Review of Pyrethroid, Fipronil and Toxicity Monitoring Data from California Urban Watersheds

Prepared for the California Stormwater Quality Association (CASQA)

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Preface and Acknowledgements

This investigation and the production of this report were funded by the California Stormwater Quality Association (CASQA) and the County of Sacramento. The work effort was coordinated through and performed with the assistance of the CASQA Pesticides Subcommittee, particularly subcommittee Co-Chairs Dave Tamayo and Jamison Crosby, as well as Kelly Moran of TDC Environmental, who provided the majority of the new data sources and carefully reviewed the draft documents.

This investigation includes literature and data sources (including unpublished data) available from public agencies and other reputable sources with documented quality control, as well as from sources published in the scientific literature. The responsibility for the accuracy and veracity of the various study results rests with the original authors. This compilation is as complete as was feasible as of early 2013, but almost certainly does not include every relevant study.

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Executive Summary

In recent years, numerous studies have documented the presence of pyrethroid pesticides and fipronil, as well as pesticide-caused toxicity, in both surface waters and sediments in California's urban waterways. This report compiles and summarizes chemistry data from monitoring performed in urban areas of California for pyrethroid and fipronil pesticides, as well as related toxicity testing results, covering the ten year period from 2003-2012. Over 9200 pyrethroid sample analysis results and over 3200 fipronil results are evaluated and summarized.

Over the past ten years, pyrethroid pesticides have become the predominant group of chemicals deployed for insect control in urban areas in California (TDC Environmental, 2010b), and are the primary cause of toxicity in urban water bodies in the state (Anderson et al., 2011). The pyrethroids are synthetic versions of the naturally-occurring pyrethrins, but are more toxic and longer-lasting when released into the environment.

As state and federal regulatory actions have begun to address the widespread impacts of urban pyrethroid uses, alternative insecticides, particularly fipronil, are also of increasing concern (TDC Environmental, 2007). Fipronil has four relatively stable degradates that may contribute to aquatic toxicity. For that reason, this report also summarizes the results of recent monitoring for fipronil and its degradates.

Key Findings – Pyrethroids

Bifenthrin, considered to be the leading cause of pyrethroid-related toxicity in urban areas (c.f., Weston et al., 2005; Amweg et al., 2006; Holmes et al., 2008, TDC Environmental, 2006), was detected most frequently of all the pesticides evaluated, in both water and sediment. Bifenthrin was detected in 69% in sediment samples and 64% in water samples.

Detection rates were generally higher for pyrethroids in sediment than in water. Permethrin was the most extreme case of this difference, detected in 50% of sediment samples but only 16% of water samples. Overall, pyrethroids were detected at a rate of 31% in sediments and 24% in water samples.

Pyrethroids were commonly found at concentrations exceeding levels known to cause toxicity to sensitive aquatic organisms in water. The average reported concentrations of bifenthrin, cyfluthrin, cyhalothrin, cypermethrin and permethrin in water samples range from approximately one to more than three orders of magnitude above the non-regulatory chronic criteria values published by UC Davis. Maximum reported concentrations of these five pyrethroids range from two to more than four orders of magnitude higher than the UC Davis acute criteria values.

For the seven pyrethroids for which sediment toxicity (LC50) values are available, the average concentrations reported in this summary would be substantially greater than the published LC50s, following organic carbon normalization. This means that, under average conditions in urban waterways in California, these pesticides are typically present in sediments at levels toxic to sensitive aquatic macroinvertebrates such as *Hyalella azteca*.

These comparisons may understate the actual potential for pyrethroids to cause toxicity to sensitive aquatic organisms, because they do not account for concurrent exposures to multiple pyrethroids. Multiple pyrethroids typically were found in each sample in the summarized chemistry studies, in both water and sediments. Because pyrethroid toxicity is generally understood to be additive (c.f., Trimble et al., 2009), the actual in-situ toxicity estimated from chemistry results should account for the mixtures of pyrethroids found.

Key Findings – Fipronil and Degradates

Fipronil was detected in 39% of water samples tested from studies evaluated for this summary, and 19% of sediment samples. This contrasts with the pattern for most pyrethroids, for which there were typically higher percent detections in sediment. Presumably this reflects fipronil's lower K_{OW}, and/or fipronil's relatively higher solubility in water.

The fipronil degradates as a group were detected analytically in 24% of the water samples tested from studies evaluated for this study, and in 35% of sediment samples. This pattern is similar to that of the pyrethroids.

Published aquatic toxicity values for fipronil are in the sub-ppb (µg/L) range (c.f., Gunasekara and Troung, 2007 and Mize et al., 2008). Maximum observed levels of fipronil and its degradates in water samples were higher than these LC50 values.

Key Findings – Toxicity

Toxic effects are documented in both water and sediment in urban waterways throughout California. Effects of pyrethroids on aquatic organisms are widespread throughout the aquatic environment, as documented in studies involving water column toxicity testing, sediment toxicity testing, and tissue analysis. Of the 25 toxicity studies that were summarized, all reported some level of toxicity for one or more organisms tested.

Research has for some time now indicated widespread sediment toxicity in urban areas of California (c.f., Amweg et al., 2005, Amweg et al., 2006, Anderson et al., 2011, Holmes et al., 2008, Weston et al. 2005), with pyrethroids often identified as the apparent cause of the toxicity.

Recent research also highlights the toxic effects of pyrethroids in water column samples. For example, Weston and Lydy (2012) found toxicity in a majority of urban creek and river samples tested during 2009-10 rain events. Toxicity Identification Evaluations (TIEs) and water chemistry testing identified pyrethroids as the principal cause of the water column toxicity.

Geographical Summary

Evidence of the presence and effects of pyrethroids and fipronil, and associated toxic effects in urban watercourses, is widely distributed geographically throughout urbanized areas of the state of California. This review identified such data from the north coast, Lake Tahoe region, San Francisco Bay Area, Central Valley, Central Coast, and both coastal and inland areas of southern California. Pyrethroid-related toxicity has been documented in nearly every major urban watershed in the state and in eight of the nine California Water Board regions.

TABLE OF CONTENTS

Background and Introduction

Legal uses of some registered pesticides have been found to result in adverse impacts to water quality and aquatic life in receiving waters within urban areas (see summary and references in TDC Environmental, 2010a). Over the past ten years, pyrethroid pesticides have become the predominant group of chemicals deployed for insect control in urban areas in California (TDC Environmental, 2010b). During this period, observations of pyrethroids and pyrethroid-caused toxicity in urban runoff and receiving waters have multiplied, increasingly resulting in listings of urban waterways on the Clean Water Act Section 303(d) List of Impaired Waters for California (the "303(d) List"; State Water Resources Control Board, 2011).

Urban pyrethroid use increased dramatically beginning in the early 2000's, when most urban uses of the organophosphate pesticides diazinon and chlorpyrifos were curtailed by the United States Environmental Protection Agency (USEPA). In response, other pesticides, principally pyrethroids, were substituted as the active ingredients most commonly used for urban pest management. The pyrethroids are synthetic versions of the naturally-occurring pyrethrins, but are more toxic and longer-lasting when released into the environment. In recent years, numerous studies have documented the presence of pyrethroid pesticides and pesticide-caused toxicity in both surface waters and sediments in California's urban waterways. This report compiles and summarizes those findings.

Within urban areas, pesticides are often applied directly and intentionally to impervious surfaces, and applications to impervious surfaces are considered to be the controlling factor in urban runoff contributions to receiving water toxicity (Moran and TenBrook, 2011). The relatively low aqueous solubility and high octanol-water partition coefficient (K_{OW}) of most pyrethroids indicate that these chemicals are likely to partition to suspended particulates in runoff and accumulate in the sediments of receiving waters. Studies in California waterways have shown that sediments contaminated with pyrethroid pesticides are frequently toxic to sediment-dwelling organisms (c.f., Weston et al., 2005; Amweg et al., 2006; Holmes et al., 2008). However, as documented in this report, pyrethroid pesticides are commonly found in both the waters and sediments of urban watercourses throughout California.

With nearly 700 pyrethroid products available to professional pest control operators and consumers in California, it is common for multiple pyrethroids to be present in the water and sediments of urban receiving waters, as shown by numerous studies summarized in this report. Studies involving urban monitoring data have demonstrated that mixtures of pyrethroids are contributing to pyrethroid-related toxicity in both water and sediments in urban creeks, and pyrethroid toxicity is generally considered to be additive in such mixtures (c.f., Trimble et al. 2009, Anderson et al., 2011).

As state and federal regulatory actions have begun to address the widespread impacts of urban pyrethroid uses, replacement insecticides, particularly fipronil, are also of increasing concern (TDC Environmental, 2007). For that reason, this report also summarizes the results of recent monitoring data for fipronil and its degradates.

Table 1 provides a summary of available water column toxicity information pertaining to pyrethroid pesticides, with references. What is most notable about the information presented in Table 1 is that the pyrethroids are generally toxic to the most sensitive aquatic arthropods at extremely low levels – generally at concentrations in the single-digit (or lower) nanograms per liter (ng/L) (parts per trillion) range. As shown in Table 1, toxicity studies typically identify the LC50, the concentration that is lethal on average to 50% of the test organisms, and/or the EC50, the concentration at which a sub-lethal effect is observed on average to 50% of the test organisms. The Toxicity Values shown in Table 1 illustrate the greater sensitivity of *Hyalella azteca* to pyrethroids compared to *Ceriodaphnia dubia*, the test species most commonly used to identify water toxicity due to organophosphate pesticides.

USEPA has not developed recommended water quality criteria for the protection of aquatic life for pyrethroids (or for many other current-use pesticides), as it has for other common water pollutants. Therefore Table 1 summarizes other, non-regulatory information that can be used as comparison values to evaluate the data compiled for this report. The available comparison values include water quality criteria values developed by UC Davis, as described below, as well as USEPA Aquatic Life Benchmark values.

To address recent pyrethroid-related additions to the 303(d) List within the Sacramento and San Joaquin River watersheds, the Central Valley Regional Water Quality Control Board (RWQCB) is developing a Basin Plan amendment to establish water quality objectives and Total Maximum Daily Loads (TMDLs) for waterbodies that are listed for pyrethroids on the 303(d) list, and a program of implementation for the control of pyrethroid pesticide discharges. This effort is part of a broader program to establish water quality objectives and a program of implementation for the control of pesticides that are impacting or could potentially impact aquatic life uses in surface waters in the Sacramento and San Joaquin River watersheds of the Central Valley, including the Delta. To support the development of pesticide water quality objectives and TMDLs, the Central Valley RWQCB contracted with the Environmental Toxicology Department of the University of California, Davis (UC Davis) to develop and evaluate a methodology for development of aquatic life criteria. Under this contract, to date UC Davis has developed acute and chronic criteria values for five pyrethroid pesticides, as shown in Table 1. The Central Valley RWQCB is still in the process of determining whether or how to make use of the UC Davis criteria values in the development of pyrethroid TMDLs for Central Valley watersheds. The context for the development of these criteria is explained in the "Sacramento and San Joaquin River Watersheds Pesticide Basin Plan Amendment Fact Sheet" (Central Valley RWQCB, 2006).

Table 2 provides the available water column toxicity information for fipronil and its principal degradate compounds, as well as the corresponding USEPA Aquatic Life Benchmarks.

There are limited sediment toxicity values available for pyrethroids and fipronil/degradates, and no corresponding comparison values for sediment (UC Davis criteria or USEPA aquatic life benchmarks). The available published sediment toxicity LC50 values are included for pyrethroids in Table 5 and for fipronil/degradates in Table 7.

Table 1. Pyrethroids Water Column Toxicity and Comparison Values (ng/L)

Species	Bifenthrin	Cyfluthrin	Cypermethrin	Deltamethrin	Esfenvalerate	Lambda-Cyhalothrin	Permethrin	Tralomethrin
Fresh Water Toxicity Values								
Hyalella azteca 96-hr LC50 (lethal)	7.5	2.4	2.5		8		21.1	
Hyalella azteca 96-hr EC50 (sub-lethal effects)	3.3	1.9	1.7			2.3		
Ceriodaphnia dubia 48-hr LC50 (lethal)	70	140			300 (96-h)		550	
Salt Water Toxicity Values								
Americamysis bahia (Mysidopsis bahia) 96-hr EC50 (sub-lethal effects)	4	2.4	5	1.7	38		20	
Comparison Values								
U.C. Davis acute criterion value (1-hr)	4	0.3	1			1	10	
U.C. Davis chronic criterion value (96-hr)	0.6	0.05	0.2			0.5	2	
Lowest USEPA Pesticide Aquatic life benchmark	1.3	7	69	4.1	17	2	1.4	4.4

Notes for Table 1:
Compiled by TDC Environmental, 11/30/11; data not verified for this report.
Note: No USEPA water quality criteria exist for any pyrethroid.
No data are available for sensitive aquatic species for these pyrethroids (therefore excluded from table): Allethrins, tau-fluvalinate, tetramethrin.
Pyrethroids excluded because they are not used in urban areas: fenvalerate, fenpropathrin.
Pyrethroid toxicity is usually additive. Toxicity usually correlates with the sum of toxic units (sum of pyrethroid concentrations divided by their toxicity values).
Sources for Toxicity Values: Werner and Moran, 2008; Weston and Jackson, 2009; Mokry and Hoagland, 1990; Maund et al., 1998; Anderson et al., 2006.
UC Davis criteria development reports (Brander et al., 2010; Fojut et al., 2010; Fojut and Tjeerdema, 2010; Fojut et al., 2011a; Fojut et al., 2011b) are available on the Central Valley Regional Water Quality Control Board website: http://tinyurl.com/2etvvg3
U.S. EPA Aquatic Life Benchmarks website: http://www.epa.gov/oppefed1/ecorisk_ders/aquatic_life_benchmark.htm

Table 2. Fipronil and Degradates Water Column Toxicity and Comparison Values (ng/L)

Species	Fipronil	Fipronil Sulfone	Fipronil Sulfide	Fipronil Desulfinyl	Fipronil Desulfinyl Amide d
Fresh Water Toxicity Values					
Lepomis macrochirus 96-hr LC50	25,000 - 83,000 a	25,000 a		20,000 a	
Chironomus tentans 96-hr LC50	410 c	720 c	2,130 c	200,000 c	
Salt Water Toxicity Values					
Americamysis bahia 96-hr LC50	140 a			1,500 b	
Comparison Values					
Lowest U.S. EPA Aquatic Life Benchmark	11	37	110	590	

Notes for Table 1:
Compiled by TDC Environmental; data not verified for this report.
Sources for Table 2:
a = Gunasekara and Troung, 2007 (DPR)
b = Konwick et al., 2005
c = U.S. EPA, 2011. Registration Review – Preliminary Problem Formulation for Ecological Risk and Environmental Fate, Endangered Species, and Drinking Water Assessments for Fipronil.
d = no comparison value data available for this compound
U.S. EPA Aquatic Life Benchmarks website:
http://www.epa.gov/oppefed1/ecorisk_ders/aquatic_life_benchmark.htm

Scope of Review and Approach

This report summarizes available chemistry data for pyrethroid pesticides and for fipronil and its degradates, as well as related results of toxicity testing, from monitoring performed in urban areas of California. The current report updates and expands upon the initial Pyrethroids Data Compilation produced for CASQA in 2008 (Ruby, 2008). Data from predominantly agricultural areas were excluded from the summaries. Otherwise, no attempt was made to distinguish the specific land use composition of contributing watersheds for the various study results. In some cases, the monitoring was performed in waterways that include contributions from a variety of land use types, but in all cases the monitored watershed includes an urban component.

Primary information sources include published scientific literature, as well as unpublished data produced under the direction of public agencies. All primary information sources are clearly referenced, including web links where available.

This report provides summaries of the various study results as provided by the study authors. Where the underlying data or statistical summaries of the data were available, this report also separately summarizes the chemistry and toxicity testing data. Distinctions are made for data produced from water vs. sediment matrices, and from urban runoff discharges vs. receiving waters (i.e., named water bodies that receive urban runoff discharges). The investigation was limited to surface waters; results of groundwater monitoring are not included.

The Chemistry Results Summary and Toxicity Results Summary tables contain data only for more recent studies, generally those published during 2008-2012, covering data generated since ca. 2005. This compilation is as complete as was feasible as of mid-calendar year 2012, but may not include every relevant study. Ongoing and planned monitoring undoubtedly will continue to reveal additional evidence of the presence of pyrethroids and other pesticides - and related effects - in California's urban watersheds. This work should be updated periodically to incorporate additional material as it becomes available. This will be particularly important as other insecticides, beyond fipronil, become more commonly used. The underlying spreadsheets upon which this report's tables are based are readily expandable, and can be updated over time.

Notes regarding nomenclature and approach used in this study:

- Chemical names, rather than brand names, are used to designate the pesticides.
- Like pyrethrins, pyrethroids have multiple chiral isomers. Most commercial products are comprised of mixtures of these isomers (e.g., permethrin is generally available as a mixture of *cis*-permethrin and *trans*-permethrin). Only a few pyrethroids appear as single isomers in commercial products (e.g., esfenvalerate, beta-cyfluthrin). Although it is known that chirality can affect toxicity (Gerlach, 2012), not enough information is available to adequately assess this factor in the context of the current report, in part because most laboratories do not report results on an isomer-specific basis. For purposes of this summary, where isomer-specific data are available, these have been totaled by chemical (e.g., "permethrin" includes the sum of available data for *cis*-permethrin and *trans*-permethrin).

- The summary tables generally exclude studies that relied on chemical analysis methods that are incapable of detecting pyrethroids at the ng/L (water) or ng/g (sediment) concentration levels, as non-detect results at higher analytical detection levels do not indicate whether potentially harmful concentrations of pyrethroids are actually present.

Findings

There is an expanding diversity of research focusing on the presence and effects of pesticides in the environment within California. Earlier (pre-2000) research on pesticides effects focused principally on agricultural areas, but that has changed in recent years. Many studies are now available documenting the presence and effects of pyrethroids and other pesticides in urban areas. Over 100 studies were evaluated for this project. After eliminating reports presenting repeat data, purely methods research projects, and studies involving predominantly agricultural watersheds, summaries are provided for over 80 studies. Many more projects and studies are currently being undertaken or planned. Over 9200 pyrethroid sample analysis results and over 3200 results for fipronil and degradates were evaluated and summarized for this report.

Summary of Findings – Pyrethroid Pesticides

Pyrethroids are frequently detected at quantifiable levels in both water and sediment in urban waterways throughout California. For environmental contaminants such as pesticides, the rate of analytical (laboratory) detection is an important metric, as it indicates how frequently the pesticide is observed at a quantifiable level in environmental samples. Due to the very low concentrations at which many of these pesticides can cause toxicity, the rate of detection is a useful indicator of the extent to which these chemicals are migrating from the site of application to the aquatic environment. The rates of analytical detection from the summarized chemistry results are presented in Table 3 for the most commonly-detected pyrethroids. This table generally summarizes chemistry data for the more recent studies evaluated (those published since 2005). Because detection rates are only relevant for studies that employ environmentally relevant detection limits, this summary focuses on studies that reported chemical analysis methods capable of detecting pyrethroids at the ng/L (water) or ng/g (sediment) concentration levels. Results are shown separately for water and sediment samples.

Bifenthrin, considered to be the leading cause of pyrethroid-related toxicity in urban areas (c.f., Weston et al., 2005; Amweg et al., 2006; Holmes et al., 2008, TDC Environmental, 2006), was detected most frequently of all the pesticides evaluated, in both water and sediment. For samples tested in studies evaluated for this summary, the rate of analytical detection for bifenthrin was 69% in sediment samples and 64% in water samples, as indicated in Table 3.

Detection rates were generally higher for pyrethroids in sediment than in water. Permethrin was the most extreme case of this difference, detected in 50% of sediment samples but only 16% of water samples. Overall, pyrethroids were detected at a rate of 31% in sediments and 24% in water samples.

Table 3. Analytical Detection Rates – Pyrethroids

WATER SAMPLES:	# Samples	% Detected
Allethrin	235	0.4%
Bifenthrin	748	64%
Cyfluthrin	847	28%
Cyhalothrin	663	22%
Cypermethrin	503	31%
Deltamethrin/Tralomethrin	533	5%
Esfenvalerate/Fenvalerate	704	19%
Fenpropathrin	306	21%
Fluvalinate	224	3%
Permethrin	1,146	16%
Phenothrin	5	0%
Prallethrin	219	2%
Resmethrin	175	0%
Tetramethrin	16	6%
All Pyrethroids	6,511	24%

SEDIMENT SAMPLES:	# Samples	% Detected
Allethrin	64	0%
Bifenthrin	359	69%
Cyfluthrin	324	33%
Cyhalothrin	334	30%
Cypermethrin	284	29%
Deltamethrin/Tralomethrin	252	22%
Esfenvalerate/Fenvalerate	314	12%
Fenpropathrin	147	16%
Fluvalinate	59	3%
Permethrin	367	50%
Phenothrin	8	13%
Prallethrin	46	0%
Resmethrin	117	3%
Tetramethrin	23	0%
All Pyrethroids	2,704	31%

Notes for Table 3:

Table summarizes data for more recent studies evaluated (generally published since 2005).

This summary generally includes only data from studies that relied on chemical analysis methods capable of detecting pyrethroids at the ng/L (water) or ng/g (sediment) concentration levels.

Fenpropathrin (trade name, Danitol) has no registered urban uses; the levels of detection may reflect results from mixed-use watersheds and/or drift from agricultural areas to urban watersheds.

Pyrethroid Concentrations – Water

Pyrethroids were commonly found at concentrations exceeding levels known to cause toxicity to aquatic organisms in water. The average and maximum concentrations from the summarized water chemistry results are presented in Table 4 for the pyrethroids, along with the relevant acute and chronic aquatic toxicity comparison values from Table 1. This table generally summarizes chemistry data for the more recent studies evaluated (those published since 2005).

For all five pyrethroids for which there are UC Davis chronic toxicity criteria comparison values in Table 1, the average observed environmental concentration is higher than the chronic toxicity comparison value. The average reported concentrations of bifenthrin, cyfluthrin, cyhalothrin, cypermethrin and permethrin in water samples range from approximately one to more than three orders of magnitude above the chronic criteria values published by UC Davis (from Table 1).

Maximum reported concentrations of these five pyrethroids are in the range of two to more than four orders of magnitude higher than the UC Davis acute criteria values (from Table 1). The most prominent examples from Table 4 include:

- The maximum reported concentration of bifenthrin in water was 398 ng/L, compared to the UC Davis acute criterion value of 4 ng/L;
- The maximum reported concentration of cypermethrin in water was 519 ng/L, compared to the UC Davis acute criterion value of 1 ng/L;
- The maximum reported concentration of permethrin in water was 12,652 ng/L, compared to the UC Davis acute criterion value of 10 ng/L.

Pyrethroid Concentrations – Sediment

The average and maximum concentrations from the summarized sediment chemistry results are presented in Table 5 for the pyrethroids. Published LC50 values exist for *Hyalella azteca* exposure in sediments for several pyrethroids (Amweg, et al., 2005; Maund et al., 2002). However, because organic carbon helps mitigate pyrethroid toxicity to invertebrates in sediments, these LC50 values are expressed as µg/g organic carbon. Conversion of the statewide sediment data to the organic carbon-normalized format was beyond the scope of this report (and not all sources provide organic carbon data). Nonetheless, for the seven pyrethroids for which sediment LC50 values are available, it is apparent that the average concentrations reported in Table 5 would be substantially greater than the published LC50s following organic carbon normalization, assuming a typical organic carbon level of 1-3 percent for California sediments (c.f., Amweg et al., 2005). This means that, under average conditions in urban waterways in California, these pesticides are typically present at levels toxic to sensitive macroinvertebrates such as *Hyalella azteca* in sediments. As shown in Table 5, the level of exceedance of the average reported concentration over the LC50 value is particularly significant for bifenthrin.

