-10%	0%	0	Oak Woodland	Southern Willow Scrub
12-Oct-05	San Mateo Cyn	1	463410	3712470	11-25%	51-75%	26-50%	1 - 5		
12-Oct-05	San Mateo Cyn	2	463227	3712314	26-50%	11-25%	11-25%	1 - 5		
18-Oct-05	San Mateo Cyn	12	462220	3710345	51-75%	26-50%	1-10%	1 - 5		
18-Oct-05	San Mateo Cyn	13	462095	3710137	51-75%	26-50%	0%	0		
14-Oct-05	San Mateo Cyn Trib 10	4	463020	3713026	26-50%	11-25%	1-10%	1 - 5		
14-Oct-05	San Mateo Cyn Trib 10	5	462808	3713154	51-75%	11-25%	1-10%	1 - 5		
14-Oct-05	San Mateo Cyn Trib 11	1	463513	3712566	11-25%	1-10%	0%			
19-Oct-05	Tenaja Canyon	15	465299	3707754	1-10%	0%	0%	0	Oak Woodland	Southern Willow Scrub
19-Oct-05	Tenaja Canyon	16	465121	3707915	0%	0%	0%	0	Oak Woodland	
19-Oct-05	Tenaja Canyon	17	464889	3707978	26-50%	1-10%	0%	0	<b>Oak Woodland</b>	<b>Sycamore-Alder Woodland</b>

**Figure 1.** Locations of all stream surveys conducted in 2005 and detections of mountain yellow-legged frog, arroyo toad, and coast range newt. California red-legged frog was not detected in 2005.