Multiple Pyrethroids Commonly Detected

Multiple pyrethroids typically were found in each sample in the summarized chemistry studies, in both water and sediment samples. Because pyrethroid toxicity is generally considered to be additive (c.f., Trimble et al., 2009), the actual in-situ toxicity estimated from chemistry results must account for the mixtures of pyrethroids and other pesticides found.

Table 4. Average and Maximum Reported Pyrethroid Concentrations (Water) Compared to U.C. Davis Criteria Values

WATER SAMPLES:	Average Conc. (ppt)	Maximum Conc. (ppt)	UC Davis Chronic Criterion Value (ppt)	Ratio of Average Conc.: Chronic Criterion Value	UC Davis Acute Criterion Value (ppt)	Ratio of Maximum Conc.: Acute Criterion Value
Allethrin	0.203	9.50				
Bifenthrin	26	398	0.6	43	4	100
Cyfluthrin	14.9	423	0.05	298	0.3	1409
Cyhalothrin	4.80	243	0.5	10	1	243
Cypermethrin	13.3	519	0.2	66	1	519
Deltamethrin/Tralomethrin	1.40	252				
Esfenvalerate/Fenvalerate	1.43	36.8				
Fenpropathrin	4.80	459.9				
Fluvalinate	0.566	154.8				
Permethrin	51.2	12652	2	26	10	1265
Phenothrin	ND	ND				
Prallethrin	2.13	287				
Resmethrin	ND	ND				
Tetramethrin	0.219	2.80				

Notes for Table 4:

Table summarizes data for more recent studies evaluated (generally published since 2005).

"Average" concentrations = mean values of mean concentrations reported from summarized studies.

"ppt" = parts per trillion

"ND" means all data were reported as non-detect.

Water column toxicity criteria comparison values shown are the UC Davis chronic and acute criteria; see Table 1 for references.

Fenpropathrin has no registered urban uses; the reported concentrations may reflect results from mixed-use watersheds and/or drift from agricultural areas to urban watersheds.

Table 5. Average and Maximum Reported Sediment Concentrations – Pyrethroids

SEDIMENT SAMPLES:	Average Conc. (ppb)	Max. Conc. (ppb)	Published LC50 Values (µg/g organic carbon)
Allethrin	ND	ND	
Bifenthrin	45.8	744	0.52
Cyfluthrin	17.4	187	1.08
Cyhalothrin	4.64	31.9	0.45
Cypermethrin	10.1	987.5	
Deltamethrin/Tralomethrin	5.11	78.0	0.79
Esfenvalerate/Fenvalerate	1.47	20.3	1.54
Fenpropathrin	0.393	8.8	
Fluvalinate	0.080	3.60	
Permethrin	27.8	539	10.83
Phenothrin	0.661	0.750	
Prallethrin	ND	ND	
Resmethrin	2.03	24.0	
Tetramethrin	ND	ND	

Notes for Table 5:

Table summarizes data for more recent studies evaluated (generally published since 2005).
"Average" concentrations = mean values of mean concentrations reported from summarized studies.
"ND" means all data were reported as non-detect.
"ppb" = parts per billion
Published LC50 Values (Amweg et al., 2005; Maund et al., 2002) are reported as organic carbon-normalized values (µg/g organic carbon), calculated by dividing the measured pyrethroid concentration by the measured percent organic carbon in the sediment sample. The organic carbon-normalized LC50 values therefore cannot be directly compared to the average or maximum observed concentrations for pyrethroids in sediments. The organic carbon-normalized average and maximum pyrethroid concentrations would be higher than those shown by a factor of roughly 33-100, assuming typical sediment organic carbon concentrations of 1-3%.
Fenpropathrin has no registered urban uses; the reported concentrations may reflect results from mixed-use watersheds and/or drift from agricultural areas to urban watersheds.

Summary of Findings – Fipronil and Degradates

The non-pyrethroid pesticide, fipronil, is a leading replacement for pyrethroid pesticides in urban areas (TDC Environmental, 2007). Fipronil has multiple degradates, some of which are more environmentally stable than fipronil itself, and some of which have equal or greater aquatic toxicity than the parent compound. Fipronil and its degradates also are frequently detected in both water and sediment in urban watercourses. Data were identified for Fipronil Amide, Fipronil Desulfinyl, Fipronil Desulfinyl Amide, Fipronil Sulfide, and Fipronil Sulfone. The rates of analytical detection from the summarized chemistry results are presented in Table 6 for fipronil and its degradates. Results are shown for both water and sediment samples.

Fipronil was detected in 39% of water samples tested from studies evaluated for this summary, and 19% of sediment samples. This is in contrast to the pattern for most pyrethroids, for which there were typically higher percent detections in sediment. Presumably this reflects fipronil's lower K_{OW}, and/or fipronil's relatively higher solubility in water.

The fipronil degradates as a group were detected analytically in 24% of the water samples tested from studies evaluated for this study, and 35% of sediment samples. This pattern is similar to that of the pyrethroids.

Table 6. Analytical Detection Rates – Fipronil and Degradates

WATER SAMPLES:	# Samples	% Detected
Fipronil	871	39%
Fipronil degradates	2,271	24%

SEDIMENT SAMPLES:	# Samples	% Detected
Fipronil	16	19%
Fipronil degradates	48	35%

Notes for Table 6:

Table summarizes data for more recent studies evaluated (generally published since 2005).
"Fipronil degradates" included are: Fipronil Amide, Fipronil Desulfinyl, Fipronil Desulfinyl Amide, Fipronil Sulfide, and Fipronil Sulfone.

The average and maximum concentrations from the summarized chemistry results are presented in Table 7 for fipronil and the group of fipronil degradates. As shown in Table 2, some published aquatic toxicity values and all of the published USEPA benchmarks for fipronil and its principal degradates are in the sub-ppb (µg/L) range. Average fipronil concentrations in water samples were higher than the USEPA Aquatic Life Benchmark for fipronil, while average concentrations of the fipronil degradates were in the range of the associated USEPA benchmarks, as shown in Table 7. The maximum reported concentrations for fipronil and its degradates in water samples were well above the USEPA benchmarks. Similarly, the maximum reported concentrations of fipronil and its degradates in sediment samples were well above published LC50 values.

Table 7. Average and Maximum Reported Concentrations in Water and Sediment – Fipronil and Degradates

WATER SAMPLES:	Average Conc. (ppt)	Max. Conc. (ppt)	US EPA Aquatic Life Benchmark (ppt)
Fipronil	89.7	10004	11
Fipronil degradates	71.2	1961	37-590

SEDIMENT SAMPLES:	Average Conc. (ppb)	Max. Conc. (ppb)	Published LC50 Values (µg/g organic carbon)
Fipronil	0.078	0.30	0.13
Fipronil degradates	0.297	2.60	0.12-0.16

Notes for Table 7:

Table summarizes data for more recent studies evaluated (generally published since 2005).

Water sample results are reported as ppt (parts per trillion), while sediment results are reported as ppb (parts per billion).

"Average" concentrations = mean values of mean concentrations reported from summarized studies.

"Fipronil degradates" included are: Fipronil Amide, Fipronil Desulfinyl, Fipronil Desulfinyl Amide, Fipronil Sulfide, and Fipronil Sulfone.

Published sediment LC50 Values (Maul et al., 2008) are reported as organic carbon-normalized values (µg/g organic carbon), calculated by dividing the measured pyrethroid concentration by the measured percent organic carbon in the sediment sample. The organic carbon-normalized LC50 values therefore cannot be directly compared to the average or maximum observed concentrations for pyrethroids in sediments. The organic carbon-normalized average and maximum fipronil concentrations would be higher than those shown by a factor of roughly 33-100, assuming typical sediment organic carbon concentrations of 1-3%.

Summary of Findings – Toxicity

Toxic effects are documented in both water and sediment in urban waterways throughout California. Effects of pyrethroids on aquatic organisms are widespread throughout the aquatic environment, as documented in studies involving water column toxicity testing, sediment toxicity testing, and tissue analysis. Of the 25 toxicity studies that were summarized, all reported some level of toxicity for one or more organisms tested.

There has been a notable shift in aquatic (water column) toxicity in urban areas since the phase-out of urban uses of diazinon and chlorpyrifos in the early 2000s. Prior to that time, samples of urban runoff and urban creeks were frequently found to be toxic to *Ceriodaphnia*, with the organophosphate pesticides diazinon and chlorpyrifos commonly identified as the likely causes (c.f., San Francisco Bay Regional Quality Control Board, 2005; Anderson et al., 2011). Since the federally mandated restrictions in diazinon and chlorpyrifos took effect, there have been few

reports of toxicity to *Ceriodaphnia*, from samples collected in urban (non-agricultural) waters, and few reports of toxicity due to the organophosphate pesticides.

The common amphipod, *Hyalella azteca*, is more sensitive to pyrethroid pesticides than other common test species (Amweg et al., 2005; Anderson et al., 2011). Data reviewed for this report show that urban waters in recent years frequently have exhibited toxicity to *Hyalella azteca*, with pyrethroids as the likely cause, based on TIEs and correlations with pyrethroid chemical concentration data (see also a summary in Anderson et al., 2011).

Early research into the toxic effects of pyrethroids as replacement pesticides for the organophosphate pesticides indicated widespread sediment toxicity in urban areas of California (c.f., Amweg et al., 2005, Amweg et al. 2006, Holmes et al., 2008, Weston et al. 2005). In these studies, pyrethroids were identified as the apparent cause of the sediment toxicity.

While the toxic effects of pyrethroids in sediments have now been thoroughly documented, recent research also highlights the toxic effects of pyrethroids in water column samples. For example, Weston and Lydy (2012) found that water samples from five of seven creeks tested during a 2009 rain event were toxic to *Hyalella*, with acute toxicity (mortality or paralysis) rates in the toxic samples ranging from 74% to 96%. Over half (52%) of water samples from two stations in the lower American River collected during storm events in 2009-2010 were acutely toxic to *Hyalella*. TIEs and water chemistry testing were used to identify pyrethroids as the cause of most of the observed water column toxicity.

The results of a number of the toxicity studies that are summarized in this report were further evaluated in a 2011 SWAMP report entitled, *Toxicity in California Waters* (Anderson et al, 2011). The reader is referred to that report for additional information on state-sponsored toxicity studies conducted during the period 2001-2010. The period of the SWAMP review spans the transition from the phase-out of orthophosphate pesticides to the rise in prominence of pyrethroids as replacement pesticides. The study includes discussions of comparisons of toxicity test results among urban, agricultural, and open space locations, as well as the findings from toxicity identification studies (TIEs) linking specific pesticides to toxicity.

Geographical Summary

Lists of the water bodies for which data were summarized are shown in Table 8a (Northern and Central California) and Table 8b (Southern California), and then alphabetically by water body name within each of those two regions.

Evidence of the presence and effects of pyrethroids and fipronil, and associated toxic effects in urban watercourses, is widely distributed geographically throughout the state of California. The review identified data from the North Coast, Lake Tahoe region, San Francisco Bay Area, Central Valley, Central Coast, and both coastal and inland areas of Southern California. Pyrethroid-related toxicity has been documented in nearly every major urban watershed in the state and eight of the nine California Water Board regions.

Table 8a. Northern/Central California Monitoring Locations with Reported Chemistry/Toxicity Results

Monitoring Location(s)	Geographic Area	Water Board Region
Alamo Creek	Solano County	5
Alder Creek	Sacramento County	5
Alisal Creek	Monterey County	3
American Canyon Creek	Napa County	2
American River	Sacramento County	5
Arcade Creek	Sacramento County	5
Blue Rock Springs	Solano County	2
Bodega Bay	Sonoma County	1
Carpinteria Salt Marsh	Santa Barbara County	3
Castro Valley Creek	Alameda County	2
Chicken Ranch Slough	Sacramento County	5
Corte Madera Creek	Marin County	2
Coyote Creek (fresh)	Santa Clara County	2
Coyote Creek (tidal)	Santa Clara County	2
Curry Creek	Sarasota County	5
Dry Creek	Roseville	5
Ducker Creek	Sonoma County	1
Elder Creek	Sacramento County	5
Elk Grove storm drains	Sacramento County	5
Gabilan Creek	Monterey County	3
Glen Echo Creek	Alameda County	2
Grayson Creek	Contra Costa County	2
Hinebaugh Creek	Sonoma County	1
Hospital Creek	San Joaquin County.	5
Ingram Creek	San Joaquin County.	5
Jane's Creek Meadows	Humboldt County	1
Kaseberg Creek	Roseville	5
Kirker Creek	Contra Costa County	2
Koopman Canyon Creek	Alameda County	2
Laguna Creek	Sacramento County	5
Lauterwasser Creek	Contra Costa County	2
Lion Creek	City of Oakland	2
Mammoth Creek	Tahoe/Lahontan Area	6
Marsh Creek	Contra Costa County	5
Martin Canyon Creek	Alameda County	2
Merced River	Merced County	5
Napa River (fresh)	Napa County	2

Napa River (tidal)	Napa County	2
Natividad Creek	Monterey County	3
Natomas drain	Sacramento County	5
Petaluma River (fresh)	Sonoma County	2
Petaluma River (tidal)	Marin County	2
Pine Creek	Contra Costa County	2
Pleasant Grove Creek	Placer County	5
Quimby Creek	Santa Clara County	2
Rheem Creek	Contra Costa County	2
Roseville storm drains	Placer County	5
Sacramento River	Sacramento County	5
Sacramento-San Joaquin Delta	Sacramento County	5
Salinas urban creeks	Salinas	3
San Francisquito Creek	San Mateo/Santa Clara Counties	2
San Joaquin River	San Joaquin R. Valley	5
San Joaquin River tributaries	San Joaquin R. Valley	5
San Leandro Creek	Alameda County	2
San Lorenzo Creek	San Leandro	2
San Mateo Creek	San Mateo County	2
San Pablo Creek	Contra Costa County	2
South Branch	Roseville	5
Stanislaus Creek	Stanislaus County	5
Stege Marsh	Contra Costa County	2
Stevens Creek	Santa Clara County	2
Stockton Creek	Sacramento County	5
Strong Ranch Slough	Sacramento County	5
Suburban watershed	Bodega Bay	1
Suisun Slough Tributary	Solano County	2
Sump 111	Sacramento County	5
Tahoe Keys	Tahoe/Lahontan Area	6
Truckee River Swale	Tahoe/Lahontan Area	6
Tuolumne Creek	Stanislaus County	5
Ulatis Creek	Solano County	5
Willow Creek	Sacramento County	5

Table 8b. Southern California Monitoring Locations with Reported Chemistry/Toxicity Results

Monitoring Location(s)	Geographic Area	Water Board Region
Agua Hedionda Creek	San Diego County	9
Arroyo Seco Channel	Los Angeles County	4
Ballona Creek	Los Angeles County	4
Ballona Creek Estuary	Los Angeles County	4
Bouquet Canyon Creek	Los Angeles County	4
Calleguas Creek	Ventura County	4
Cole Creek	Riverside County	8
Chollas Creek	San Diego County	9
Chollas Creek - North Fork	San Diego County	9
Chollas Creek - South Fork	San Diego County	9
Conejo Creek	Calleguas Creek Watershed	4
Cottonwood Creek	San Diego County	9
Huntington Harbor tributaries	Huntington Harbor/Orange County	8
Los Angeles River	Los Angeles County	4
Lindo Lake	San Diego County	9
Long Canyon Channel	Riverside County	8
Los Peñasquitos Creek	San Diego County	9
Mugu Lagoon	Ventura County	4
Murrieta Creek	Riverside County	9
N. Fork Arroyo Conejo	Calleguas Creek Watershed	4
New River at Boundary	Calexico	9
Newport Harbor	Orange County	8
Newport Harbor tributaries	Orange County	8
Peters Canyon Wash	Orange County	8
Revolon Slough	Calleguas Creek Watershed	4
Redhawk Channel	Riverside County	8
Salt Creek watershed	Orange County	8
San Diego River	San Diego County	9
San Diego Harbor	San Diego County	9
San Dieguito River	San Diego County	9
San Juan Creek	Orange County	9
San Luis Rey River	San Diego County	9
Santa Gertrudis Channel	Riverside County	8
San Marcos Creek	San Diego County	9
Santa Clara River watershed	Ventura County	4
Santa Margarita River	Riverside County	9
Santa Margarita R. tributaries	Riverside County	9

Sweetwater River	San Diego County	9
Switzer Creek	City of San Diego	9
Tecolote Creek	City of San Diego	9
Temecula Creek	Riverside County	9
Tijuana River	San Diego County	9
Upper Newport Bay	Newport Bay	8
Warm Springs Channel	Riverside County	8
Wood Creek watershed	Orange County	8

Detailed Results

Details of the summarized studies are presented in the tables included in the appendices, as described below. These appendix tables are based on spreadsheets in which information can be easily sorted and from which selected information can be extracted, and there are a number of clickable web links to studies.

The appendices to this memorandum include the following tables:

Appendix A: The "Study Summaries by Author" table, organized alphabetically by abbreviated citation in (author, date) format. This table contains detailed information on the source documents, including web links where available (in some cases these links lead to just an abstract or perhaps ordering information). The "Citation – Abbrev." field can be used as a cross-reference for the various studies across the different tables.

Appendix B: The "Results Summaries by Geography" table contains at-a-glance summaries of the methods and key results of the compiled studies. The Results Summaries entries are organized geographically (Northern/Central California vs. Southern California and then by local area, nominally ordered from north to south within each of those two regions).

Appendix C: The "Chemistry Results Summary" table contains detailed results of water and sediment chemistry tests compiled where available from the more recent studies (generally those published 2005-2012) summarized in the preceding tables. The Chemistry Results Summary table summarizes results for more than 12,400 pesticide analyses (including pyrethroid pesticides plus fipronil and its degradates).

Appendix D: The "Toxicity Results Summary" table contains detailed results of water and sediment toxicity tests compiled where available from the more recent studies (generally those published 2005-2012) summarized in the preceding tables.

Note that the Study Summaries by Author (Appendix A) and Results Summaries by Geography (Appendix B) tables contain all studies investigated and found to be pertinent, including the studies evaluated for the previous (2008) Pyrethroids Data Compilation. The Chemistry Results Summary (Appendix C) and Toxicity Results Summary (Appendix D) tables contain data only for more recent studies evaluated for the current report, generally those published since 2005.

Recommendations

Improvements in Laboratory Analytical Methods Are Needed
Some studies involving chemical analysis of pyrethroids in water and sediment are performed with analytical detection limits that are not sufficiently low to detect these pesticides at environmentally relevant concentrations. This has the effect of understating the extent of the problem, as some samples reported as "non-detect" may in fact contain pyrethroids at potentially harmful concentrations. Personnel responsible for pesticides analysis should ensure that the analytical work can be done so as to detect the target pesticides at environmentally relevant concentrations (i.e., near the "comparison values" shown in Tables 1 and 2). Some commercial laboratories are currently capable of providing appropriate analytical detection limits on a routine basis. However, a systematic means is called for by which analytical protocols are established at the federal level, with analytical detection limits sufficient to detect pesticides at environmentally-relevant concentrations in both waters and sediments.

Cumulative Impacts of Pesticide Mixtures Should Be Addressed
A clear need exists for quantitative assessment of cumulative impacts of pesticide mixtures, as this appears to be a significant factor contributing to the observed toxicity in urban creeks.

Conclusions

Monitoring data compiled for this report indicate significant levels of pyrethroid pesticides found in water and sediment samples from surface waters in California's urban areas. Average reported concentrations of several commonly-used pyrethroids in urban water samples are typically well above published comparison values, including UC Davis chronic toxicity criteria levels and USEPA Aquatic Life Benchmarks. Under average conditions in the sediments of urban waterways in California, pyrethroids also are typically present at levels known to be toxic to sensitive organisms. Bifenthrin, thought to be a principal cause of toxicity in urban waterways, is found in 64% of water samples and 67% of sediment samples in urban areas of California. Detections of pyrethroid pesticides in both water and sediment are widely distributed geographically throughout the state. In most samples, multiple pyrethroids are detected.

Fipronil, a common pyrethroid replacement pesticide, is also found in substantial numbers of water and sediment samples, along with its most common degradate compounds. Average fipronil concentrations in water samples are higher than the USEPA Aquatic Life Benchmark for fipronil, while average concentrations of the fipronil degradates are in the range of the associated USEPA benchmarks. The maximum reported concentrations for fipronil and its degradates in water samples are well above the USEPA benchmarks. Similarly, the maximum reported concentrations of fipronil and its degradates in sediment samples are well above published toxicity (LC50) values.

Toxicity in urban waterways throughout California is also well-documented in the compiled results, with many studies indicating pyrethroids as the likely cause of the observed toxicity. Because pyrethroid toxicity is generally considered to be additive, the level of toxicity estimated from chemistry results must account for the mixtures of pyrethroids and other pesticides found, including fipronil.

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Appendix A:“Study Summaries by Author” Table

Citation - Abbrev.	Author(s)/Date	Agency	Report/Study Title	Journal/Publication Reference	Web Link	Water/ Sediment	Chemical Constituents
Alameda County, 2005a	Alameda County Public Works, personal communication, 2005	Alameda County Public Works	Unpublished data. CRG Marine Laboratories report, Nov. 4, 2004			Water	Trace metals, TSS, OP pesticides, Synthetic pyrethroids
Alameda County, 2005b	Alameda County Public Works, personal communication, 2005	Alameda County Public Works	Unpublished data. CRG Marine Laboratories report, Dec. 21, 2004			Water	OP pesticides, Pyrethroids
Alameda County, 2005c	Alameda County Public Works, personal communication, 2005	Alameda County Public Works	Unpublished data. CRG Marine Laboratories report, Jan. 26, 2005			Water	Trace metals, TSS, OP pesticides, Synthetic pyrethroids
Amweg et al., 2005	Amweg, Erin L., Donald P. Weston, and Nicole M. Ureda 2005	Department of Integrative Biology, University of California, 3060 Valley Life Sciences Building, Berkeley, California 94720-3140, USA	Use and Toxicity of Pyrethroid Pesticides in the Central Valley, California, USA.	Environmental Toxicology and Chemistry, Vol. 24, No. 4, pp. 966–972, 2005 SETAC	http://alienpress.com/pdf/entc_24_414_966_972.pdf	Sediment	Pyrethroids: Bifenthrin, Cyfluthrin, Deltamethrin, Esfenvalerate, Lambda-cyhalothrin, Permethrin
Amweg et al., 2006	Amweg, Erin L., Donald P. Weston, Jing You, and Michael J. Lydy. January 31, 2006	Department of Integrative Biology, University of CA, and Fisheries and Illinois Aquaculture Center, Department of Zoology, Southern Illinois University	Pyrethroid Insecticides and Sediment Toxicity in Urban Creeks from California and Tennessee	Environmental Science and Technology 40(5) 1700-1706 (2006)	http://pubs.acs.org/cgi-bin/abstract.cgi/esthag/2006/40/i05/abs/es051407c.html	Sediment	Pyrethroids, chlorpyrifos
Anderson et al., 2005	Anderson, Susan, Gary Cherr, Steven Morgan, Roger Nisbet Co-Investigators: John Allen, William Murdoch, Allan Stewart-Oaten, Ingeborg Werner. 2005	UC Davis Bodega Marine Laboratory, UC Davis, UC Santa Barbara.	Year 4 Annual Report, Pacific Estuarine Ecosystem Indicator Research (PEEIR) Consortium: Biogeochemistry and Bioavailability Component, EPA Agreement Number: R-82867601		http://bml.ucdavis.edu/peeir/docs/YR%204%20Annual%20Report.pdf	Sediment	bifenthrin, permethrin, chlorpyrifos
Anderson et al., 2008a	Anderson, Brian S., Bryn M. Phillips, John W. Hunt, Sara L. Clark, Jennifer P. Voorhees, Ron S. Tjeerdema, Jane Casteline, Margaret Stewart, Dave Crane, Abdou Mekebri. 2008.	Dept. Environmental Toxicology, UC Davis, Marine Pollution Studies Laboratory, Water Environment Research Foundation, CA Dept. Fish and Game Water Pollution Control Lab	Causes of Sediment Toxicity in San Diego Bay, California, USA			Sediment	Pyrethroids
Anderson et al., 2008b	Anderson, BS, Phillips, BM, Hunt, JW, Vorhees, J, Clark, S, Tjeerdema, RS. June, 2008	Copyright © 2008 American Chemical Society University of California, California Department of Pesticide Regulation, Syngenta Crop Protection, Inc., and the University of California	Recent advances in sediment toxicity identification evaluation methods emphasizing pyrethroid pesticides. In: Gan, J-G, Hendley, P, Spurlock, F, Weston, D. (eds.), Synthetic Pyrethroids: Occurrence and Behavior in Aquatic Environments.	In: Gan, J-G, Hendley, P, Spurlock, F, Weston, D. (eds.), Synthetic Pyrethroids: Occurrence and Behavior in Aquatic Environments. American Chemical Society Books, Washington, DC. Volume 991. Publication Date (Print): August 19, 2008	http://www.oup.com/us/catalog/general/subject/Chemistry/AgricultureandPesticides/?view=usa&ci=9780841274334	Sediment	Pyrethroids
Anderson et al., 2010	Anderson, Brian S., Bryn M. Phillips, John W. Hunt, Sara L. Clark, Jennifer P. Voorhees, Ron S. Tjeerdema, Jane Casteline, Margaret Stewart, Dave Crane, Abdou Mekebri 2010	Dept. Environmental Toxicology, UC Davis, Marine Pollution Studies Laboratory, Water Environment Research Foundation, CA Dept. Fish and Game Water Pollution Control Lab	Evaluation of methods to determine causes of sediment toxicity in San Diego Bay, California USA	Ecotoxicology and Environmental Safety Vol 73 Issue 4 May 2010	http://www.sciencedirect.com/science/article/pii/S0147651310000084	Sediment	Copper, Pyrethroids, Organochlorines, PAH, PCB, OP
Anderson et al., 2011	Anderson B., Hunt, J., Markiewicz, D., and Larsen, K. 2011	Surface Water Ambient Monitoring Program, California State Water Resources Control Board	Toxicity in California Waters		http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/txcty_rprt.pdf	Water, sediment	
Aqua-Science, 2007	Aqua-Science. July 2007	Prepared by Aqua-Science for the Central Valley Regional Water Quality Control Board	Acute Toxicity of Sacramento Area Urban Creeks to Ceriodaphnia Dubia		http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/reglrpts/rb5_sactotox_dubia_urbancrks.pdf	Water	cyfluthrin, permethrin, chlorpyrifos, diazinon, and malathion
Bacey and Spurlock, 2005	Bacey, Juanita and Frank Spurlock. June, 2005	California Environmental Protection Agency, Environmental Monitoring Branch, California Department of Pesticide Regulation	Biological Assessment of Urban and Agricultural Streams in the California Central Valley	CDPR Publication # EH05-01. Also published in: Environmental Monitoring and Assessment July 2007, Volume 130, Issue 1-3, pp 483-493.	http://www.cdpr.ca.gov/docs/emon/pubs/ehapreps/eh0501.pdf	Water, sediment	Water: pyrethroids, selected organophosphate. Sediment: pyrethroids
Bay et al., 2010	Bay, Steven M., Greenstein, Darrin J., Maruaya, Keith A. and Lao, Wenjian 2010	Southern California Coastal Water Research Project	Toxicity Identification Evaluation of Sediment (Sediment TIE) in Ballona Creek Estuary	SCCWRP Technical Report 634, December 2010	ftp://sccwrp.org/pub/download/DOCUMENTS/TechnicalReports/634_BallonaTIE.pdf	Sediment	Trace metals, pyrethroids, fipronil, PAH, PCB, legacy pesticides
Bay et al., 2011	Bay, Steven M., Greenstein Darrin J., Jacobe Matthew, Barton, Carlita, Sakamoto, Ken, Young, Diana, Ritter, Kerry J., and Schiff, Kenneth C. Feb., 2011	Southern California Coastal Water Research Project	Southern California Bight 2008 Regional Monitoring Program: Vol. I. Sediment Toxicity		ftp://ftp.sccwrp.org/pub/download/DOCUMENTS/TechnicalReports/640_B08SedTox.pdf	Sediment	
Bondarenko et al, 2007	Bondarenko, Svetlana, Frank Spurlock, Jianying Gan. 2007	Department of Environmental Sciences, University of California, Riverside; California Department of Pesticide Regulation, Sacramento, California	Analysis of pyrethroids in sediment pore water by solid-phase microextraction.	*Environmental Toxicology and Chemistry* 26(12): 2587-2593 (2007)	http://onlinelibrary.wiley.com/doi/10.1897/07-286.1/abstract	Sediment	Pyrethroids
Brown et al., 2010	Brown, Jeffrey S., Sutula, Martha, Stransky, Chris, Rudolph, John and Byron, Earl 2010	Southern California Coastal Water Research Project, Nautilus Environmental	Sediment Contaminant and Toxicity of Freshwater Urban Wetlands in Southern California	Journal of the American Water Resources Association April 2010	http://onlinelibrary.wiley.com/doi/10.1111/j.1752-1688.2009.00407.x/abstract	Sediment and Water	Trace metals, PAH, PCB, organochlorine pesticides, organophosphate pesticides and synthetic pyrethroids
Budd et al., 2007	Budd, R., S. Bondarenko, D. Haver, J. Kabashima, and J. Gan. 2007	UC Riverside	Occurrence and Bioavailability of Pyrethroids in a Mixed Land Use Watershed	*Journal of Environmental Quality* 36: 1006-1012 (2007)	https://www.soils.org/publications/jeq/abstracts/36/4/1006	Sediment	Pyrethroids
Budd, 2011	Budd, Robert 2011	Department of Pesticide Regulation	Urban Pesticide Monitoring in Southern California During Fiscal Year 2011-2012	CA Dept. of Pesticide Regulation, Environmental Monitoring Branch, Study 270	http://www.cdpr.ca.gov/docs/emon/pubs/protocol/study270protocol_rev_2011.pdf	Sediment and Water	Pyrethroid pesticides, Fipronil, Organophosphorus and other insecticides
Budd et al., 2011	Budd, Robert, O'geen, Anthony, Goh, Kean S., Bondarenko, Svetlana and Gan, Jay 2011	Dept of Pesticide Regulation Sacramento, Department of Land Air and Water Resources UC Davis, Department of Environmental Sciences, UC Riverside	Removal Mechanisms and fate of insecticides in constructed wetlands	Chemosphere Volume 83 Issue 11 pp. 1581-1587, June 2011	http://www.sciencedirect.com/science/article/pii/S0045653511000142	Sediment and Water	Pyrethroids, carbamates, fipronil, organophosphates, phenoxy, and triazines
Calleguas Creek WMP, 2008	Calleguas Creek Watershed Management Plan, personal communication, June 2008	Calleguas Municipal Water District	Unpublished data. Personal communication: e-mail from Tracy Krueger of Larry Walker Associates to Armand Ruby of Armand Ruby Consulting; Subject: pyrethroid monitoring data, June 23, 2008.			Surface water, sediment	Pyrethroids
CDM et al., 2007	Camp Dresser & McKee, Inc., laboratory data Consultants, and Katz & Associates. Sept., 2007	Sacramento Regional County Sanitation District, Sacramento Stormwater Quality Partnership	Sacramento Regional County Sanitation District Coordinated Monitoring Program 2006-2007 Annual Report			Surface water, sediment	Pyrethroids
Delgado-Moreno et al., 2011	Delgado-Moreno, Laura, Lin, Kunde, Veiga-Nascimento, Rebecca, and Gan, Jay 2011	Department of Environmental Sciences, UC Riverside, and Los Angeles Regional Water Quality Control Board	Occurrence and Toxicity of Three Classes of Insecticides in Water and Sediment in Two Southern California Coastal Watersheds	J. Agric. Food Chem., 2011, 59 (17), pp 9448–9456. DOI: 10.1021/jf202049s. Publication Date (Web): August 5, 2011	http://pubs.acs.org/doi/abs/10.1021/jf202049s	Sediment and Water	Pyrethroids, fipronil, chlorpyrifos and diazinon
Deng, 2010	Xin Deng 2010	California Department of Pesticide Regulation; Interagency Ecological Program under CALFED Bay Delta Program	Memorandum: Summary of the Final Report Entitled "Pelagic Organism Decline: Acute and Chronic Invertebrate and Fish Toxicity Testing in the Sacramento-San Joaquin Delta"		http://www.cdpr.ca.gov/docs/emon/surfwtr/swanalysismemo/2262_gill.pdf	Water	Pyrethroids and organophosphates
Domagalski et al., 2010	Domagalski, Joseph L., Weston, Donald P., Zhang, Minghua, Hladik, Michelle 2010	US Geological Survey, Department of Integrative Biology, UC Berkeley, Department of Land Air and Water UC Davis	Pyrethroid Insecticide Concentration and Toxicity in Streambed Sediments and Loads in Surface Waters of the San Joaquin Valley California USA	Environmental Toxicology and Chemistry Vol 29 Issue 4 April 2010	http://onlinelibrary.wiley.com/doi/10.1002/etc.106/abstract	Sediment and Water	Pyrethroids
Ensminger and Kelley, 2011a	Ensminger, Michael and Kevin Kelley, 2011	California Department of Pesticide Regulation Environmental Monitoring Branch, Surface Water Protection Program	Monitoring Urban Pesticide Runoff in California 2008-2009	CA Dept. of Pesticide Regulation, Environmental Monitoring Branch, Study 249	http://www.cdpr.ca.gov/docs/emon/pubs/ehapreps/study_249_ensminger.pdf	Sediment and Water	Pyrethroids, chlorpyrifos, herbicides and degradates
Ensminger and Kelley, 2011b	Ensminger, Michael and Kevin Kelley, 2011	California Department of Pesticide Regulation Environmental Monitoring Branch, Surface Water Protection Program	Monitoring Urban Pesticide Runoff in California 2009-2010	CA Dept. of Pesticide Regulation, Environmental Monitoring Branch, Study 264	http://www.cdpr.ca.gov/docs/emon/pubs/ehapreps/report_264.pdf	Sediment and Water	Pyrethroids, Herbicides, Fipronil
Ensminger et al., 2012	Ensminger, Michael P., Budd, Robert, Kelley, Kevin C., Goh, Kean S., 2012	California Department of Pesticide Regulation. Environmental Monitoring Branch, Surface Water Protection Program.	Pesticide occurrence and aquatic benchmark exceedances in urban surface waters and sediments in three urban areas of California, USA, 2008–2011	Environmental Monitoring and Assessment May 2013, Volume 185, Issue 5, pp 3697-3710	http://www.springerlink.com/content/q11r274187122410/supplemental/	Sediment and Water	Pesticides, pesticide degradates
Gan et al., 2012	J. Gan, S. Bondarenko, L. Oki, D. Haver, and J. X. Li, 2012	Department of Environmental Sciences, University of California, Riverside. Department of Plant Sciences, University of California, Davis. University of California Cooperative Extension, Orange County, Irvine, California. Department of Statistics, University of California, Riverside.	Occurrence of Fipronil and Its Biologically Active Derivatives in Urban Residential Runoff	Environmental Science & Technology Vol 46 No 3 2012.	http://pubs.acs.org/doi/abs/10.1021/es202904x	Water	Fipronil and degradates
Gilliom et al., 2007	Gilliom, Robert J., Jack E. Barbash, Charles G. Crawford, Pixie A. Hamilton, Jeffrey D. Martin, Naomi Nakagaki, Lisa H. Nowell, Jonathan C. Scott, Paul E. Stackelberg, Gail P. Thelin, and David M. Wolock. Feb 15, 2007	US Geological Survey	Pesticides in the Nation's Streams and Ground Water, 1992-2001	USGS Circular 1291	http://pubs.usgs.gov/circ/2005/1291/	Surface and ground water, sediment	Pesticides, pesticide degradates - incl. permethrin (only pyrethroid) in water and sediment

Toxicity data?	Source Type	Geographic Area	Monitoring Location(s)	Notes/Results	Study Date(s)	Toxicity Testing Species/Approach	Most commonly found current-use pesticide(s)
No	Urban creek			No pyrethroid detects; Diazinon detected	17-Oct-04		
No	Urban creek			No pyrethroid detects; Diazinon and malathion detected	27-Nov-04		
No	Urban creek			No pyrethroid detects; Diazinon detected	27-Dec-04		
		Central Valley	South Fork American River, Pacheco Creek, Del Puerto Creek	Bifenthrin and lambda-cyhalothrin were the most toxic of all compounds tested	October, 2003	H. azteca	
Yes	Urban creeks	Sacramento and East Bay	Arcade Creek, Chicken Ranch Slough, Curry Creek, Elder Creek, Laguna Creek, Morrison Creek, Strong Ranch Slough, Willow Creek, Glen Echo, Kirker Creek, Lauterwasser Creek, Lion Creek, Pine Creek, San Leandro, and San Pablo Creek	Most of the Sacramento area sediment samples caused acute mortality to H. azteca. Pyrethroids likely cause of toxic effects.	31-Jan-06	H. azteca	
Yes			Carpinteria Marsh	Bifenthrin, permethrin detected	8-Jul-05		
Yes			Switzer Creek at San Diego Harbor	All samples highly toxic; pyrethroids detected in amounts sufficient to explain toxicity			
Yes							
Yes		San Diego Harbor	Switzer Creek, San Diego Harbor	Pyrethroid pesticides found to be at least partially responsible for sediment toxicity. Bifenthrin, Cyfluthrin and Permethrin detected	2004	Amphipod species (Eohaustorius estuarius)	Bifenthrin
Yes	Receiving waters	Statewide - CA		Compilation of state-sponsored toxicity testing performed from 2001-2010; 53% of freshwater sites and 45% of sediment sites reported some toxicity; results are reported separately in other studies.	2001-2010	Water: C. dubia, S. capricornutum, and P. promelas; Sediment: H. azteca	
Yes	Urban creeks			TIE - Elk Grove Creek; 4 pyrethroids detected	2007		
No	Urban and Agricultural streams			1 permethrin detection in sediment from Elk Grove Creek.	2002-04		
Yes		Marina del Rey	Ballona Creek Estuary	Pyrethroid pesticides detected at high levels and likely from multiple sources. Permethrin and bifenthrin present in the highest concentrations; potential concern for fipronil.	2007-2010	Amphipod species (Eohaustorius estuarius) sediment toxicity	Bifenthrin and Permethrin
Yes		Southern California Bight	Ballona Creek, Marina del Rey, Mugu Lagoon	Pyrethroid pesticides are an important factor in sediment toxicity Most of the SCB was non-toxic, pyrethroid pesticides are a cause for concern, however; studies were limited	2008	Amphipod species (Eohaustorius estuarius) sediment toxicity, Sediment Water Interface Test (Mytilus galloprovincialis)	
Yes	Ag (nursery) and urban runoff			2 urban runoff sites, Orange County - several pyrethroids detected each site	2007		
Yes	SC Wetlands	Southern California	23 wetland sites	Pyrethroid pesticides are a regional, if not national issue for wetlands Bifenthrin, Permethrin, Cyhalothrin and cyfluthrin were all found exceeding mean sediment in one or more monitoring sites	2007	H. azteca	Bifenthrin
No	Various land use drainages and tributaries to San Diego Creek			Bifenthrin detected in 95-100% of samples, fenpropathrin in 68% of dry season, 90% of wet season samples. Cyhalothrin, permethrin, cyfluthrin & deltamethrin detected at lower levels. Fenpropathrin detected at several residential sites but likely due to ag/nursery sources.	April-May 2005 and August 2005		
No		Orange County, CA	Slat Creek watershed, and Wood Creek watershed	Ongoing study. In preliminary results, bifenthrin and fipronil detected in most water samples in both watersheds; fipronil degradates and other pyrethroids detected less frequently.	2009 - ongoing		Bifenthrin, Permethrins
No		Orange County, CA	7 sites in Salt Creek Watershed, and 3 sites in the Wood Creek Watershed	Research into treatment effectiveness of constructed wetlands. Possible accumulation of pyrethroids in constructed wetlands needs to be further investigated	2009		Bifenthrin (most stable under testing conditions)
	Urban creeks			Water: 3 detects in Conejo Creek at Howard Rd. Sediment: 3 detects (Revolon Slough, Conejo Creek, and N. Fork Arroyo Conejo). No detects in urban runoff.	2003-04		
	Urban creeks			References PRISM monitoring project on pesticides in sediment and study of urban creek pyrethroid seasonal trends and loading in selected Sacramento area creeks.	Sept., 2007		
Yes		Ventura County	Santa Clara River Watershed and Calleguas Creek Watershed	Pyrethroids were detected in 71% and 100% of water and sediment samples respectively, with bifenthrin detected most frequently.	2009	Ceriodaphnia dubia	Bifenthrin
Yes		Sacramento-San Joaquin Delta	Saacramento- San Joaquin Delta	Low frequency (<1%) of occurrences of toxicity to H. azteca. Pyrethroids detected in 21% of samples.	2008-2010	H. Azteca	Bifenthrin and Fipronil
Yes		San Joaquin River Valley	San Joaquin River and tributaries	Up to 100% mortality (H. Azteca) observed in some locations and in contrast, little or no toxicity because of preponderance of sandy soils and sediments	2007	H. Azteca	Bifenthrin and Cyhalothrin
No	Urban runoff and urban creeks	Sacramento, San Francisco Bay, greater Los Angeles and San Diego areas	Pleasant Grove Creek, Grayson Creek, Koopman/Martin Canyon Creek, Wood Canyon Creek, Salt Creek, Lindo Lake and San Diego River	Bifenthrin, fipronil and diuron detected in water samples at concentrations that potentially could be toxic to aquatic life. Half of sediment samples contained 5 or more pyrethroids. For most detected pesticides concentrations increased following rainfall; fipronil and degradates stayed fairly constant.	2008-2009		Bifenthrin and Fipronil
No	Urban runoff and urban creeks	Sacramento and San Francisco Bay areas	Pleasant Grove Creek, Koopman/Martin Canyon Creek, Dry Creek, Sacramento River, Alder/Willow Creek	Bifenthrin, fipronil and occasionally other pesticides were detected in water samples at concentrations that potentially could be toxic to aquatic life. Half of sediment samples contained 6 or more pyrethroids. Rainfall generally increased frequency of pesticide detection in water samples.	2009-2010		Bifenthrin
No	Urban runoff and urban creeks	Sacramento and San Francisco Bay areas, Orange County	Alder Creek, Pleasant Grove Creek, Grayson Creek, Martin Canyon Creek, Koopman Canyon Creek, Salt Creek, Wood Creek	Samples were analyzed for up to 64 pesticides or degradates. Multiple detections were common; 50 % of the water samples contained five or more pesticides. Statewide, the most frequently detected insecticides in water were bifenthrin, imidacloprid, fipronil, fipronil sulfone, fipronil desulfinyl, carbaryl, and perithion. Bifenthrin was the most common contaminant in sediment samples	2008-2011	Pyrethroids, Chlorpyrifos	Bifenthrin, Permethrin, and Fipronil
No	Urban storm drain outfalls	Sacramento County, Orange County	Storm drain outfalls in two residential communities in Sacramento and four residential communities in Orange County	At a limit of detection of 1.5 ng L−1, fipronil was detected at 85% (N1) and 66% (N2) at the two northern California sites. Fipronil was found in nearly all samples that were taken from the four southern California neighborhoods (S1–S4). Higher concentrations of fipronil at the four southern sites than the northern sites were likely the result of different use patterns. Fipronil and fipronil sulfone were the more dominant components in the runoff, contributing almost equally for most time of the year, while fipronil desulfinyl contributed 22% of the total concentration.	2006-2008		Fipronil and degradates
No	Water, sediments throughout U.S. - urban and ag		Assessments conducted in 20 Study Units during 1992–1995, 16 Study Units during 1996–1998, and 15 Study Units during 1998–2001.	Nationally, water samples for pesticide analysis were collected from 186 stream sites within the 51 Study Units, bed-sediment samples were collected from 1,052 stream sites, and fish samples were collected from 700 stream sites. Ground-water samples were collected from 5,047 wells. One or more pesticides or degradates were detected in water more than 90 percent of the time during the year in streams draining watersheds with agricultural, urban, and mixed land uses. Pesticides were less common in ground water, but were detected in more than 50 percent of wells.	15-Feb-07		*cis*-Permethrin, *trans*-Permethrin

Citation - Abbrev.	Author(s)/Date	Agency	Report/Study Title	Journal/Publication Reference	Web Link	Water/ Sediment	Chemical Constituents
Hladik et al., 2009	Hladik, Michelle L., Domagalski, Joseph L., Kuivila, Kathryn M. 2009	US Geological Survey	Concentrations and loads of suspended sediment-associated pesticides in the San Joaquin River, California and Tributaries during storm events	Science of The Total Environment Volume 408, Issue 2, 20 December 2009	http://www.sciencedirect.com/science/article/pii/S0048969709009036	Sediment	Anilines, Chloroacetanilide, Organophosphates, Pyrethroids, Triazines, Legacy and miscellaneous
Hladik and Kuivila, 2012	Hladik, Michelle L. and Kuivila, Kathryn M. 2012	USGS National Water Quality Assessment Program and the USGS Toxic Substances Hydrology Program	Pyrethroid insecticides in bed sediments from urban and agricultural streams across the United States	J. Environ. Monit., 2012, 14, 1838	http://pubs.rsc.org/en/Content/ArticleLanding/2012/EM/c2em10946h	Sediment	Pyrethroid Pesticides
Holmes, 2004	Holmes, Robert W. July 2004	Cal EPA Regional Water Quality Control Board Central Valley Region Surface Water Ambient Monitoring Program (SWAMP) Lower Sacramento River Watershed	Monitoring of Sediment-bound Contaminants In the Lower Sacramento River Watershed. Surface Water Ambient Monitoring Program (SWAMP) Lower Sacramento River Watershed FINAL REPORT		http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/reglrpts/rb5_sedimentchem_rptmain.pdf	Sediment	metals, polycyclic aromatic hydrocarbons (PAHs), organochlorine pesticides (OCs), pyrethroid pesticides, and organophosphate pesticides (OPs).
Holmes et al., 2008	Holmes, Robert W., Anderson, Brian S., Phillips, Bryn M., Hunt, John W., Crane, Dave B., Mekebri, Abdou, Connor, Valerie 2008	California Dept. of Fish and Game Water Branch, Marine Pollution Studies Laboratory, California Dept. of Fish and Game, Fish and Wildlife Water Pollution Control Laboratory, State Water Resources Control Board	Statewide Investigation of the Role of Pyrethroid Pesticides in Sediment Toxicity in California's Urban Waterways	Environmental Science & Technology Vol 42 No 18 2008	http://pubs.acs.org/doi/abs/10.1021/es801346g	Sediment	Pyrethroid Pesticides
Kent et al., 2005	Kent, Robert, Kenneth Belitz, Andrea J. Altmann, Michael T. Wright, and Gregory O. Mendez. 2005	US Geological Survey	Occurrence and Distribution of Pesticide Compounds in Surface Water of the Santa Ana Basin, California, 1998–2001	USGS National Water-Quality Assessment Program Scientific Investigations Report 2005-5203	http://pubs.usgs.gov/sir/2005/5203/	Surface water	Various pyrethroids, organochlorines, others
Kuivila and Smalling, 2007	Kuivila, K.M. and K.L. Smalling. 2007	US Geological Survey	Presentation: Occurrence and Bioavailability of Urban-Use Insecticides in Estuarine Environments		http://www.setac.org/milwaukee/pdf/2007_Abstract_Book.pdf	Crab embryo tissue, water, sediments	OPs, fipronil, pyrethroids
Lao et al., 2010	Lao, Wenjian, Tsukada, David, Greenstein, Darrin J., Bay, Steven M., Maruya, Keith A. 2010	Southern California Coastal Water Research Project	Analysis, Occurrence, and Toxic Potential of Pyrethroids, and Fipronil in Sediments From An Urban Estuary	Environmental Toxicology and Chemistry Vol. 29 No. 4 2010	ftp://ftp.sccwrp.org/pub/download/DOCUMENTS/JournalArticles/609_PyrethroidFibronilSedToxPotentialUrbanEstuary.pdf	Sediment	Pyrethroid Pesticides and Fipronil
Larry Walker Associates, 2005	Larry Walker Associates, Dec., 2005	Calleguas Creek Watershed Management Plan	Calleguas Creek Watershed Management Plan Dry Season Urban Runoff Characterization (DSURC)		http://www.calleguascreek.org/ccwmp/Final_DSURC_121505.pdf	Water	chlorpyrifos and diazinon, triazine herbicides, and pyrethroid insecticides
Levine et al., 2005	Levine, Johanna, Dave Kim, Kean S. Goh, Carissa Ganapathy, Jean Hsu, Hsiao Feng, Paul Lee. March 2005	California Environmental Protection Agency, Environmental Monitoring Branch, California Department of Pesticide Regulation	Surface and Ground Water Monitoring of Pesticides Used in the Red Imported Fire ant Control Program	CDPR Publication # EH05-02	www.cdpr.ca.gov/docs/emon/pubs/ehapreps/EH0502.pdf	Water, groundwater	bifenthrin, fenoxycarb, hydramethylnon pyriproxyfn, chlorpyrifos, and diazinon
Lowe et al., 2007	Lowe, S., B. Anderson and B. Phillips. 2007	SFEI; UC Davis Marine Pollution Studies Laboratory; State Water Resources Control Board	Final Project Report: Investigations of Sources and Effects of Pyrethroid Pesticides in Watersheds of the San Francisco Estuary	Proposition 13 PRISM Grant # 041355520. SFEI Contribution #523. San Francisco Estuary Institute, Oakland, CA	http://www.waterboards.ca.gov/water_issues/programs/tmdl/records/region_2/2008/ref2415.pdf	Sediment	sediment quality parameters, trace metals, PAHs, PCBs, OP pesticides), pyrethroids, and possibly other diazinon alternatives
Maul et al., 2008	Jonathan D. Maul1, Amanda A. Brennan, Amanda D. Harwood, Michael J. Lydy 2008	Fisheries and Illinois Aquaculture Center, Department of Zoology, Southern Illinois University. The Institute of Environmental and Human Health and Department of Environmental Toxicology, Texas Tech University	Effect of sediment-associated pyrethroids, fipronil, and metabolites on Chironomus tentans growth rate, body mass, condition index, immobilization, and survival	USEPA and Greater Research Graduate Opportunities Program MA-91670201-1	http://openagricola.nal.usda.gov/Record/IND44161618	Sediment	Bifenthrin, Lambda-cyhalothrin, permethrin, fipronil, fipronil-sulfide, fipronil-sulfone
Ng et al., 2008	Ng, C.M., Weston, D.P., You, J., Lydy, M.J. 2008	Department of Integrative Biology, UC Berkeley, Fisheries and Illinois Aquaculture Center, Dept. of Zoology, Southern Illinois University	Patterns of Pyrethroid Contamination and Toxicity in Agricultural and Urban Stream Segments	American Chemical Society Symposium Series Vol 991 August 2008	http://pubs.acs.org/doi/abs/10.1021/bk-2008-0991.ch016	Sediment	Pyrethroid Pesticides
Oki and Haver, 2009	Oki, Loren and Darren Haver	UC Davis and UC Cooperative Extension, Orange and Riverside County	Monitoring Pesticides in Runoff from Northern and Southern California Neighborhoods. Presentation by Loren Oki Ph.D. and Darren Haver Ph.D., June 22, 2009.		http://www.cdpr.ca.gov/docs/emon/surfwtr/presentations/oki_2009.pdf	Water	Pyrethroids, fipronil, and other constituents incl. OP pesticides
Orange County, 2008	Orange County Dept. Public Works/RDMD, 2008	Orange County Dept. of Public Works/RDMD	Unpublished data. Personal communication: transmitted via e-mail by Bruce Moore to Armand Ruby.			Sediment	Pyrethroids and sediment toxicity
Phillips et al., 2010	Phillips, B.M., Anderson, B.S., Voorhees, J.P., Hunt, J.W., Holmes, R.W., Mekebri, A., Connor, V., Tjeerdema, R.S., 2010	SWAMP, DPR, CASQA, SMC	The contribution of pyrethroid pesticides to sediment toxicity in four urban creeks in California, USA.	Journal of Pesticide Science 35, 302-309		water	Pyrethroid-spiked sediments and pyrethroid-contaminated sediments
Riverside County et al., 2007	Riverside County Flood Control and Water Conservation District; County of Riverside, City of Murrieta, and City of Temecula. 2007	Riverside County Flood Control and Water Conservation District Protection Agency, County of Riverside, City of Murrieta, and City of Temecula	2006 – 2007 Watershed Annual Progress Report			Water	Pyrethroids
Riverside County, 2008	Riverside County Flood Control and Water Conservation District, personal communication, 2008	Riverside County Flood Control and Water Conservation District	Unpublished data from laboratory reports dated Nov. 6, 2007, and Jan. 16, Feb. 20, Feb. 22, June 5, and July 3, 2008			Water	Pyrethroids
Riverside County, 2011	Riverside County Flood Control and Water Conservation District 2011	Riverside County Flood Control and Water Conservation District	NPDES Municipal Stormwater Permit (NPDES No. CAS0108766) Fiscal Year 2011-2012 SANTA MARGARITA WATERSHED ANNUAL REPORT For The Riverside County Municipal Copermittees. Appendix G, Monitoring Annual Report. October, 2012.		http://rcflood.org/downloads/NPDES/Documents/SM_Annual/Watershed%20Annual%20Report.pdf	Water	Pyrethroids
Ruby, 2005	Ruby, Armand. December 2005	Armand Ruby Consulting for Clean Estuary Partnership	Technical Memorandum: Analysis of Bay Area Urban Creeks Monitoring, 2004-05		http://www.up3project.org/documents/CEP_2004-05_Urban_Creeks_Monitoring_Tech_Memo.pdf	Water	Organophosphate pesticides and pyrethroids
Ryberg et al., 2010	Ryberg, Karen R., Vecchia, Aldo V., Martin, Jeffrey D., and Gilliom, Robert J.	US Geological Survey, NATIONAL WATER-QUALITY ASSESSMENT PROGRAM	Trends in Pesticide Concentrations in Urban Streams in the United States 1992-2008.	USGS Scientific Investigations Report 2010-5139	http://pubs.usgs.gov/sir/2010/5139/	Water	Insecticides incl. Fipronil
Sacramento County, 2011	Tamayo, Dave, Personal Communication, 2011.	County of Sacramento	Unpublished data. Personal communication transmitted via email from Dave Tamayo to Armand Ruby			Water/Sediment	Pyrethroid insecticides
SFBRWQCB, 2007	SFBRWQCB [Katznelson, Revital, Nelia White, Matt Cover, Karen Taberski.] June 2007	Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board, Oakland, CA	Water Quality Monitoring and Bioassessment in Four San Francisco Bay Region Watersheds in 2003-2004: Kirker Creek, Mt. Diablo Creek, Petaluma River, and San Mateo Creek.		http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/reglrpts/rb2_wqmb4sfws2007.pdf	Sediment	Organophosphate Pesticides; Organochlorine Pesticides
Smalling et al., 2010	Smalling, Kelly L., Morgan, Steven, Kuivila, Kathryn K. 2010	US Geological Survey, bodega Marine Laboratory, UC Davis	Accumulation of Current Use and Organochlorine Pesticides in Crab Embryos From Northern California, USA	Environmental Toxicology and Chemistry, Vol 29 No. 11 2010	http://onlinelibrary.wiley.com/doi/10.1002/etc.317/abstract	Crab embryos	Aniline, Chloroacetanilide, Conazole, Organochlorine, Organophosphate, Pyrethroid, Strobilurin, Thiocarbamate, Misc
Trimble et al., 2009	Trimble, Andrew J., Weston, Donald P., Belden, Jason B., Lydy, Michael J. 2009	Fisheries and Illinois Aquaculture Center and Department of Zoology Southern Illinois University, Department of Integrative Biology, UC Berkeley, Department of Zoology Oklahoma State University	Identification and Evaluation of Pyrethroid Insecticide Mixtures in Urban Sediments	Environmental Toxicology and Chemistry Vol 28 No 8 2009	http://www.ncbi.nlm.nih.gov/pubmed/19245272	Sediment	Pyrethroid Insecticides
Ventura County, 2011	Manwill, Ron, 2011, County of Ventura, Personal Communication	City of Thousand Oaks	Calleguas Creek Watershed TMDL Monitoring Program			Sediment and Water	Pyrethroid pesticides
Wang et al., 2009	Wang, Dongli, Weston, Donald P., Lydy, Michael J. 2009	Fisheries and Illinois Aquaculture Center and Department of Zoology, Southern Illinois University, Department of Integrative Biology, UC Berkeley	Method Development For The Analysis of Organophosphate and Pyrethroid Insecticides at Low Parts per Trillion Levels in Water	Talanta. 2009 Jun 15;78(4-5):1345-51. doi: 10.1016/j.talanta.2009.02.012. Epub 2009 Feb 20.	http://www.ncbi.nlm.nih.gov/pubmed/19362199	Water	Organophosphate and Pyrethroid Insecticides
Wang et al., 2010	Wang, Dongli, Weston, Donald P., Ding, Yuping, Lydy, Michael J. 2010	Fisheries and Illinois Aquaculture Center and Department of Zoology, Southern Illinois University, Department of Integrative Biology, UC Berkeley	Development of a Sample Preparation Method for the Analysis of Current Use Pesticides in Sediment Using Gas Chromatography	Arch Environ Contam Toxicol. 2010 Feb; 58(2):255-67. doi: 10.1007/s00244-009-9398-4. Epub 2009 Oct 2.	http://www.ncbi.nlm.nih.gov/pubmed/19798461	Sediment	Pesticides
Werner et al., 2006	Werner, Inge, Marie Vasi, Daniel Markiewicz 2006	Aquatic Toxicology Laboratory, UCD for Surface Water Ambient Monitoring Program State Water Resources Control Board	Toxicity Testing and Toxicity Identification Evaluation Final Report April 10, 2006. SWAMP and SWRCB, contract # 03-197-250-0		http://www.waterboards.ca.gov/water_issues/programs/tmdl/records/region_7/2008/ref2743.pdf	Water	Tox testing, TIEs; some limited chemical analysis (Organics, metals, pesticides, incl. pyrethroids)

Toxicity data?	Source Type	Geographic Area	Monitoring Location(s)	Notes/Results	Study Date(s)	Toxicity Testing Species/Approach	Most commonly found current-use pesticide(s)
No		Northern California	San Joaquin River and tributaries	The pesticide concentrations in the tributaries were greater than in the main stem San Joaquin River. The set side tributaries had the highest pesticide concentrations which can be attributed to the intense agriculture and erodible soil in the area.	2008		Bifenthrin and Permethrin
Yes	Urban and agricultural streams	National survey, incl. one Sacramento area stream	Arcade Creek near Del Paso Heights	3 pyrethroid detections. Sediment toxicity found. Bifenthrin was the most frequently detected and was found in over half (58%) of the sediment samples.	2009	H. azteca	Bifenthrin and Permethrin
No	3 ag, 1 urban waterways			One permethrin detect in Dry Creek (Roseville)	July, 2004		
Yes	90 Sites on 63 urban Waterways in California			After scope narrowed to 30 creeks in 8 geographical regions, tests showed all 30 samples were toxic tested at 15 Celsius, and 25 of 30 at 23 Celsius.	2006	H. azteca	Bifenthrin and Permethrin
No	Urban streams and rivers			No pyrethroid detects	2005		
No	urbanized estuaries	Sonoma County		Pyrethroids and fipronil detected in crab tissues	2007		
Yes		Southern California	Ballona Creek	Estimated toxic units of bifenthrin and cypermethrin were likely contributors to the mortality observed in tests with the estuarine amphipod Eohaustorius estuarius. Although fipronil was not a likely contributor to the observed mortality, the concentrations detected may be of concern for more sensitive crustacean species.	2007-2008	Eohaustorius estuarius	Permethrin and Bifenthrin
No	3 Urban storm drains - Camarillo	Ventura County	Calleguas Creek	No pyrethroids detected	2004		
Yes	Residential, ag (nurseries) - Orange County			Few detects at urban sites	Mar. 2005		
Yes	Tributaries to SF estuary	North San Francisco Bay	Petaluma River, Napa River, Suisun Creek, San Mateo Creek, San Lorenzo Creek, Coyote Creek	Several pyrethroid detects in sediment; bifenthrin inmost samples; several sediment tox. hits	Jan. 2007	E. estuarius and H. azteca	Permethrin and Bifenthrin
Yes, only LC50's		N/A	N/A obtained analytes for testing from Chem Service	Paper derives LC50s and EC50s for fipronil and degradates in sediment	2008	C. tentans	N/A
Yes		Central California	Gabilan, Natividad and Alisal Creeks, Salinas	Minimal mortality in background sites, prior to creeks entering agricultural land; significantly more toxic in urban, agricultural and residential areas. Urban sites are downstream of agricultural areas. Two background sites contained no detectable pyrethroids. Pyrethroid concentrations alone showed a strong relationship to H. azteca mortality as observed in sediment toxicity tests.	2005	H. azteca	Permethrin and Bifenthrin
No	Residential runoff	Sacramento and Orange Counties	Residential storm drain outfalls	Bifenthrin and fipronil detected in almost all residential runoff samples	2006-2009		
Yes - sediment			Sites near Huntington Harbor and Newport Harbor	Extensive toxicity to amphipods, 50% of sites have bifenthrin detects	2005-06 and 2006-07		Bifenthrin, fipronil
yes- interstitial water and sediment	Urban creek stations	Los Angeles County, San Diego County, Orange County, and Contra Costa County	Bouquet Canyon Creek, Cottonwood Creek, Marsh Creek, and Peters Canyon Wash	Investigation of water and sediment TIE methods for samples with measurable concentrations of pyrethroids concluded that use of whole sediment and interstitial water TIEs and chemical analysis provided multiple lines of evidence that pyrethroids contributed to toxicity. 3-5 pyrethroids detected in each sample.	2009	H. azteca	Bifenthrin
Yes	Receiving water (triad) stations	Riverside County	Murrieta and Temecula Creeks	Pyrethroids implicated in TIEs	31-Oct-07		
No	Receiving water ("triad") stations and "tributary" stations (urban outfalls)	Riverside County	Triad/Receiving Water Stations in Santa Margarita River Region: Murrieta Creek, Temecula Creek, & Adobe Creek (background station); Tributary Stations (IC/ID urban outfall locations)	Pyrethroids detected in several urban outfall samples (Dec. 17, 2007 and Jan. 26-27, 2013) and receiving water (triad) station samples (Jan. 27-28, 2008). No detects in samples from triad stations Oct. 17, 2007 and May 14, 2008. Phase II TIEs confirm pyrethroids as likely cause of toxicity.	Oct. 2007 - May 2008		
No	Receiving water ("triad") stations and "tributary" stations (urban outfalls)	Southern California	Santa Margarita Watershed	Pyrethroids were commonly detected in receiving waters.	2010-2011		Bifenthrin
Yes	Urban creeks	SF Bay area	Corte Madera Creek, Blue Rock Springs Creek, Rheem Creek, Castro Valley Creek, Calabazas Creek, San Francisquito Creek, Belmont Creek	No pyrethroid detects, some chronic toxicity hits	December, 2005		
No	27 streams throughout the United States	Northeast, Midwest, South and West	27 sites are a subset of 201 sites sampled as a part of NAWQA studies. These sites have adequate pesticide data for trend analysis.	Results indicate significant upward trends for fipronil and its degradation products. Arcade Creek and Santa Ana River were monitored one event each in 2002. Fipronil and 2 degradate were tested for but not detected. No pyrethroid data.	1992-2008		N/A
No	Urban Creeks	Central California- Sacramento	Natomas STA2, Arcade Creek at Watt Ave., Laguna Creek at Franklin, Willow Creek at Blue Ravine Rd., Strong Ranch Slough, Sump 111, and Laguna Creek at Hwy 99.	Pyrethroids were commonly detected in urban runoff discharges and receiving waters, and very frequently detected in receiving water sediments.	2008-2011		
Yes - water and sediment	Urban creeks			Sediment toxicity found in Kirker and San Mateo Creeks	Jun-07		
No		Northern California	Bodega Bay and Stege Marsh	Preliminary results indicate that embryos are an effective sink for organic contaminants in the environment and have the potential to be good indicators of ecosystem health, especially when contaminant body burden analyses are paired with reproductive impairment assays.	2005-2006	H. oregonensis and P. Crassipes	Cyfluthrin
Yes		Central and Northern California	94 samples from an existing database	Mixtures of pyrethroids are additive; future studies evaluating specific mixtures would help to better understand mechanistic processes leading to deviations from additive models		H. azteca	Bifenthrin
No		Southern California	Calleguas Creek	Of the 222 samples, Bifenthrin was detected in 131 of them (59%).	2008-2010		Bifenthrin
No			Campus Lake Southern Illinois University, Sacramento Regional County Sanitation District, runoff from Alamo Creek in Vacaville, and samples from Roseville, CA	Developed method successful for the analysis of field collected waters with good results		H. azteca and others	
No				Seven additional pesticides were examined from samples previously tested for pyrethroids, and reported on separately, to determine if they are the cause of unexplained toxicity in approximately 30% of the samples. Method developed should help clarify the remaining toxic compounds.			
Yes	Variety of surface waters	Los Angeles, CA	Sites throughout Region 4, Region 7, and Region 9	Many toxic hits; pyrethroids implicated in some TIEs	10-Apr-06	Fathead minnow larvae (P. promelas), C. dubia, S. capricornutum, Hyalella azteca	cyfluthrin, permethrin

Citation - Abbrev.	Author(s)/Date	Agency	Report/Study Title	Journal/Publication Reference	Web Link	Water/ Sediment	Chemical Constituents
Werner et al., 2010a	Inge Werner, Dan Markiewicz, Linda Deanovic, Richard Connon, Sebastian Beggel, Swee Teh, Marie Stillway, Charissa Reece 2010	Aquatic Toxicology Laboratory School of Veterinary Medicine University of California Davis, California	Pelagic Organism Decline (POD): Acute and Chronic Invertebrate and Fish Toxicity Testing in the Sacramento-San Joaquin Delta 2008-2010. Final Report California Department of Water Resources July 24, 2010		http://www.science.calwater.ca.gov/pdf/workshops/POD/Werner%20et%20al_2010_POD2008-2010_Final%20Report.pdf	Water	Pyrethroids and organophosphates; TIE testing with PBO
Werner et al., 2010b	Werner, Inge, Deanovic, Linda A., Markiewicz, Dan, Khamphanh, Manisay, Reece, Charles K., Stillway, Marie, Reece, Charissa 2010	Aquatic Toxicology Laboratory, Department anatomy, Physiology and Cell Biology, School of Veterinary Medicine, UC Davis	Monitoring Acute and Chronic Water Column Toxicity in the Northern Sacramento-San Joaquin Estuary, California, USA, Using the Euryhaline Amphipod, H. Azteca: 2006 to 2007	Environmental Toxicology and Chemistry, Vol. 29, No. 10, pp. 2190–2199, 2010 DOI: 10.1002/etc.281	http://www.ncbi.nlm.nih.gov/pubmed/20872681	Water	Pyrethroids and organophosphates; TIE testing
Weston and Jackson, 2009	Weston, Donald P., Jackson, Colin J. 2009	Department of Integrative Biology, UC Berkeley, and CSIRO Entomology, Black Mountain Canberra Australia	Use of Engineered Enzymes to Identify Organophosphate and Pyrethroid Related Toxicity in Toxicity Identification Evaluations	Environmental Science & Technology Vol. 43 No 14 2009	http://pubs.acs.org/doi/abs/10.1021/es900434z	Sediment and Water	Pyrethroid Pesticides and Organophosphates
Weston and Lydy, 2010a	Weston, Donald P., Lydy, Michael J. 2010	Department of Integrative Biology, UC Berkeley, Agriculture Center and Department of Zoology, Southern Illinois University	Focused Toxicity Identification Evaluations to Rapidly Identify the Cause of Toxicity in Environmental Samples	Chemosphere Vol. 78, Issue 4, pp. 368-374, January 2010	http://www.ncbi.nlm.nih.gov/pubmed/20018342	Water	Pyrethroid insecticides and Organophosphate insecticides
Weston and Lydy, 2010b	Weston, Donald P., Lydy, Michael J. 2010	Department of Integrative Biology, UC Berkeley, Agriculture Center and Department of Zoology, Southern Illinois University	Urban and Agricultural Sources of Pyrethroid Insecticides to the Sacrament-San Joaquin Delta of California	Environmental Science & Technology Vol. 44 No 5, pp. 1833-1840, 2010	http://pubs.acs.org/doi/abs/10.1021/es9035573	Water	Pyrethroid insecticides
Weston and Lydy, 2012	Weston, Donald P., Lydy, Michael J. 2012	Department of Integrative Biology, UC Berkeley, Fisheries and Illinois Aquaculture Center and Department of Zoology, Southern Illinois University	Stormwater Input of Pyrethroid Insecticides to an Urban River	Environmental Toxicology and Chemistry Vol 31, Issue 7	http://onlinelibrary.wiley.com/doi/10.1002/etc.1847/abstract;jsessionid	Water	Pyrethroid insecticides
Weston et al., 2005	Weston, D.P., R. W. Holmes, J. You, and M. J. Lydy. 2005	Department of Integrative Biology, University of CA, and Central Valley Regional Water Quality Control Board, and Southern Illinois University	Aquatic Toxicity Due to Residential Use of Pyrethroid Pesticides	Environmental Science and Technology 39 (24), 9778 - 9784 (2005)	http://pubs.acs.org/cgi-bin/abstract.cgi/esthag/2005/39/i24/abs/es0506354.html	Sediment	Pyrethroids
Weston et al., 2006	Weston, Donald P., Erin L. Amweg, Abdou Mekebri, R. Scott Ogle, and Michael J. Lydy. July 26, 2006	Department of Integrative Biology, University of California, Berkeley; Water Pollution Control Laboratory, California Department of Fish and Game; Pacific EcoRisk; Fisheries and Illinois Aquaculture Center & Department of Zoology Southern Illinois University, Carbondale, Illinois	Aquatic Effects of Aerial Spraying for Mosquito Control over an Urban Area	Environ. Sci. Technol., 40 (18), 5817 -5822, 2006.	http://pubs.acs.org/cgi-bin/abstract.cgi/esthag/2006/40/i18/abs/es0601540.html	Sediment	Pyrethrins and the synergist piperonyl butoxide
Weston et al., 2009a	Weston, Donald P., Holmes, Robert W., Lydy, Michael J. 2009	Department of Integrative Biology, UC Berkeley, Water Branch, California Department of Fish and Game., Fisheries and Illinois Agriculture Center and Department of Zoology, Southern Illinois University	Residential Runoff as a Source of Pyrethroid Pesticides to Urban Creeks	Environmental Pollution Volume 157, Issue 1, January 2009	http://www.sciencedirect.com/science/article/pii/S0269749108003527	Sediment and Water	Pyrethroid insecticides
Weston et al., 2009b	Weston, Donald P., You, Jing, Harwood, Amanda D., Lydy, Michael J. 2009	Department of Integrative Biology, UC Berkeley, Department of Biochemistry, Chemistry and Physics, University of Central Missouri, Fisheries and Illinois Aquaculture Center and Department of Zoology, Southern Illinois University	Whole Sediment Toxicity Identification Evaluation Tools For Pyrethroid Insecticides: III. Temperature Manipulation	Environmental Toxicology and Chemistry Vol. 28 No. 1, 2009	http://www.ncbi.nlm.nih.gov/pubmed/18717618	Sediment	Pyrethroid Insecticides
Weston Solutions Inc., 2004	Weston Solutions Inc., January, 2004	San Diego County Municipal Copermittees	San Diego County Municipal Copermittees 2002-2003 Urban Runoff Monitoring Report		http://www.projectcleanwater.org/html/wq_monitoring.html	Water	Organophosphorus pesticides, general chemistry, trace metals, toxicity
Weston Solutions Inc., 2005	Weston Solutions Inc., January, 2005	San Diego County Municipal Copermittees	San Diego County Municipal Copermittees 2003-2004 Urban Runoff Monitoring Report		http://www.projectcleanwater.org/html/wq_monitoring.html	Water	Organophosphorus pesticides, general chemistry, trace metals, toxicity
Weston Solutions Inc., 2006a	Weston Solutions Inc., January, 2006	San Diego County Municipal Copermittees	San Diego County Municipal Copermittees 2004-2005 Urban Runoff Monitoring Report		http://www.projectcleanwater.org/html/wq_monitoring_04-05report.html	Water	Organophosphorus pesticides, general chemistry, trace metals, toxicity
Weston Solutions Inc., 2006b	Weston Solutions Inc., August, 2006	County of San Diego and Copermittees	Toxicity Identification Evaluation (TIE) of County of San Diego and Copermittees Chollas Creek Stormwater Sample		www.projectcleanwater.org/pdf/science_mon/05-06monitoring/appendix_i_tie.pdf	Water, sediment	Pyrethroids, organophosphorus pesticides, general chemistry, trace metals
Weston Solutions Inc., 2007a	Weston Solutions Inc., January, 2007	San Diego County Municipal Copermittees	San Diego County Municipal Copermittees 2005-2006 Urban Runoff Monitoring Report		http://www.projectcleanwater.org/html/wq_monitoring.html	Water	Pyrethroids, organophosphorus pesticides, general chemistry, trace metals, toxicity
Weston Solutions Inc., 2007b	Weston Solutions Inc., January 2007	City of San Diego and Chollas Creek Watershed Copermittees	Response to Monitoring in Chollas Creek, Investigation Order No. R9-2004-0277, Proposition 13 PRISM Grant Agreement No. 04-17-559-0, San Diego Region, Integrated Pest Management (IPM) Education and Outreach Project, 2004-2006 Water and Sediment Quality Monitoring Data Summary for Chollas Creek, Final Report			Water, sediment	Pyrethroid and OP pesticides, toxicity, general chemistry
Weston Solutions Inc., 2007c	Weston Solutions Inc., August, 2007	City of San Diego	Chollas Creek Jurisdictional Boundary Water Quality Monitoring, Final Report			Water	Organophosphorus pesticides, general chemistry, trace metals, toxicity
Weston Solutions Inc., 2008a	Weston Solutions Inc., January, 2008	San Diego County Municipal Copermittees	San Diego County Municipal Copermittees 2006-2007 Urban Runoff Monitoring Report		http://www.projectcleanwater.org/html/wq_monitoring.html	Water	Pyrethroids, organophosphorus pesticides, general chemistry, trace metals, toxicity
Weston Solutions Inc., 2008b	Weston Solutions Inc., January, 2008	City of San Diego and Chollas Creek Watershed Copermittees	Chollas Creek Water Quality Protection and Habitat Enhancement, Grant Agreement Number: 04-015-559-0, Water Quality Monitoring, Final Report			Water	Organophosphate, pyrethroid pesticides, general chemistry
Weston Solutions Inc., 2008c	Weston Solutions Inc., January 11, 2008	Prepared for State Water Resources Control Board, in cooperation with Chollas Creek Watershed Municipal Copermittees, cities of Lemon Grove, LaMesa and San Diego, County of San Diego and Port of San Diego	Response to Monitoring in Chollas Creek, Investigation Order No. R9-2004-0277, 2006-2007 Water Quality Monitoring Data Summary for Chollas Creek, Final Report		http://66.147.244.210/~projeec0/images/stories/Docs/Pueblo/0607_chollas_WQmonitoring_report.pdf	Sediment and Water	Organophosphorus pesticides and pyrethroids
Woudneh and Oros, 2006a	Woudneh, Million B., Daniel R. Oros, 2006a	San Francisco Estuary Institute	Quantitative Determination of Pyrethroids, Pyrethrins, and Piperonyl Butoxide in Surface Water by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry	J. Agric. Food Chem. 54: 6957−6962 (2006)	http://www.sfei.org/sites/default/files/441_CMR_Woudneh_Oros_Quantitative.pdf	Water	Pyrethroids, Pyrethrins, Piperonyl Butoxide
Woudneh and Oros, 2006b	Woudneh, Million B., Daniel R. Oros, 2006b	San Francisco Estuary Institute	Pyrethroids, pyrethrins, and piperonyl butoxide in sediments by high-resolution gas chromatography/high-resolution mass spectrometry	Journal of Chromatography A, 1135 (2006) 71-77	http://www.sfei.org/sites/default/files/439_CMR_Woudneh_Oros_Pyrethroids.pdf	Sediment	Pyrethroids, Pyrethrins, Piperonyl Butoxide
You et al., 2008	You, Jing, Pehkonen, Sari, Weston, Donald P., Lydy, Michael J. 2008	Department of Integrative Biology, UC Berkeley, Department of Biochemistry, Chemistry and Physics, University of Central Missouri, Fisheries and Illinois Aquaculture Center and Department of Zoology, Southern Illinois University	Chemical Availability and Sediment Toxicity of Pyrethroid Insecticides to Hyalella Azteca: Application to Field Sediment With Unexpectedly Low Toxicity	Environmental Toxicology and Chemistry Vol 27 No 10 2008	http://onlinelibrary.wiley.com/doi/10.1897/08-016.1/abstract	Sediment	Pyrethroid insecticides
Zeigler, 2006	Zeigler, Eric, February 10, 2006	Larry Walker Associates	Memorandum: Sacramento/Yolo Mosquito and Vector Control District Pyrethrin Water Quality Monitoring Data Summary		http://www.up3project.org/documents/FinalMemo+att02-10-06.pdf	Water	Pyrethrins, Piperonyl butoxide
Zhang, 2010	Zhang, Xuyang, December 3, 2010	California Department of Pesticide Regulation, Environmental Monitoring Branch	Detections of Pyrethroid Insecticides in Surface Waters from Urban Areas of California, 1993-2010.		http://www.cdpr.ca.gov/docs/emon/surfwtr/swanalysismemo/memo_zhang_urban%20py%20report_dec310.pdf	Sediment and Water	Pyrethroid Insecticides

Toxicity data?	Source Type	Geographic Area	Monitoring Location(s)	Notes/Results	Study Date(s)	Toxicity Testing Species/Approach	Most commonly found current-use pesticide(s)
Yes	Surface waters	Sacramento San Joaquin Estuary	Region 5	4 water samples (0.5% of total) were acutely toxic to Hyalella; 2 of these had < 50% survival. Addition of PBO increased acute toxicity in 7 ambient samples (0.9% of total) suggesting the presence of pyrethroid insecticides. Three of these contained detectable concentrations of pyrethroids: cypermethrin , bifenthrin, lambda-cyhalothrin, and permethrin.	January 1, 2008 to December 31, 2009	H. azteca, larval delta smelt (Hypomesus transpacificus), and fathead minnows (Pimephales promelas)	Although TIE indicated that pyrethroid insecticides were the dominant toxicants, pyrethroids were mostly below detection limits.
Yes	Surface waters	Sacramento San Joaquin Estuary	15-16 sites located in large channels and main-stem rivers.	Significant amphipod mortality observed in 5.6% of ambient samples. Pyrethroid insecticides were detected at potentially toxic concentrations. Overall, results of this study identified specific area and contaminants of concern and showed that water in the Northern SSJ Estuary was at times acutely toxic to sensitive invertebrates. Water quality in the Sacramento San Joaquin Delta and Estuary is characterized by large geographic and seasonal variation. Pyrethroid concentrations detected in this study most likely underestimate those present in the field.	2006-2007	H. azteca	
Yes		Northern California		The enzymes show considerable ability to mitigate the toxicity of pesticides in water; most notably, cyfluthrin.	2008-2009	H. azteca	
Yes		Northern California	Ulatis Creek (Vacaville), White Slough Drain (San Joaquin River), New Hope Tract Drain (Mokelumne river)	Focused TIE procedure using manipulations specifically designed to identify pyrethroid or chlorpyrifos toxicity was successful in identifying cause of toxicity in a variety of urban and agricultural settings		H. azteca	
Yes		Northern California	Ulatis Creek, Alamo Creek, San Joaquin River, American River, Sacramento River	Urban runoff samples exhibited toxicity to Hyalella and contained pyrethroids at concentrations sufficient to cause acute toxicity. Urban inputs repeatedly caused toxicity in Ulatis and Alamo Creeks and along urbanized reaches of the American and Sacramento Rivers, with pyrethroids found at sufficient levels to cause the toxicity.	2009	H. azteca	Bifenthrin
Yes	Urban creeks and storm drains, urban river	Central Valley	American River, and urban creeks, sumps and drains in Sacramento discharging to the American River	In the 23 samples collected at stations 3 and 4 during storm events, 35% caused mortality to H. azteca, and 52% were toxic based on the swimming endpoint.	2009-2010	H. azteca	Bifenthrin
Yes	Urban creeks	Placer County	22 sites in Pleasant Grove Creek watershed, Roseville	Pyrethroids implicated in TIEs	19-Oct-05	H. azteca	Bifenthrin, Permethrins
Yes			Urban creeks - Sacramento	Pyrethroids implicated in TIEs	26-Jul-06		
Yes		Northern California	Drains in Roseville, CA and Elk Grove, CA	Stormwater runoff is responsible for greater transport of pyrethroids to urban surface waters than is summer irrigation runoff. Both winter and summer inputs present risks to aquatic life and challenges for mitigation	2006-2007	H. azteca	Bifenthrin
Yes		Northern California and Tennessee	20 creeks in Northern California and 8 urban watercourses in Tennessee	Dependence of pyrethroid toxicity on temperature has important ramifications for predicting environmental effects; the standard lab temperature of 23C dramatically underestimates risk to resident fauna during cooler months. Testing at 15C provides a more realistic assessment of toxic effects.		H. azteca	Bifenthrin
Yes	Receiving Waters (Urban Creeks, Rivers, Estuary, Lagoon, Bay)	San Diego County		Long Term Program, toxicity trends, adaptation to changing conditions and permits	1/1/2004		
Yes	Receiving Waters (Urban Creeks, Rivers, Estuary, Lagoon, Bay)	San Diego County		Long Term Program, toxicity trends, adaptation to changing conditions and permits	1/1/2005		
Yes	Receiving Waters (Urban Creeks, Rivers, Estuary, Lagoon, Bay)	San Diego County	12 sites - Agua Hedionda Creek	Long Term Program, toxicity trends, adaptation to changing conditions and permits	1/1/2006	C. dubia, H. azteca, and Selenastrum	
Yes; TIEs	Receiving Waters (Urban Creeks, Rivers, Estuary, Lagoon, Bay)	San Diego County	Chollas Creek	Pyrethroids implicated in TIEs	Aug. 2006		
Yes	Receiving Waters (Urban Creeks, Rivers, Estuary, Lagoon, Bay)	San Diego County		Long Term Program, toxicity trends, adaptation to changing conditions and permits			
Yes	Receiving Water, Urban Creek	San Diego County			Jan. 2007		
Yes	Receiving Water, Urban Creek	San Diego County			Aug. 2007		
Yes	Receiving Waters (Urban Creeks, Rivers, Estuary, Lagoon, Bay)	San Diego County		Long Term Program, toxicity trends, adaptation to changing conditions and permits			
No	Receiving Water, Urban Creek	San Diego County			Jan. 2008		
Yes	Receiving Waters (Urban Creek, Bay)	San Diego County	Chollas Creek	Synthetic pyrethroids were detected at concentrations above published LC50s for Hyalella azteca during all three monitoring events during the 2006-2007 monitoring season.	2006-2007	H. azteca	Bifenthrin
No		SF Bay Area	Methods development, w/data from SF Bay tributaries	Delta/tralomethrin and permethrin detected in 4/5 tributaries	April, 2005		
No		SF Bay Area	Methods development, w/data from SF Bay tributaries	8 pyrethroids detected, up to 17.6 ng/g; at least 2 pyrethroids detected in 4/5 tributaries; PBO detected in all samples	April, 2005		
Yes		Northern California	American River, Weber Creek near Folsom Lake, CA	Tenax extraction better explained the low toxicity of pyrethroid concentration in sediment in 17 selected samples. Adsorption to sand particles might play a controlling role in pyrethroid bioavailability and, in turn, sediment toxicity to benthic invertebrates.	2004-2008	H. azteca	
Yes	River, urban pond, urban creeks	Central Valley		Pyrethrins detected in 9 of 26 samples, at 5 of 10 sites, following aerial spraying	10-Feb-06		
No		Northern California		Analysis of 8,834 water samples and 2,010 sediment samples from DPR database (1993-2010) showed Bifenthrin was detected in 85.2% of sediment samples and 73.1% of water samples. Further research on toxicity of samples to be investigated.	1993-2010		Bifenthrin

Appendix B: “Results Summaries by Geography” Table

Geographic Area	Monitoring Location(s)	Water Board Region	Citation - Abbrev.	Study Date(s)	Principal Testing Approach	Test Results Summary
Northern/Central California						
Central and Northern California	94 samples from central and northern CA		Trimble et al., 2009	2008	Sediment chemistry; H. azteca, sediment toxicity	Bifenthrin and permethrin occurred in over 90% of the samples
Northern California	17 sites incl. creeks and sloughs: Gilsier Slough, Elk Bayou, Owens Creek, Del Puerto Creek, Spring Creek, Chicken Ranch Slough, Lauterwasser Creek, Morrison Creek, Kirker Creek, Strong Ranch Slough, Arcade Creek, Reclamation Ditch, Glen Echo Creek		You et al., 2008	2004-2008	Sediment chemistry; H. azteca, sediment toxicity	8 of 17 samples had mortality rates greater than 50% (2 were at 100%)
Humboldt County	Jane's Creek Meadows	1	Holmes et al., 2008	2006-2007	*H. azteca*, sediment toxicity	Toxic at 15˚ and 23˚C
Sonoma County	Bodega Bay/Suburban watershed	1	Kuivila and Smalling, 2007	2006-2007	Tissue analysis (crab embryos)	Bifenthrin and cyfluthrin detected in shore crab embryos (tissue analysis)
Sonoma County	Bodega Bay	1	Smalling et al., 2010	2005-2006	Crab tissue analysis	Cyfluthrin was measured at 50x the level of any other insecticide
Sonoma County	Hinebaugh Creek	1	Holmes et al., 2008	2006-2007	*H. azteca*, sediment toxicity	Highly toxic at 15˚C; toxic at 23˚C
Sonoma County	Ducker Creek	1	Holmes et al., 2008	2006-2007	*H. azteca*, sediment toxicity	Highly toxic at 15˚C; toxic at 23˚C
Tahoe/Lahontan Area	Truckee River Swale	6	Holmes et al., 2008	2006-2007	*H. azteca*, sediment toxicity	Highly toxic at 15˚C; toxic at 23˚C
Tahoe/Lahontan Area	Tahoe Keys	6	Holmes et al., 2008	2006-2007	*H. azteca*, sediment toxicity	Highly toxic at 15˚C; toxic at 23˚C
Tahoe/Lahontan Area	Mammoth Creek	6	Holmes et al., 2008	2006-2007	*H. azteca*, sediment toxicity	Toxic at 15˚ and 23˚C
Placer County	Roseville Drain	5	Weston et al., 2009a	2006-2007	Sediment & water chemistry; H. azteca, sediment toxicity	Estimated 85 mg of bifenthrin discharged from a drain in dry season - could contaminate 8.5 tons of sediment to the H. azteca LC50
Placer County	Pleasant Grove Creek	5	Weston et al., 2009a	2006-2007	Sediment & water chemistry; H. azteca, sediment toxicity	Estimated 85 mg of bifenthrin discharged from a drain in dry season - could contaminate 8.5 tons of sediment to the H. azteca LC50
Roseville	Dry Creek	5	Holmes, 2004	April, 2003	Sediment chemistry	Permethrin detected at 8.1 ng/g (sediment)
Roseville	Pleasant Grove Creek	5	Weston et al., 2005	2004	*H. azteca*, sediment toxicity and bioassessment (field abundance)	Most sites toxic; 9 of 21 had >90% mortality
Roseville	Kaseberg Creek	5	Weston et al., 2005	2004	*H. azteca*, sediment toxicity and bioassessment (field abundance)	Most sites toxic
Roseville	South Branch	5	Weston et al., 2005	2004	*H. azteca*, sediment toxicity and bioassessment (field abundance)	All sites toxic
Placer County	Pleasant Grove Creek, Dry Creek	5	Ensminger and Kelley, 2011b	2009-2010	Water and sediment chemistry	95% of water samples in this study contained at least one pesticide; multiple detections were common. Bifenthrin, malathion, carbaryl, and fipronil were commonly detected. 75% of the samples had 2 detected pesticides.
Sacramento County	Sacramento River, Alder/Willow Creek	5	Ensminger and Kelley, 2011b	2009-2010	Water and sediment chemistry	95% of water samples in this study contained at least one pesticide; multiple detections were common. Bifenthrin, malathion, carbaryl, and fipronil were commonly detected. 75% of the samples had 2 detected pesticides.
Sacramento	Arcade Creek (1)	5	Amweg et al., 2006	2004-2005	*H. azteca*, sediment toxicity	1/1 sample not toxic
Sacramento	Arcade Creek (2)	5	Amweg et al., 2006	2004-2005	*H. azteca*, sediment toxicity	4/4 samples toxic (1 at >95% mortality)
Sacramento	Chicken Ranch Slough	5	Amweg et al., 2006	2004-2005	*H. azteca*, sediment toxicity	2/4 samples toxic
Sacramento	Curry Creek	5	Amweg et al., 2006	2004-2005	*H. azteca*, sediment toxicity	3/3 samples acutely toxic (>90% mortality)
Sacramento	Elder Creek	5	Amweg et al., 2006	2004-2005	*H. azteca*, sediment toxicity	3/3 samples toxic
Sacramento	Laguna Creek (1)	5	Amweg et al., 2006	2004-2005	*H. azteca*, sediment toxicity	4/4 samples not toxic
Sacramento	Laguna Creek (2)	5	Amweg et al., 2006	2004-2005	*H. azteca*, sediment toxicity	2/2 samples acutely toxic (>90% mortality)
Sacramento	Laguna Creek (3)	5	Amweg et al., 2006	2004-2005	*H. azteca*, sediment toxicity	1/1 sample toxic
Sacramento	Strong Ranch Slough	5	Amweg et al., 2006	2004-2005	*H. azteca*, sediment toxicity	4/4 samples toxic (3 at >70% mortality)
Sacramento	Willow Creek	5	Amweg et al., 2006	2004-2005	*H. azteca*, sediment toxicity	1/1 sample not toxic
Sacramento	Urban creeks	5	Weston et al., 2006	August, 2005	*H. azteca*, sediment toxicity	Most sites toxic; toxicity enhanced by PBO delivered from aerial spraying for mosquito control.
Sacramento	Elder Creek	5	Bacey and Spurlock, 2005	2002-2004	Water and sediment chemistry	Bifenthrin in water at 27.5 ppt + 1 "trace" detect; numerous OPs, herbicides det. in water.
Sacramento	Elk Grove Creek	5	Bacey and Spurlock, 2005	2002-2004	Water and sediment chemistry	1 "trace" bifenthrin det.-water; 1 "trace" permethrin det.-sediment; numerous OPs, herbicides-water.
Sacramento	Elk Grove Creek	5	Aqua-Science, 2007	Feb., 2007	*C. dubia*, water toxicity	Highly toxic
Sacramento	Elk Grove Creek	5	Aqua-Science, 2007	Feb., 2007	Water chemistry	4 pyrethroids detected (water)
Sacramento	Elk Grove Drain	5	Weston et al., 2009a	2006-2007	Sediment & water chemistry; H. azteca, sediment toxicity	Estimated 85 mg of bifenthrin discharged from a drain in dry season - could contaminate 8.5 tons of sediment to the H. azteca LC50

Geographic Area	Monitoring Location(s)	Water Board Region	Citation - Abbrev.	Study Date(s)	Principal Testing Approach	Test Results Summary
Sacramento	American River, Arcade Creek, Chicken Ranch Slough, Cripple Creek, Elder Creek, Laguna Creek, Land Park Pond, Morrison Creek	5	Zeigler, 2006	August, 2005	Water chemistry	Pyrethrins detected in 9 of 26 samples (water) immediately after aerial spraying for mosquito control
Sacramento County	San Joaquin River and tributaries	5	Hladik et al., 2009	2008	Sediment chemistry	Bifenthrin found in 100% of samples (maximum of 51 ng/g)
Sacramento County	Arcade Creek near Del Paso Heights	5	Hladik and Kuivila, 2012	2009	Sediment chemistry; H. azteca, sediment toxicity	Bifenthrin was the most frequently detected and was found in over half (58%) of the sediment samples.
Sacramento County	15-16 sites located in Sacramento San Joaquin Estuary	5	Werner et al., 2010b	2006-2007	Water chemistry; H. azteca, water toxicity; TIEs	5.6% of 623 samples showed significant mortality
Sacramento County	Northern Sacramento-San Joaquin Estuary	5	Werner et al., 2010a	2008-2009	Water chemistry; water toxicity testing with H. azteca, delta smelt (H. transpacificus), and fathead minnows (Pimephales promelas); partial TIEs	Pyrethroids detected in 21% of samples; less than 1% of samples were toxic. Pyrethroid concentrations in this study most likely underestimate those present in the field.
Sacramento County	Natomas STA2	5	Sacramento County, 2011	2008-2010	Water and sediment chemistry	Pyrethroids were commonly detected in urban runoff discharges and receiving waters, and very frequently detected in receiving water sediments.
Sacramento County	Arcade Creek at Watt Avenue	5	Sacramento County, 2011	2008-2011	Water and sediment chemistry	Pyrethroids were commonly detected in urban runoff discharges and receiving waters, and very frequently detected in receiving water sediments.
Sacramento County	Laguna Creek at Franklin	5	Sacramento County, 2011	2008	Sediment chemistry	Bifenthrin was detected in urban in receiving water sediments.
Sacramento County	Willow Creek at Blue Ravine Road	5	Sacramento County, 2011	2008-2011	Water and sediment chemistry	Pyrethroids were commonly detected in urban runoff discharges and receiving waters, and very frequently detected in receiving water sediments.
Sacramento County	Strong Ranch Slough	5	Sacramento County, 2011	2009-2010	Water and sediment chemistry	Pyrethroids were commonly detected in urban runoff discharges and receiving waters, and very frequently detected in receiving water sediments.
Sacramento County	Sump 111	5	Sacramento County, 2011	2009-2010	Water and sediment chemistry	Pyrethroids were commonly detected in urban runoff discharges and receiving waters, and very frequently detected in receiving water sediments.
Sacramento County	Laguna Creek at Hwy 99	5	Sacramento County, 2011	2009-2011	Water and sediment chemistry	Pyrethroids were commonly detected in urban runoff discharges and receiving waters, and very frequently detected in receiving water sediments.
Sacramento County	Storm Drain Site SA-28 (Sacramento)	5	Weston and Jackson, 2009	2008-2009	Water chemistry; H. azteca, water toxicity; TIEs	Pyrethroid concentrations exceeded their respective LC50s in the urban runoff sample; various treatments were evaluated for use in TIEs
San Joaquin County	Storm Drain Site "WR" (Stockton)	5	Weston and Jackson, 2009	2008-2009	Water chemistry; H. azteca, water toxicity; TIEs	Pyrethroid concentrations exceeded their respective LC50s in the urban runoff sample; various treatments were evaluated for use in TIEs
Sacramento County	American River	5	Weston and Lydy, 2010b	2008-2009	Water chemistry; H. azteca, water toxicity; TIEs	6 of 7 urban area wet weather receiving water samples were toxic to H. azteca
Sacramento County	Sacramento River	5	Weston and Lydy, 2010b	2008-2009	Water chemistry; H. azteca, water toxicity; TIEs	5 of 6 urban area wet weather receiving water samples were toxic to H. azteca
Sacramento County	Elk Grove Drain	5	Weston et al., 2009a	2006-2007	Sediment & water chemistry; H. azteca, sediment toxicity	Bifenthrin presents the greatest risk to H. azteca, and presumably other sensitive aquatic life.
Sacramento County	American River	5	Weston and Lydy, 2012	2009-2010	Water chemistry; H. azteca, water toxicity; TIEs	In the 23 samples collected at stations 3 and 4 during storm events, 35% caused mortality to H. azteca, and 52% were toxic based on the swimming endpoint.
Solano County	Alamo Creek	5	Weston and Jackson, 2009	2008-2009	Water chemistry; H. azteca, water toxicity; TIEs	Pyrethroid concentrations exceeded their respective LC50s in the urban runoff sample; various treatments were evaluated for use in TIEs
Solano County	Alamo Creek	5	Weston and Lydy, 2010b	2008-2009	Water chemistry; H. azteca, water toxicity; TIEs	2 of 2 urban area wet weather receiving water samples were toxic to H. azteca with 100% mortality
Solano County	Ulatis Creek	5	Weston and Lydy, 2010b	2008-2009	Water chemistry; H. azteca, water toxicity; TIEs	2 of 2 urban area wet weather receiving water samples were toxic to H. azteca
Contra Costa County	Marsh Creek	5	Phillips et al., 2010	2008-2010	TIE analysis using pyrethroid-contaminated sediments; chemical testing for pyrethroids	Use of whole sediment and interstitial water TIEs and chemical analysis provided multiple lines of evidence that pyrethroids contributed to toxicity. Pyrethroids detected in each sample.
Contra Costa County	Kirker Creek	2	Hall et al., 2007	Spring, 2006	Bioassessment, chemical analysis	Benthic biotic metrics correlate to pyrethroids and physical habitat
Contra Costa County	Stege Marsh	2	Smalling et al., 2010	2005-2006	Crab tissue	Only bifenthrin and permethrin were detected, and at a relatively low-level
Contra Costa County	Stege Marsh	2	Kuivila and Smalling, 2007	2006-2007	Tissue analysis (crab embryos)	Bifenthrin and permethrin detected in shore crab embryos (tissue analysis)
Contra Costa County	Grayson Creek	2	Ensminger and Kelley, 2011a	2008-2009	Water and sediment chemistry	50% of the sampled waters in this study had three or more detected pesticides, and 25% had 6 or more. Bifenthrin, fipronil, and diuron were detected in water at concentrations that could potentially be toxic to aquatic life.
Alameda County	Martin Canyon/Koopman Canyon Creek	2	Ensminger and Kelley, 2011a	2008-2009	Water and sediment chemistry	50% of the sampled waters in this study had three or more detected pesticides, and 25% had 6 or more. Bifenthrin, fipronil, and diuron were detected in water at concentrations that could potentially be toxic to aquatic life.
Alameda County	Glen Echo Creek	2	Amweg et al., 2006	2004-2005	*H. azteca*, sediment toxicity	2/2 samples toxic
Contra Costa County	Kirker Creek	2	Amweg et al., 2006	2004-2005	*H. azteca*, sediment toxicity	3/3 samples toxic (2 at >95% mortality)
Contra Costa County	Lauterwasser Creek	2	Amweg et al., 2006	2004-2005	*H. azteca*, sediment toxicity	1/3 samples toxic

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City of Oakland	Lion Creek	2	Amweg et al., 2006	2004-2005	*H. azteca*, sediment toxicity	1/2 samples toxic
Contra Costa County	Pine Creek	2	Amweg et al., 2006	2004-2005	*H. azteca*, sediment toxicity	1/1 sample toxic (>95% mortality)
Alameda County	San Leandro Creek	2	Amweg et al., 2006	2004-2005	*H. azteca*, sediment toxicity	2/2 samples not toxic
Contra Costa County	San Pablo Creek	2	Amweg et al., 2006	2004-2005	*H. azteca*, sediment toxicity	2/2 samples not toxic
Contra Costa County	Kirker Creek	2	SFBRWQCB, 2007	2003	*H. azteca*, sediment toxicity	Highly toxic; 100% mortality
San Mateo	San Mateo Creek	2	SFBRWQCB, 2007	2003	*H. azteca*, sediment toxicity	Highly toxic; 82% mortality compared to control
Alameda County	Castro Valley Creek	2	Ruby, 2005	2005	USEPA 3 spp., water toxicity	Toxicity: fathead minnow & C. dubia chronic in Feb., C. dubia acute in April; no pyrethroids detected in water
Contra Costa County	Rheem Creek	2	Ruby, 2005	2005	USEPA 3 spp., water toxicity	Toxicity: C. dubia chronic in March; no pyrethroids detected in water
Palo Alto	San Francisquito Creek	2	Ruby, 2005	2005	USEPA 3 spp., water toxicity	Toxicity: C. dubia chronic in Feb.; no pyrethroids detected in water
Santa Clara County	Coyote Creek (fresh)	2	Lowe et al., 2007	11/04; 04/05	*H. azteca*, sediment toxicity	Toxic in April; bifenthrin detected April and November
Santa Clara County	Coyote Creek (tidal)	2	Lowe et al., 2007	11/04; 04/05	*E. estuarius*, sediment toxicity	Not toxic; bifenthrin detected in April
Napa County	Napa River (fresh)	2	Lowe et al., 2007	11/04; 04/05	*H. azteca*, sediment toxicity	Not toxic; bifenthrin detected in November
Napa County	Napa River (tidal)	2	Lowe et al., 2007	11/04; 04/05	*E. estuarius*, sediment toxicity	Not toxic; bifenthrin detected in April
Petaluma County	Petaluma River (fresh)	2	Lowe et al., 2007	11/04; 04/05	*H. azteca*, sediment toxicity	Not toxic; bifenthrin detected in November
Marin County	Petaluma River (tidal)	2	Lowe et al., 2007	11/04; 04/05	*E. estuarius*, sediment toxicity	Not toxic; no pyrethroid detects
San Leandro	San Lorenzo Creek (fresh)	2	Lowe et al., 2007	11/04; 04/05	*H. azteca*, sediment toxicity	Toxic in November; bifenthrin & permethrin det. November, bifenthrin det. April
San Leandro	San Lorenzo Creek (tidal)	2	Lowe et al., 2007	11/04; 04/05	*E. estuarius*, sediment toxicity	Not toxic; no pyrethroid detects
San Mateo	San Mateo Creek (fresh)	2	Lowe et al., 2007	11/04; 04/05	*H. azteca*, sediment toxicity	Highly toxic in Nov. and April; 4 pyrethroids detected November
San Mateo	San Mateo Creek (tidal)	2	Lowe et al., 2007	11/04; 04/05	*E. estuarius*, sediment toxicity	Highly toxic in Nov. and April; bifenthrin & permethrin det. Nov., bifenthrin det. April
Solano County	Suisun Creek (fresh)	2	Lowe et al., 2007	11/04; 04/05	*H. azteca*, sediment toxicity	Not toxic; bifenthrin & permethrin detected in November
Solano County	Suisun Creek (tidal)	2	Lowe et al., 2007	11/04; 04/05	*E. estuarius*, sediment toxicity	Not toxic; no pyrethroid detects
Santa Clara County	Coyote Creek	2	Woudneh and Oros, 2006a	April, 2005	Water chemistry	Bifenthrin, delta/tralomethrin and permethrin detected
Petaluma County	Petaluma River	2	Woudneh and Oros, 2006a	April, 2005	Water chemistry	Delta/tralomethrin and permethrin detected
San Mateo	San Mateo Creek	2	Woudneh and Oros, 2006a	April, 2005	Water chemistry	Delta/tralomethrin and permethrin detected
San Leandro	San Lorenzo Creek	2	Woudneh and Oros, 2006a	April, 2005	Water chemistry	Delta/tralomethrin and permethrin detected
Santa Clara County	Coyote Creek	2	Woudneh and Oros, 2006b	April, 2005	Sediment chemistry	Bifenthrin, delta/tralomethrin, flucythrinate, L-cyhalothrin and permethrin detected
Petaluma County	Petaluma River	2	Woudneh and Oros, 2006b	April, 2005	Sediment chemistry	Delta/tralomethrin and permethrin detected
San Mateo	San Mateo Creek	2	Woudneh and Oros, 2006b	April, 2005	Sediment chemistry	Bifenthrin, cyfluthrin, cypermethrin, delta/tralomethrin, L-cyhalothrin and permethrin detected
San Leandro	San Lorenzo Creek	2	Woudneh and Oros, 2006b	April, 2005	Sediment chemistry	Bifenthrin, delta/tralomethrin, L-cyhalothrin, phenothrin and permethrin detected
SF Bay Area	Coyote Creek	2	Holmes et al.,. 2008	2006-2007	*H. azteca*, sediment toxicity	Highly toxic at 15˚C; toxic at 23˚C
SF Bay Area	Blue Rock Springs	2	Holmes et al.,. 2008	2006-2007	*H. azteca*, sediment toxicity	Highly toxic at 15˚C and 23˚C
SF Bay Area	Corte Madera Creek	2	Holmes et al.,. 2008	2006-2007	*H. azteca*, sediment toxicity	Toxic at 15˚ and 23˚C
SF Bay Area	American Canyon Creek	2	Holmes et al.,. 2008	2006-2007	*H. azteca*, sediment toxicity	Highly toxic at 15˚C; toxic at 23˚C
SF Bay Area	Rheem Creek	2	Holmes et al.,. 2008	2006-2007	*H. azteca*, sediment toxicity	Highly toxic at 15˚C and 23˚C
SF Bay Area	Stevens Creek	2	Holmes et al.,. 2008	2006-2007	*H. azteca*, sediment toxicity	Highly toxic at 15˚C; toxic at 23˚C
SF Bay Area	Suisun Slough Tributary	2	Holmes et al.,. 2008	2006-2007	*H. azteca*, sediment toxicity	Highly toxic at 15˚C and 23˚C
SF Bay Area	Quimby Creek	2	Holmes et al.,. 2008	2006-2007	*H. azteca*, sediment toxicity	Highly toxic at 15˚C and 23˚C
Monterey County	Gabilan Creek	3	Ng et al., 2008	2005	Sediment chemistry; H. azteca, sediment toxicity	1 of 3 samples toxic (83% mortality)
Monterey County	Natividad Creek	3	Ng et al., 2008	2005	Sediment chemistry; H. azteca, sediment toxicity	3 of 3 samples toxic (2 at 90% and 96% mortality)
Monterey County	Alisal Creek	3	Ng et al., 2008	2005	Sediment chemistry; H. azteca, sediment toxicity	4 of 7 samples toxic (1 at 84% and 1 at 100% mortality)
San Joaquin River Valley	San Joaquin River	5	Weston and Lydy, 2010b	2008-2009	Water chemistry; H. azteca, water toxicity; TIEs	1 of 5 urban area wet weather receiving water samples was toxic to H. azteca
San Joaquin River Valley	San Joaquin River	5	Domagalski et al., 2010	2007	Sediment & water chemistry; H. azteca, sediment toxicity	100% of samples were non-toxic (lowest survival rate was 90%)
San Joaquin County	Hospital Creek	5	Domagalski et al., 2010	2007	Sediment & water chemistry; H. azteca, sediment toxicity	5 of 6 samples had mortality rates from 94-100%
San Joaquin County	Ingram Creek	5	Domagalski et al., 2010	2007	Sediment & water chemistry; H. azteca, sediment toxicity	5 of 6 samples had mortality rates from 90-100%
Stanislaus County	Stanislaus Creek	5	Domagalski et al., 2010	2007	Sediment & water chemistry; H. azteca, sediment toxicity	100% of samples were non-toxic (lowest survival rate was 91%)
Stanislaus County	Tuolumne Creek	5	Domagalski et al., 2010	2007	Sediment & water chemistry; H. azteca, sediment toxicity	100% of samples were non-toxic (lowest survival rate was 93%)

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Merced County	Merced River	5	Domagalski et al., 2010	2007	Sediment & water chemistry; H. azteca, sediment toxicity	100% of samples were non-toxic (lowest survival rate was 85%)
Southern California						
Southern California	Southern California Bight		Bay et al., 2011	2008	E. estuarius and M. galloprovincialis, sediment toxicity; TIEs	36% of samples (80 of 222) were toxic to E. estuarius at some level; 23% of samples (42 of 180) were toxic to Mytilus galloprovincialis at some level;
Carpinteria	Carpinteria Salt Marsh	4	Anderson et al., 2005	2004-2005	Sediment chemistry	Bifenthrin and permethrin detected in sediment (2-3 ug/kg dry weight)
Calleguas Creek Watershed	Conejo Creek/Howard Rd.	4	Calleguas Creek WMP, 2008	2003-2004	Water and sediment chemistry	Cyfluthrin, cypermethrin, deltamethrin detects in surface water (4/21/04)
Calleguas Creek Watershed	Revolon Slough/Wood Rd.	4	Calleguas Creek WMP, 2008	2003-2004	Water and sediment chemistry	1 permethrin detection in sediment
Calleguas Creek Watershed	Conejo Creek/Adolfo Rd.	4	Calleguas Creek WMP, 2008	2003-2004	Water and sediment chemistry	1 permethrin detection in sediment
Calleguas Creek Watershed	N. Fork Arroyo Conejo u/s of Hill Canyon Treatment Plant	4	Calleguas Creek WMP, 2008	2003-2004	Water and sediment chemistry	1 bifenthrin detection in sediment
Ventura County	Santa Clara River watershed	4	Delgado-Moreno et al., 2011	2009	H. azteca/sediment toxicity	94% of samples showed toxic values for bifenthrin
Ventura County	Calleguas Creek watershed	4	Delgado-Moreno et al., 2011	2009	C. dubia/water toxicity	17 of 34 samples were highly toxic (15 showed 100% mortality)
Ventura County	Santa Clara River watershed	4	Delgado-Moreno et al., 2011	2009	H. azteca/sediment toxicity	50% of samples showed toxic values for bifenthrin
Ventura County	Calleguas Creek watershed	4	Delgado-Moreno et al., 2011	2009	C. dubia/water toxicity	7 of 19 samples showed mortality ranging from 10-100%
Ventura County	Calleguas Creek	4	Ventura County, 2011	2008-2010	Water and sediment chemistry	Bifenthrin was detected in 131 of 222 samples (59%).
Los Angeles	LA River site 412LAR024	4	Werner et al., 2006	July, 2005	USEPA 3 spp., water toxicity	Acute toxicity to C. dubia in Region 4, New River sites were acutely toxic to H. Azteca, in region 9 half of the water samples were solely toxic to C. dubia.
Los Angeles County	Arroyo Seco Channel, Ballona Freshwater Marsh, Big Canyon Marsh, Brayley Wetlands, Camino Real, Crown Valley, Dairy Mart Ponds, IRWD Carlson Marsh, IRWD Pond A, IRWD Pond 6, Lewis Center Marsh, Madrona Marsh, Mojave River Marsh, Old Mission Creek, San Elijo Marsh, Sespe Creek, Sims Pond, UCI Pond 11, UCI Pond 3, Waleta Street Marsh, Wet CAT East, Wet CAT North	4	Brown et al., 2010	2007	Sediment chemistry; H. azteca, sediment toxicity	10 of 23 sites were toxic
Los Angeles County	Ballona Creek	4	Lao et al., 2010	2007-2008	Sediment chemistry; E. estuarius, sediment toxicity; TIEs	61% of samples were toxic to Eohaustorius estuarius
Los Angeles County	Ballona Creek Estuary	4	Bay et al., 2010	2007-2010	Sediment chemistry; E. estuarius, sediment toxicity; TIEs	100% of samples included at least one pyrethroid that could cause 100% mortality
Los Angeles County	Bouquet Canyon Creek	4	Phillips et al., 2010	2008-2010	TIE analysis using pyrethroid-contaminated sediments; chemical testing for pyrethroids	Use of whole sediment and interstitial water TIEs and chemical analysis provided multiple lines of evidence that pyrethroids contributed to toxicity. Pyrethroids detected in each sample.
Huntington Harbor	Huntington Harbor tributary sites	8	Orange County, 2008	2005-2006	Amphipod (*Eohaustorius*), sediment toxicity	4 of 6 samples mod. toxic; 1 of 6 samples highly toxic
Huntington Harbor	Huntington Harbor tributary sites	8	Orange County, 2008	2005-2006	Sediment Chemistry	Bifenthrin detected 1/6 samples
Newport Harbor	Newport Harbor tributary sites	8	Orange County, 2008	2005-2006	Amphipod (*Eohaustorius*), sediment toxicity	1 of 14 samples mod. toxic; 10 of 14 samples highly toxic
Newport Harbor	Newport Harbor tributary sites	8	Orange County, 2008	2005-2006	Sediment Chemistry	Bifenthrin detected 9 of 14 samples; Permethrin detected 1 of 14 samples
Huntington Harbor	Huntington Harbor tributary sites	8	Orange County, 2008	2006-2007	Amphipod (*Eohaustorius*), sediment toxicity	2 of 9 samples mod. toxic; 2 of 9 samples highly toxic
Huntington Harbor	Huntington Harbor tributary sites	8	Orange County, 2008	2006-2007	Sediment Chemistry	Bifenthrin detected 6 of 9 samples
Newport Harbor	Newport Harbor tributary sites	8	Orange County, 2008	2006-2007	Amphipod (*Eohaustorius*), sediment toxicity	6 of 25 samples mod. toxic; 13 of 25 samples highly toxic
Newport Harbor	Newport Harbor tributary sites	8	Orange County, 2008	2006-07	Sediment Chemistry	Bifenthrin detected 16 of 27 samples; Permethrin detected 3 of 27 samples
San Diego Creek/ Newport Bay	6 residential drainages, 7 commercial/residential tributaries	8	Budd et al., 2007	April/May and August, 2005	Sediment chemistry	Pyrethroids detected at all sites; bifenthrin det. 95% of dry weather, 100% of wet weather samples.
Orange County	6 urban runoff sites	8	Levine et al., 2005	1999-2002	Water chemistry	Bifenthrin detected in several samples (water), part of Red Imported Fire Ant pesticide study
Orange County	2 Urban runoff sites	8	Bondarenko et al, 2007	2006-2007	Sediment chemistry	7 pyrethroids detected (sediment), both sites (bifenthrin up to 279.7, cyfluthrin up to 66.7 ng/g)
Orange County	Salt Creek	8	Ensminger and Kelley, 2011a	2008-2009	Water and sediment chemistry	Bifenthrin was detected in 56% of all samples; 20% of samples were above 50% survival benchmark (includes Orange County and San Diego County stations)

Geographic Area	Monitoring Location(s)	Water Board Region	Citation - Abbrev.	Study Date(s)	Principal Testing Approach	Test Results Summary
Orange County	Wood Canyon Creek	8	Ensminger and Kelley, 2011a	2008-2009	Water and sediment chemistry	Bifenthrin was detected in 56% of all samples; 20% of samples were above 50% survival benchmark (includes Orange County and San Diego County stations)
Orange County	Peters Canyon Wash	8	Phillips et al., 2010	2008-2010	TIE analysis using pyrethroid-contaminated sediments; chemical testing for pyrethroids	Use of whole sediment and interstitial water TIEs and chemical analysis provided multiple lines of evidence that pyrethroids contributed to toxicity. Pyrethroids detected in each sample.
Orange County	Salt Creek and Wood Creek watersheds	8	Budd, 2011	2009-2011	Water and sediment chemistry	In preliminary results, bifenthrin and fipronil detected in most water samples in both watersheds; fipronil degradates and other pyrethroids detected less frequently.
Riverside County	Murrieta Creek	9	Riverside County et al., 2007	2004-2007	*H. azteca*, water toxicity	5 of 8 samples toxic
Riverside County	Temecula Creek	9	Riverside County et al., 2007	2004-2007	*H. azteca*, water toxicity	5 of 8 samples toxic
Riverside County	Tributary Stations, Santa Margarita Region. IC/ID urban outfall stations	9	Riverside County, 2008	12/7/2007	Pyrethroids in water	Detects: Permethrin 2 of 4 samples
Riverside County	Tributary Stations, Santa Margarita Region. IC/ID urban outfall stations	9	Riverside County, 2008	Jan 26-27, 2008	Pyrethroids in water	Detects: Bifenthrin 3 of 4 samples, Permethrin 1 of 4
Riverside County	Triad Stations, Santa Margarita Region (receiving water stations in Temecula and Murrieta)	9	Riverside County, 2008	1/27/2008	Pyrethroids in water	Detects: Bifenthrin 4 of 4 samples, Permethrin 3 of 4
Riverside County	Santa Margarita Region	9	Riverside County, 2008		*H. azteca*, water toxicity	Phase II TIE confirms pyrethroids likely cause of toxicity
Riverside County	Cole Creek	9	Riverside County, 2011	2010-2011	Water chemistry	Pyrethroids were commonly detected in receiving waters.
Riverside County	Long Canyon Channel	9	Riverside County, 2011	2010-2011	Water chemistry	Pyrethroids were commonly detected in receiving waters.
Riverside County	Murrieta Creek	9	Riverside County, 2011	2010-2011	Water chemistry	Pyrethroids were commonly detected in receiving waters.
Riverside County	Santa Gertrudis Channel	9	Riverside County, 2011	2010-2011	Water chemistry	Pyrethroids were commonly detected in receiving waters.
Riverside County	Temecula Creek	9	Riverside County, 2011	2010-2011	Water chemistry	Pyrethroids were commonly detected in receiving waters.
Riverside County	Warm Springs Channel	9	Riverside County, 2011	2010-2011	Water chemistry	Pyrethroids were commonly detected in receiving waters.
Riverside County	Redhawk Channel	9	Riverside County, 2011	2010-2011	Water chemistry	Pyrethroids were commonly detected in receiving waters.
Orange County	San Juan Creek	9	Holmes et al.,. 2008	2006-2007	*H. azteca*, sediment toxicity	Highly toxic at 15˚C and 23˚C
San Diego County	San Marcos Creek	9	Holmes et al.,. 2008	2006-2007	*H. azteca*, sediment toxicity	Highly toxic at 15˚C and 23˚C
San Diego County	Cottonwood Creek	9	Holmes et al.,. 2008	2006-2007	*H. azteca*, sediment toxicity	Highly toxic at 15˚C and 23˚C
San Diego County	Penasquitos Creek	9	Holmes et al.,. 2008	2006-2007	*H. azteca*, sediment toxicity	Highly toxic at 15˚C and 23˚C
City of San Diego	Switzer Creek	9	Holmes et al.,. 2008	2006-2007	*H. azteca*, sediment toxicity	Highly toxic at 15˚C and 23˚C
San Diego County	Chollas Creek	9	Holmes et al.,. 2008	2006-2007	*H. azteca*, sediment toxicity	Highly toxic at 15˚C; toxic at 23˚C
City of San Diego	Switzer Creek	9	Anderson et al., 2008a	2004-2005	*E. estuarius*, sediment toxicity	Highly toxic (toxic at 10% dilution)
City of San Diego	Switzer Creek	9	Anderson et al., 2008a	2004-2005	Sediment chemistry	Bifenthrin, cyfluthrin, permethrin detected in sediment at >4 TUs (sum, OC normalized)
San Diego County	Cottonwood Creek	9	Phillips et al., 2010	2008-2010	TIE analysis using pyrethroid-contaminated sediments; chemical testing for pyrethroids	Use of whole sediment and interstitial water TIEs and chemical analysis provided multiple lines of evidence that pyrethroids contributed to toxicity. Pyrethroids detected in each sample.
San Diego County	Chollas Creek	9	Weston Solutions Inc., 2006b	2005-2006	*H. azteca*, water toxicity	67% of samples were acutely toxic
San Diego County	Agua Hedionda Creek	9	Weston Solutions Inc., 2006a	2004-2005	*C. dubia, H. azteca, Selenastrum,* water toxicity	Hyalella acute toxicity, 1st event
San Diego County	San Dieguito River	9	Weston Solutions Inc., 2006a	2004-2005	*C. dubia, H. azteca, Selenastrum,* water toxicity	Ceriodaphnia chronic toxicity, 1st event
San Diego County	Chollas Creek	9	Weston Solutions Inc., 2006a	2004-2005	*C. dubia, H. azteca, Selenastrum,* water toxicity	Hyalella: acute toxicity, 1st event. Ceriodaphnia: chronic tox., 1st event.
San Diego County	Tijuana River	9	Weston Solutions Inc., 2006a	2004-2005	*C. dubia, H. azteca, Selenastrum,* water toxicity	Ceriodaphnia: acute & chronic toxicity, all 3 events.
San Diego County	Agua Hedionda Creek	9	Weston Solutions Inc., 2007a	2005-2006	*C. dubia, H. azteca, Selenastrum,* water toxicity	Hyalella acute toxicity, 2 events
San Diego County	San Dieguito River	9	Weston Solutions Inc., 2007a	2005-2006	*C. dubia, H. azteca, Selenastrum,* water toxicity	Ceriodaphnia: chronic tox., 2 events; Selenastrum toxicity, 2 events
City of San Diego	Tecolote Creek	9	Weston Solutions Inc., 2007a	2005-2006	*C. dubia, H. azteca, Selenastrum,* water toxicity	Hyalella: acute toxicity, 1 event. Ceriodaphnia: chronic tox., 1st event.
San Diego County	San Diego River	9	Weston Solutions Inc., 2007a	2005-2006	*C. dubia, H. azteca, Selenastrum,* water toxicity	Ceriodaphnia chronic toxicity, 1st event
San Diego County	Chollas Creek	9	Weston Solutions Inc., 2007a	2005-2006	*C. dubia, H. azteca, Selenastrum,* water toxicity	Hyalella: acute toxicity, all 3 events. Ceriodaphnia: chronic tox., 1st event.
San Diego County	Chollas Creek	9	Weston Solutions Inc., 2007a	2005-2006	Stormwater chemistry: OP Pesticides & Pyrethroids	Detects: Bifenthrin, cyfluthrin, & L- cyhalothrin all 3 events; Cypermethrin, danitol, permethrin, & piperonyl butoxide (PBO) 1-2 events. Bifenthrin & permethrin exceed 96-hr LC50 for H. Azteca.
San Diego County	Sweetwater River	9	Weston Solutions Inc., 2007a	2005-2006	*C. dubia, H. azteca, Selenastrum,* water toxicity	Selenastrum toxicity, 1st event

Geographic Area	Monitoring Location(s)	Water Board Region	Citation - Abbrev.	Study Date(s)	Principal Testing Approach	Test Results Summary
San Diego County	Tijuana River	9	Weston Solutions Inc., 2007a	2005-2006	*C. dubia, H. azteca, Selenastrum,* water toxicity	Hyalella: acute toxicity, 1st 2 events. Ceriodaphnia: acute & chronic, all 3 events.
San Diego County	Agua Hedionda Creek	9	Weston Solutions Inc., 2008a	2006-2007	*C. dubia, H. azteca, Selenastrum,* water toxicity	Hyalella: acute toxicity, all 3 events. Ceriodaphnia: acute & chronic tox., 1st event.
San Diego County	Agua Hedionda Creek	9	Weston Solutions Inc., 2008a	2006-2007	Stormwater chemistry: OP Pesticides & Pyrethroids	Detects: Bifenthrin all 3 events; cyfluthrin & cypermethrin 2 events; L-cyhalothrin 1 event; diazinon, malathion all 3 events.
San Diego County	San Dieguito River	9	Weston Solutions Inc., 2008a	2006-2007	*C. dubia, H. azteca, Selenastrum,* water toxicity	Ceriodaphnia chronic tox., 2 events; Selenastrum tox. 1 event
San Diego County	Los Peñasquitos Creek	9	Weston Solutions Inc., 2008a	2006-2007	*C. dubia, H. azteca, Selenastrum,* water toxicity	Ceriodaphnia chronic toxicity, 1 event
San Diego County	Tecolote Creek	9	Weston Solutions Inc., 2008a	2006-2007	Stormwater chemistry: OP Pesticides & Pyrethroids	Detects: Bifenthrin, all 3 events (0.013-0.210 µg/L); cyfluthrin & cypermethrin, 2 events; prallethrin, 1 event (0.183 µg/L)
San Diego County	San Diego River	9	Weston Solutions Inc., 2008a	2006-2007	*C. dubia, H. azteca, Selenastrum,* water toxicity	Hyalella toxicity, 1 event
San Diego County	Chollas Creek	9	Weston Solutions Inc., 2008a	2006-2007	*C. dubia, H. azteca, Selenastrum,* water toxicity	Hyalella: acute toxicity, all 3 events. Ceriodaphnia: chronic tox., 1st event.
San Diego County	Chollas Creek - South Fork	9	Weston Solutions Inc., 2008a	2006-2007	*C. dubia, H. azteca,* water toxicity	Ceriodaphnia toxicity was 92% Chronic, 100% Acute, Hyalella toxicity was 90% Acute
San Diego County	Chollas Creek - North Fork	9	Weston Solutions Inc., 2008a	2006-2007	*C. dubia, H. azteca,* water toxicity	Ceriodaphnia toxicity was 94% Chronic, Hyalella toxicity was 49% Chronic, 90% Acute
San Diego County	Chollas Creek	9	Weston Solutions Inc., 2008a	2006-2007	Stormwater chemistry: OP Pesticides & Pyrethroids	Detects: Bifenthrin, cyfluthrin, & cypermethrin: all 3 events (bifenthrin & cypermethrin > 96-hr LC50 for *H. azteca*). Esfenvalerate, fenvalerate, L-cyhalothrin, & prallethrin: 1-2 events. Diazinon & malathion: 1st event.
San Diego County	Tijuana River	9	Weston Solutions Inc., 2008a	2006-2007	*C. dubia, H. azteca, Selenastrum,* water toxicity	Hyalella: acute toxicity, all 3 events. Ceriodaphnia: acute & chronic, all 3 events.
San Diego County	Tijuana River	9	Weston Solutions Inc., 2008a	2006-2007	Stormwater chemistry: OP Pesticides & Pyrethroids	Detects: Diazinon > 0.27 µg/L, all 3 events; Malathion > 0.43 µg/L, 2 events.
Riverside County	Santa Margarita River	9	Weston Solutions Inc., 2008a	2006-2007	*C. dubia, H. azteca, Selenastrum,* water toxicity	Hyalella acute toxicity, 1 event
San Diego County	San Luis Rey River	9	Weston Solutions Inc., 2008a	2006-2007	*C. dubia, H. azteca, Selenastrum,* water toxicity	Hyalella toxicity, 1st event
San Diego County	Chollas Creek	9	Weston Solutions Inc., 2008c	2006-2007	H. azteca and C. dubia, water toxicity	66% of samples toxic to H. Azteca, 33% of samples toxic to C. Dubia
San Diego County	San Diego River and Lindo Lake	9	Ensminger and Kelley, 2011a	2008-2009	Sediment and water chemistry	Bifenthrin was detected in 56% of all samples; 20% of samples were above 50% survival benchmark (includes Placer County and Orange County stations)
San Diego County	Switzer Creek, San Diego Harbor	9	Anderson et al, 2010	2004	Sediment chemistry; E. estuarius, sediment toxicity	Pyrethroid pesticides at least partially responsible for sediment toxicity Bifenthrin, Cyfluthrin and Permethrin detected
Calexico	New River at Boundary	9	Werner et al., 2006	2005	*H. azteca* , water toxicity	Acute toxicity to H. azteca in May and October
Statewide California and Other Areas						
State of California	Sacramento to Orange County		Zhang, 2010	1993-2010	Summary of 18 years testing of 8,834 water samples and 2,010 sediment samples throughout the state of California	Bifenthrin detection rates of 85.2% and 73.1% detected in sediment and water respectively. Concentrations of 1,211 PPB in sediment and 6,121 PPT in water were the maximum concentrations detected.
Sacramento and SF Bay areas and Orange County	Alder Creek, Pleasant Grove Creek, Grayson Creek, Martin Canyon Creek, Koopman Canyon Creek, Salt Creek, Wood Creek	2, 5, & 8	Ensminger et al., 2012	2008-2011	Water and sediment chemistry analysis	32 different pesticides or degradates were detected above their analytical reporting limit. More than 90% of the water samples contained at least one pesticide. 50% of water samples contained 5 or more pesticides. Detection frequency, number of pesticides and concentration all increased during rain storms.
Sacramento and Orange County	Sacramento and Orange County residential storm drainages	2 & 8	Gan et al., 2012	2006-2008	Water chemistry	69 to 98 water samples were collected from each site spanning over 26 months. Fipronil was detected at 85% (N1) and 66% (N2) at the two northern California sites. In comparison, fipronil was found in nearly all samples that were taken from the four southern California neighborhoods.
U.S. Nationwide: Northeast, Midwest, South and West	27 sites are a subset of 201 sites sampled as a part of NAWQA studies. These sites have adequate pesticide data for trend analysis.		Ryberg et al., 2010	1992-2008	Water chemistry analysis for pesticides including pyrethroids and fipronil and its degradates.	Results indicate a widespread significant upward trends for fipronil and its degradation products, but no detections for pyrethroids. Fipronil found in higher levels during 2000-2008 may be the result of it replacing chlorpyrifos and diazinon

Appendix C: “Chemistry Results Summary” Table

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather	Water/ Sediment	Discharge/ Receiving Water	# Sites	# Samples	# Detected	% Detected	Units	Sed. Unit Weight	Mean	Median	Min	Max	Notes
Amweg et al., 2006	Pyrethroid insecticides and sediment toxicity in urban creeks from California and Tennessee	Sacramento	Arcade Creek site 1	2004-2005	Bifenthrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	4.6		4.6	4.6	Only one sample, no median calculated
			Arcade Creek site 1	2004-2005	Cyfluthrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Arcade Creek site 1	2004-2005	Cypermethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Arcade Creek site 1	2004-2005	Deltamethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Arcade Creek site 1	2004-2005	Esfenvalerate	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Arcade Creek site 1	2004-2005	L-Cyhalothrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	1.4		1.4	1.4	Only one sample, no median calculated
			Arcade Creek site 1	2004-2005	Permethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
Amweg et al., 2006	Pyrethroid insecticides and sediment toxicity in urban creeks from California and Tennessee	Sacramento	Arcade Creek site 2	2004-2005	Bifenthrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			0.5	15.0	Unable to determine number of detects or % detected, only range provided.
			Arcade Creek site 2	2004-2005	Cyfluthrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			1.1	5.9	Unable to determine number of detects or % detected, only range provided.
			Arcade Creek site 2	2004-2005	Cypermethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			0.5	1.1	Unable to determine number of detects or % detected, only range provided.
			Arcade Creek site 2	2004-2005	Deltamethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			0.5	2.8	Unable to determine number of detects or % detected, only range provided.
			Arcade Creek site 2	2004-2005	Esfenvalerate	Dry	Sediment	Receiving	1	4			ng/g	Dry					
			Arcade Creek site 2	2004-2005	L-Cyhalothrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			0.5	1.5	Unable to determine number of detects or % detected, only range provided.
			Arcade Creek site 2	2004-2005	Permethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			5.6	16.9	Unable to determine number of detects or % detected, only range provided.
Amweg et al., 2006	Pyrethroid insecticides and sediment toxicity in urban creeks from California and Tennessee	Sacramento	Chicken Ranch Slough	2004-2005	Bifenthrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			2.9	45.1	Unable to determine number of detects or % detected, only range provided.
			Chicken Ranch Slough	2004-2005	Cyfluthrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			0.5	6.6	Unable to determine number of detects or % detected, only range provided.
			Chicken Ranch Slough	2004-2005	Cypermethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			0.5	4.1	Unable to determine number of detects or % detected, only range provided.
			Chicken Ranch Slough	2004-2005	Deltamethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			0.5	6.3	Unable to determine number of detects or % detected, only range provided.
			Chicken Ranch Slough	2004-2005	Esfenvalerate	Dry	Sediment	Receiving	1	4			ng/g	Dry			0.5	3.6	Unable to determine number of detects or % detected, only range provided.
			Chicken Ranch Slough	2004-2005	L-Cyhalothrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			0.5	1.4	Unable to determine number of detects or % detected, only range provided.
			Chicken Ranch Slough	2004-2005	Permethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			0.5	33.2	Unable to determine number of detects or % detected, only range provided.
Amweg et al., 2006	Pyrethroid insecticides and sediment toxicity in urban creeks from California and Tennessee	Sacramento	Curry Creek	2004-2005	Bifenthrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			40.3	429.5	Unable to determine number of detects or % detected, only range provided.
			Curry Creek	2004-2005	Cyfluthrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			12.2	60.4	Unable to determine number of detects or % detected, only range provided.
			Curry Creek	2004-2005	Cypermethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			17.9	30.6	Unable to determine number of detects or % detected, only range provided.
			Curry Creek	2004-2005	Deltamethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			7.0	23.9	Unable to determine number of detects or % detected, only range provided.
			Curry Creek	2004-2005	Esfenvalerate	Dry	Sediment	Receiving	1	4			ng/g	Dry			0.5	4.4	Unable to determine number of detects or % detected, only range provided.
			Curry Creek	2004-2005	L-Cyhalothrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			0.5	7.0	Unable to determine number of detects or % detected, only range provided.
			Curry Creek	2004-2005	Permethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			37.2	171.6	Unable to determine number of detects or % detected, only range provided.
Amweg et al., 2006	Pyrethroid insecticides and sediment toxicity in urban creeks from California and Tennessee	Sacramento	Elder Creek	2004-2005	Bifenthrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			21.7	43.9	Unable to determine number of detects or % detected, only range provided.
			Elder Creek	2004-2005	Cyfluthrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			14.0	35.3	Unable to determine number of detects or % detected, only range provided.
			Elder Creek	2004-2005	Cypermethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			7.5	18.9	Unable to determine number of detects or % detected, only range provided.
			Elder Creek	2004-2005	Deltamethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			4.0	5.1	Unable to determine number of detects or % detected, only range provided.
			Elder Creek	2004-2005	Esfenvalerate	Dry	Sediment	Receiving	1	4			ng/g	Dry			0.5	1.3	Unable to determine number of detects or % detected, only range provided.

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather	Water/ Sediment	Discharge/ Receiving Water	# Sites	# Samples	# Detected	% Detected	Units	Sed. Unit Weight	Mean	Median	Min	Max	Notes
			Elder Creek	2004-2005	L-Cyhalothrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			1.4	3.1	Unable to determine number of detects or % detected, only range provided.
			Elder Creek	2004-2005	Permethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			37.8	115.3	Unable to determine number of detects or % detected, only range provided.
Amweg et al., 2006	Pyrethroid insecticides and sediment toxicity in urban creeks from California and Tennessee	Sacramento	Laguna Creek Site 1	2004-2005	Bifenthrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			0.5	4.1	Unable to determine number of detects or % detected, only range provided.
			Laguna Creek Site 1	2004-2005	Cyfluthrin	Dry	Sediment	Receiving	1	4	0	0%	ng/g	Dry					
			Laguna Creek Site 1	2004-2005	Cypermethrin	Dry	Sediment	Receiving	1	4	0	0%	ng/g	Dry					
			Laguna Creek Site 1	2004-2005	Deltamethrin	Dry	Sediment	Receiving	1	4	0	0%	ng/g	Dry					
			Laguna Creek Site 1	2004-2005	Esfenvalerate	Dry	Sediment	Receiving	1	4	0	0%	ng/g	Dry					
			Laguna Creek Site 1	2004-2005	L-Cyhalothrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			0.5	1.5	Unable to determine number of detects or % detected, only range provided.
			Laguna Creek Site 1	2004-2005	Permethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			0.5	5.6	Unable to determine number of detects or % detected, only range provided.
Amweg et al., 2006	Pyrethroid insecticides and sediment toxicity in urban creeks from California and Tennessee	Sacramento	Laguna Creek Site 2	2004-2005	Bifenthrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			62.8	84.6	Unable to determine number of detects or % detected, only range provided.
			Laguna Creek Site 2	2004-2005	Cyfluthrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			23.8	30.5	Unable to determine number of detects or % detected, only range provided.
			Laguna Creek Site 2	2004-2005	Cypermethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			8.76	13.3	Unable to determine number of detects or % detected, only range provided.
			Laguna Creek Site 2	2004-2005	Deltamethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			9.4	11.1	Unable to determine number of detects or % detected, only range provided.
			Laguna Creek Site 2	2004-2005	Esfenvalerate	Dry	Sediment	Receiving	1	4			ng/g	Dry			1.0	3.6	Unable to determine number of detects or % detected, only range provided.
			Laguna Creek Site 2	2004-2005	L-Cyhalothrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			0.5	3.8	Unable to determine number of detects or % detected, only range provided.
			Laguna Creek Site 2	2004-2005	Permethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			31.5	69.1	Unable to determine number of detects or % detected, only range provided.
Amweg et al., 2006	Pyrethroid insecticides and sediment toxicity in urban creeks from California and Tennessee	Sacramento	Laguna Creek Site 3	2004-2005	Bifenthrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	13.8		13.8	13.8	Only one sample, no median calculated
			Laguna Creek Site 3	2004-2005	Cyfluthrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	3.9		3.9	3.9	Only one sample, no median calculated
			Laguna Creek Site 3	2004-2005	Cypermethrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	7.2		7.2	7.2	Only one sample, no median calculated
			Laguna Creek Site 3	2004-2005	Deltamethrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	2.7		2.7	2.7	Only one sample, no median calculated
			Laguna Creek Site 3	2004-2005	Esfenvalerate	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	1.8		1.8	1.8	Only one sample, no median calculated
			Laguna Creek Site 3	2004-2005	L-Cyhalothrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	2.2		2.2	2.2	Only one sample, no median calculated
			Laguna Creek Site 3	2004-2005	Permethrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	30.0		30.0	30.0	Only one sample, no median calculated
Amweg et al., 2006	Pyrethroid insecticides and sediment toxicity in urban creeks from California and Tennessee	Sacramento	Morrison Creek	2004-2005	Bifenthrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			13.4	25.9	Unable to determine number of detects or % detected, only range provided.
			Morrison Creek	2004-2005	Cyfluthrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			0.5	19.2	Unable to determine number of detects or % detected, only range provided.
			Morrison Creek	2004-2005	Cypermethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			4.3	9.5	Unable to determine number of detects or % detected, only range provided.
			Morrison Creek	2004-2005	Deltamethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			3.4	5.4	Unable to determine number of detects or % detected, only range provided.
			Morrison Creek	2004-2005	Esfenvalerate	Dry	Sediment	Receiving	1	4			ng/g	Dry			0.5	1.4	Unable to determine number of detects or % detected, only range provided.
			Morrison Creek	2004-2005	L-Cyhalothrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			0.5	3.2	Unable to determine number of detects or % detected, only range provided.
			Morrison Creek	2004-2005	Permethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			26.1	73.0	Unable to determine number of detects or % detected, only range provided.
Amweg et al., 2006	Pyrethroid insecticides and sediment toxicity in urban creeks from California and Tennessee	Sacramento	Strong Ranch Slough	2004-2005	Bifenthrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			8.0	89.8	Unable to determine number of detects or % detected, only range provided.
			Strong Ranch Slough	2004-2005	Cyfluthrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			2.0	26.3	Unable to determine number of detects or % detected, only range provided.
			Strong Ranch Slough	2004-2005	Cypermethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			0.63	15.0	Unable to determine number of detects or % detected, only range provided.

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather	Water/ Sediment	Discharge/ Receiving Water	# Sites	# Samples	# Detected	% Detected	Units	Sed. Unit Weight	Mean	Median	Min	Max	Notes
			Strong Ranch Slough	2004-2005	Deltamethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			0.5	6.5	Unable to determine number of detects or % detected, only range provided.
			Strong Ranch Slough	2004-2005	Esfenvalerate	Dry	Sediment	Receiving	1	4			ng/g	Dry			0.5	3.9	Unable to determine number of detects or % detected, only range provided.
			Strong Ranch Slough	2004-2005	L-Cyhalothrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			0.5	6.6	Unable to determine number of detects or % detected, only range provided.
			Strong Ranch Slough	2004-2005	Permethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			9.5	93.9	Unable to determine number of detects or % detected, only range provided.
Amweg et al., 2006	Pyrethroid insecticides and sediment toxicity in urban creeks from California and Tennessee	Sacramento	Willow Creek	2004-2005	Bifenthrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	3.0		3.0	3.0	Only one sample, no median calculated
			Willow Creek	2004-2005	Cyfluthrin	Dry	Sediment	Receiving	1	0			ng/g	Dry					
			Willow Creek	2004-2005	Cypermethrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	1.0		1.0	1.0	Only one sample, no median calculated
			Willow Creek	2004-2005	Deltamethrin	Dry	Sediment	Receiving	1	0			ng/g	Dry					
			Willow Creek	2004-2005	Esfenvalerate	Dry	Sediment	Receiving	1	0			ng/g	Dry					
			Willow Creek	2004-2005	L-Cyhalothrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	1.6		1.6	1.6	Only one sample, no median calculated
			Willow Creek	2004-2005	Permethrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	8.2		8.2	8.2	Only one sample, no median calculated
Amweg et al., 2006	Pyrethroid insecticides and sediment toxicity in urban creeks from California and Tennessee	East Bay, CA	Glen Echo Creek	2004-2005	Bifenthrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			3.9	5.4	Unable to determine number of detects or % detected, only range provided.
			Glen Echo Creek	2004-2005	Cyfluthrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			0.5	3.5	Unable to determine number of detects or % detected, only range provided. U= undetected at 1 ng/g. Substituted as 1/2 the detection limit (0.5 ng/g)
			Glen Echo Creek	2004-2005	Cypermethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			0.5	1.1	Unable to determine number of detects or % detected, only range provided. U= undetected at 1 ng/g. Substituted as 1/2 the detection limit (0.5 ng/g)
			Glen Echo Creek	2004-2005	Deltamethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry					
			Glen Echo Creek	2004-2005	Esfenvalerate	Dry	Sediment	Receiving	1	4			ng/g	Dry					
			Glen Echo Creek	2004-2005	L-Cyhalothrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			0.5	1.9	Unable to determine number of detects or % detected, only range provided. U= undetected at 1 ng/g. Substituted as 1/2 the detection limit (0.5 ng/g)
			Glen Echo Creek	2004-2005	Permethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			0.5	56.0	Unable to determine number of detects or % detected, only range provided. U= undetected at 1 ng/g. Substituted as 1/2 the detection limit (0.5 ng/g)
Amweg et al., 2006	Pyrethroid insecticides and sediment toxicity in urban creeks from California and Tennessee	East Bay, CA	Kirker Creek	2004-2005	Bifenthrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			11.5	19.9	Unable to determine number of detects or % detected, only range provided.
			Kirker Creek	2004-2005	Cyfluthrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			11.5	49.9	Unable to determine number of detects or % detected, only range provided.
			Kirker Creek	2004-2005	Cypermethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			7.3	9.8	Unable to determine number of detects or % detected, only range provided.
			Kirker Creek	2004-2005	Deltamethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			13.4	57.0	Unable to determine number of detects or % detected, only range provided.
			Kirker Creek	2004-2005	Esfenvalerate	Dry	Sediment	Receiving	1	4			ng/g	Dry					
			Kirker Creek	2004-2005	L-Cyhalothrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			3.3	10.7	Unable to determine number of detects or % detected, only range provided.
			Kirker Creek	2004-2005	Permethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			18.4	39.7	Unable to determine number of detects or % detected, only range provided.
Amweg et al., 2006	Pyrethroid insecticides and sediment toxicity in urban creeks from California and Tennessee	East Bay, CA	Lauterwasser Creek	2004-2005	Bifenthrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			0.5	8.6	Unable to determine number of detects or % detected, only range provided. U= undetected at 1 ng/g. Substituted as 1/2 the detection limit (0.5 ng/g)
			Lauterwasser Creek	2004-2005	Cyfluthrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			0.5	2.2	Unable to determine number of detects or % detected, only range provided. U= undetected at 1 ng/g. Substituted as 1/2 the detection limit (0.5 ng/g)
			Lauterwasser Creek	2004-2005	Cypermethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry					
			Lauterwasser Creek	2004-2005	Deltamethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			2.4	5.6	Unable to determine number of detects or % detected, only range provided.
			Lauterwasser Creek	2004-2005	Esfenvalerate	Dry	Sediment	Receiving	1	4			ng/g	Dry					
			Lauterwasser Creek	2004-2005	L-Cyhalothrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			0.5	1.5	Unable to determine number of detects or % detected, only range provided. U= undetected at 1 ng/g. Substituted as 1/2 the detection limit (0.5 ng/g)
			Lauterwasser Creek	2004-2005	Permethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			2.5	12.0	Unable to determine number of detects or % detected, only range provided.
Amweg et al., 2006	Pyrethroid insecticides and sediment toxicity in urban creeks from California and Tennessee	East Bay, CA	Lion Creek	2004-2005	Bifenthrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			0.5	12.8	Unable to determine number of detects or % detected, only range provided. U= undetected at 1 ng/g. Substituted as 1/2 the detection limit (0.5 ng/g)

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather	Water/ Sediment	Discharge/ Receiving Water	# Sites	# Samples	# Detected	% Detected	Units	Sed. Unit Weight	Mean	Median	Min	Max	Notes
			Lion Creek	2004-2005	Cyfluthrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			1.9	16.9	Unable to determine number of detects or % detected, only range provided.
			Lion Creek	2004-2005	Cypermethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			2.8	11.7	Unable to determine number of detects or % detected, only range provided.
			Lion Creek	2004-2005	Deltamethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			1.1	1.9	Unable to determine number of detects or % detected, only range provided.
			Lion Creek	2004-2005	Esfenvalerate	Dry	Sediment	Receiving	1	4			ng/g	Dry					
			Lion Creek	2004-2005	L-Cyhalothrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			0.5	1.6	Unable to determine number of detects or % detected, only range provided. U= undetected at 1 ng/g. Substituted as 1/2 the detection limit (0.5 ng/g)
			Lion Creek	2004-2005	Permethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			5.4	23.7	Unable to determine number of detects or % detected, only range provided.
Amweg et al., 2006	Pyrethroid insecticides and sediment toxicity in urban creeks from California and Tennessee	East Bay, CA	Pine Creek	2004-2005	Bifenthrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	11.1		11.1	11.1	Only one sample, no median calculated
			Pine Creek	2004-2005	Cyfluthrin	Dry	Sediment	Receiving	1	1	0		ng/g	Dry					
			Pine Creek	2004-2005	Cypermethrin	Dry	Sediment	Receiving	1	1	0		ng/g	Dry					
			Pine Creek	2004-2005	Deltamethrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	2.2		2.2	2.2	Only one sample, no median calculated
			Pine Creek	2004-2005	Esfenvalerate	Dry	Sediment	Receiving	1	1	0		ng/g	Dry					
			Pine Creek	2004-2005	L-Cyhalothrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	2.0		2.0	2.0	Only one sample, no median calculated
			Pine Creek	2004-2005	Permethrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	2.3		2.3	2.3	Only one sample, no median calculated
Amweg et al., 2006	Pyrethroid insecticides and sediment toxicity in urban creeks from California and Tennessee	East Bay, CA	San Leandro Creek	2004-2005	Bifenthrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			3.9	8.6	Unable to determine number of detects or % detected, only range provided.
			San Leandro Creek	2004-2005	Cyfluthrin	Dry	Sediment	Receiving	1	4			ng/g	Dry					
			San Leandro Creek	2004-2005	Cypermethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			1.8	5.3	Unable to determine number of detects or % detected, only range provided.
			San Leandro Creek	2004-2005	Deltamethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry					
			San Leandro Creek	2004-2005	Esfenvalerate	Dry	Sediment	Receiving	1	4			ng/g	Dry					
			San Leandro Creek	2004-2005	L-Cyhalothrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			1.3	3.3	Unable to determine number of detects or % detected, only range provided.
			San Leandro Creek	2004-2005	Permethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			2.8	14.0	Unable to determine number of detects or % detected, only range provided.
Amweg et al., 2006	Pyrethroid insecticides and sediment toxicity in urban creeks from California and Tennessee	East Bay, CA	San Pablo Creek	2004-2005	Bifenthrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			3.0	8.1	Unable to determine number of detects or % detected, only range provided.
			San Pablo Creek	2004-2005	Cyfluthrin	Dry	Sediment	Receiving	1	4			ng/g	Dry					
			San Pablo Creek	2004-2005	Cypermethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry					
			San Pablo Creek	2004-2005	Deltamethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			1.4	3.4	Unable to determine number of detects or % detected, only range provided.
			San Pablo Creek	2004-2005	Esfenvalerate	Dry	Sediment	Receiving	1	4			ng/g	Dry					
			San Pablo Creek	2004-2005	L-Cyhalothrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			0.5	2.1	Unable to determine number of detects or % detected, only range provided. U= undetected at 1 ng/g. Substituted as 1/2 the detection limit (0.5 ng/g)
			San Pablo Creek	2004-2005	Permethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			1.6	17.1	Unable to determine number of detects or % detected, only range provided.
Anderson et al., 2010	Evaluation of methods to determine causes of sediment toxicity in San Diego Bay, California USA	San Diego County	Switzer Creek	2004	Bifenthrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	23.9				
			Switzer Creek	2004	Cyfluthrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	183.0				
			Switzer Creek	2004	Cypermethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Switzer Creek	2004	Permethrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	135.0				
Aqua-Science, 2007	Acute Toxicity of Sacramento Area Urban Creeks to Ceriodaphnia Dubia	Sacramento	Elk Grove Creek	2007	Cyfluthrin	Dry	Water	Receiving	1	1	1	100%	µg/L		0.136		0.136	0.136	Only one sample, thus one detect. Min and max values are the same, no median.
			Elk Grove Creek	2007	Deltamethrin	Dry	Water	Receiving	1	1	1	100%	µg/L		0.023		0.023	0.023	
			Elk Grove Creek	2007	L-Cyhalothrin	Dry	Water	Receiving	1	1	1	100%	µg/L		0.008		0.008	0.008	
			Elk Grove Creek	2007	Permethrin	Dry	Water	Receiving	1	1	1	100%	µg/L		0.027		0.027	0.027	
Delgado-Moreno et al., 2011	Occurrence and Toxicity of Three Classes of Insecticides in Water and Sediment in Two Southern California Coastal Watersheds	Southern California	Santa Clara River Watershed and Calleguas Creek Watershed	2009	Fipronil	Wet	Water	Receiving	4	8	4	50%	ng/L		6.36	1.45	0.50	19.00	ND and trace detections substituted as 1/2 the detection limit(1.0 ng/L)

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			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Fipronil Desulfinyl	Wet	Water	Receiving	4	8	4	50%	ng/L		2.26	1.05	0.50	6.10	ND and trace detections substituted as 1/2 the detection limit(1.0 ng/L)
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Fipronil Sulfide	Wet	Water	Receiving	4	8	4	50%	ng/L		1.44	0.55	0.50	4.20	ND and trace detections substituted as 1/2 the detection limit(1.0 ng/L)
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Fipronil Sulfone	Wet	Water	Receiving	4	8	5	63%	ng/L		6.06	2.40	0.50	18.10	ND and trace detections substituted as 1/2 the detection limit(1.0 ng/L)
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Bifenthrin	Wet	Water	Receiving	4	8	4	50%	ng/L		35.29	6.10	0.50	134.00	ND and trace detections substituted as 1/2 the detection limit(1.0 ng/L)
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Fenpropathrin	Wet	Water	Receiving	4	8	2	25%	ng/L		5.30	0.50	0.50	30.10	ND and trace detections substituted as 1/2 the detection limit(1.0 ng/L)
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Lambda-cyhalothrin	Wet	Water	Receiving	4	8	1	13%	ng/L		2.66	0.50	0.50	17.80	ND and trace detections substituted as 1/2 the detection limit(1.0 ng/L)
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Permethrin cis	Wet	Water	Receiving	4	8	3	38%	ng/L		26.53	0.50	0.50	94.50	ND and trace detections substituted as 1/2 the detection limit(1.0 ng/L)
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Permethrin trans	Wet	Water	Receiving	4	8	4	50%	ng/L		80.44	15.75	0.50	239.00	ND and trace detections substituted as 1/2 the detection limit(1.0 ng/L)
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Cyfluthrin	Wet	Water	Receiving	4	8	4	50%	ng/L		7.24	1.60	0.50	38.10	ND and trace detections substituted as 1/2 the detection limit(1.0 ng/L)
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Cypermethrin	Wet	Water	Receiving	4	8	5	63%	ng/L		76.43	6.60	0.50	519.00	ND and trace detections substituted as 1/2 the detection limit(1.0 ng/L)
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Esfenvalerate	Wet	Water	Receiving	4	8	3	38%	ng/L		1.63	0.50	0.50	5.60	ND and trace detections substituted as 1/2 the detection limit(1.0 ng/L)
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Deltamethrin	Wet	Water	Receiving	4	8	0	0%	ng/L						
Delgado-Moreno et al., 2011	Occurrence and Toxicity of Three Classes of Insecticides in Water and Sediment in Two Southern California Coastal Watersheds	Southern California	Santa Clara River Watershed and Calleguas Creek Watershed	2009	Fipronil	Dry	Water	Receiving	4	8	2	25%	ng/L		7.10	0.50	0.50	34.80	ND and trace detections substituted as 1/2 the detection limit(1.0 ng/L)
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Fipronil Desulfinyl	Dry	Water	Receiving	4	8	3	38%	ng/L		2.58	0.50	0.50	9.90	ND and trace detections substituted as 1/2 the detection limit(1.0 ng/L)
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Fipronil Sulfide	Dry	Water	Receiving	4	8	2	25%	ng/L		1.50	0.50	0.50	6.40	ND and trace detections substituted as 1/2 the detection limit(1.0 ng/L)
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Fipronil Sulfone	Dry	Water	Receiving	4	8	3	38%	ng/L		4.14	0.50	0.50	17.50	ND and trace detections substituted as 1/2 the detection limit(1.0 ng/L)
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Bifenthrin	Dry	Water	Receiving	4	8	2	25%	ng/L		1.10	0.50	0.50	4.70	ND and trace detections substituted as 1/2 the detection limit(1.0 ng/L)
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Fenpropathrin	Dry	Water	Receiving	4	8	0	0%	ng/L						
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Lambda-cyhalothrin	Dry	Water	Receiving	4	8	0	0%	ng/L						
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Permethrin cis	Dry	Water	Receiving	4	8	1	13%	ng/L		534.39	0.50	0.00	4806.00	ND and trace detections substituted as 1/2 the detection limit(1.0 ng/L); This unusually high concentrations were a single-time episode and may be due to application drift, cleaning of spray equipment, or improper disposal of spray waste
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Permethrin trans	Dry	Water	Receiving	4	8	2	25%	ng/L		1585.26	0.50	0.50	12652.00	ND and trace detections substituted as 1/2 the detection limit(1.0 ng/L); This unusually high concentrations were a single-time episode and may be due to application drift, cleaning of spray equipment, or improper disposal of spray waste
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Cyfluthrin	Dry	Water	Receiving	4	8	2	25%	ng/L		1.34	0.50	0.50	4.90	ND and trace detections substituted as 1/2 the detection limit(1.0 ng/L)
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Cypermethrin	Dry	Water	Receiving	4	8	1	13%	ng/L		1.66	0.50	0.50	9.80	ND and trace detections substituted as 1/2 the detection limit(1.0 ng/L)

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			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Esfenvalerate	Dry	Water	Receiving	4	8	0	0%	ng/L						
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Deltamethrin	Dry	Water	Receiving	4	8	0	0%	ng/L						
Delgado-Moreno et al., 2011	Occurrence and Toxicity of Three Classes of Insecticides in Water and Sediment in Two Southern California Coastal Watersheds	Southern California	Santa Clara River Watershed and Calleguas Creek Watershed	2009	Fipronil	Wet	Sediment	Receiving	4	8	1	13%	ng/g	Dry	0.08	0.05	0.05	0.30	ND and trace detections substituted as 1/2 the detection limit(0.05 ng/g)
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Fipronil Desulfinyl	Wet	Sediment	Receiving	4	8	1	13%	ng/g	Dry	0.09	0.05	0.05	0.40	ND and trace detections substituted as 1/2 the detection limit(0.05 ng/g)
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Fipronil Sulfide	Wet	Sediment	Receiving	4	8	1	13%	ng/g	Dry	0.13	0.05	0.05	0.70	ND and trace detections substituted as 1/2 the detection limit(0.05 ng/g)
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Fipronil Sulfone	Wet	Sediment	Receiving	4	8	5	63%	ng/g	Dry	0.67	0.10	0.05	2.60	ND and trace detections substituted as 1/2 the detection limit(0.05 ng/g)
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Bifenthrin	Wet	Sediment	Receiving	4	8	7	88%	ng/g	Dry	6.29	1.10	0.05	30.10	ND and trace detections substituted as 1/2 the detection limit(0.05 ng/g)
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Fenpropathrin	Wet	Sediment	Receiving	4	8	1	13%	ng/g	Dry	0.19	0.05	0.05	1.20	ND and trace detections substituted as 1/2 the detection limit(0.05 ng/g)
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Lambda-cyhalothrin	Wet	Sediment	Receiving	4	8	1	13%	ng/g	Dry	0.36	0.05	0.05	2.50	ND and trace detections substituted as 1/2 the detection limit(0.05 ng/g)
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Permethrin cis	Wet	Sediment	Receiving	4	8	6	75%	ng/g	Dry	20.74	8.55	0.05	85.30	ND and trace detections substituted as 1/2 the detection limit(0.05 ng/g)
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Permethrin trans	Wet	Sediment	Receiving	4	8	7	88%	ng/g	Dry	29.66	18.15	0.05	81.20	ND and trace detections substituted as 1/2 the detection limit(0.05 ng/g)
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Cyfluthrin	Wet	Sediment	Receiving	4	8	5	63%	ng/g	Dry	1.88	1.10	0.05	6.50	ND and trace detections substituted as 1/2 the detection limit(0.05 ng/g)
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Cypermethrin	Wet	Sediment	Receiving	4	8	7	88%	ng/g	Dry	143.66	2.90	0.05	987.50	ND and trace detections substituted as 1/2 the detection limit(0.05 ng/g)
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Esfenvalerate	Wet	Sediment	Receiving	4	8	1	13%	ng/g	Dry	1.49	0.05	0.05	11.60	ND and trace detections substituted as 1/2 the detection limit(0.05 ng/g)
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Deltamethrin	Wet	Sediment	Receiving	4	8	0	0%	ng/g	Dry					
Delgado-Moreno et al., 2011	Occurrence and Toxicity of Three Classes of Insecticides in Water and Sediment in Two Southern California Coastal Watersheds	Southern California	Santa Clara River Watershed and Calleguas Creek Watershed	2009	Fipronil	Dry	Sediment	Receiving	4	8	2	25%	ng/g	Dry	0.08	0.05	0.05	0.20	ND and trace detections substituted as 1/2 the detection limit(0.05 ng/g)
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Fipronil Desulfinyl	Dry	Sediment	Receiving	4	8	3	38%	ng/g	Dry	0.16	0.05	0.05	0.60	ND and trace detections substituted as 1/2 the detection limit(0.05 ng/g)
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Fipronil Sulfide	Dry	Sediment	Receiving	4	8	3	38%	ng/g	Dry	0.18	0.05	0.05	0.90	ND and trace detections substituted as 1/2 the detection limit(0.05 ng/g)
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Fipronil Sulfone	Dry	Sediment	Receiving	4	8	4	50%	ng/g	Dry	0.55	0.23	0.05	1.70	ND and trace detections substituted as 1/2 the detection limit(0.05 ng/g)
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Bifenthrin	Dry	Sediment	Receiving	4	8	8	100%	ng/g	Dry	2.59	2.00	0.50	8.70	
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Fenpropathrin	Dry	Sediment	Receiving	4	8	1	13%	ng/g	Dry	0.76	0.05	0.05	5.70	ND and trace detections substituted as 1/2 the detection limit(0.05 ng/g)

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather	Water/ Sediment	Discharge/ Receiving Water	# Sites	# Samples	# Detected	% Detected	Units	Sed. Unit Weight	Mean	Median	Min	Max	Notes
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Lambda-cyhalothrin	Dry	Sediment	Receiving	4	8	2	25%	ng/g	Dry	1.10	0.05	0.05	5.90	ND and trace detections substituted as 1/2 the detection limit(0.05 ng/g)
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Permethrin cis	Dry	Sediment	Receiving	4	8	3	38%	ng/g	Dry	10.19	0.05	0.05	62.40	ND and trace detections substituted as 1/2 the detection limit(0.05 ng/g); The unusually high concentrations were a single-time episode and may be due to application drift, cleaning of spray equipment, or improper disposal of spray waste
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Permethrin trans	Dry	Sediment	Receiving	4	8	3	38%	ng/g	Dry	4.72	0.05	0.05	21.50	ND and trace detections substituted as 1/2 the detection limit(0.05 ng/g); The unusually high concentrations were a single-time episode and may be due to application drift, cleaning of spray equipment, or improper disposal of spray waste
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Cyfluthrin	Dry	Sediment	Receiving	4	8	4	50%	ng/g	Dry	1.80	0.53	0.05	7.90	ND and trace detections substituted as 1/2 the detection limit(0.05 ng/g)
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Cypermethrin	Dry	Sediment	Receiving	4	8	2	25%	ng/g	Dry	13.91	0.05	0.05	108.20	ND and trace detections substituted as 1/2 the detection limit(0.05 ng/g)
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Esfenvalerate	Dry	Sediment	Receiving	4	8	2	25%	ng/g	Dry	0.61	0.05	0.05	2.70	ND and trace detections substituted as 1/2 the detection limit(0.05 ng/g)
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Deltamethrin	Dry	Sediment	Receiving	4	8	0			Dry					
Domagalski et al., 2010	Pyrethroid Insecticide Concentration and Toxicity in Streambed Sediments and Loads in Surface Waters of the San Joaquin Valley California USA	Northern California	San Joaquin watersheds	2007	Bifenthrin	Wet	Sediment	Receiving	8	59	38	64%	ng/g	Dry	1.65	1.10	0.10	15.80	ND substituted as 1/2 the detection limit (2.2 ng/g)
			San Joaquin watersheds	2007	L-Cyhalothrin	Wet	Sediment	Receiving	8	59	20	34%	ng/g	Dry	1.9	1.2	0.2	19.8	ND substituted as 1/2 the detection limit (2.4 ng/g)
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	Orange County	Wood Canyon-AV01	2008-2009	Bifenthrin	Dry	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	236.5		236.5	236.5	Only one sample, no median calculated
			Wood Canyon-AV01	2008-2009	Cyfluthrin	Dry	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	44.6		44.6	44.6	Only one sample, no median calculated
			Wood Canyon-AV01	2008-2009	Cypermethrin	Dry	Sediment	Receiving	1	1	0	0%	µg/kg	Dry					
			Wood Canyon-AV01	2008-2009	Deltamethrin	Dry	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	12.3		12.3	12.3	Only one sample, no median calculated
			Wood Canyon-AV01	2008-2009	Fenvalerate/esfenvalerate	Dry	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	9.4		9.4	9.4	Only one sample, no median calculated
			Wood Canyon-AV01	2008-2009	Lambda cyhalothrin	Dry	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	21.6		21.6	21.6	Only one sample, no median calculated
			Wood Canyon-AV01	2008-2009	Permethrin cis	Dry	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	45.7		45.7	45.7	Only one sample, no median calculated
			Wood Canyon-AV01	2008-2009	Permethrin trans	Dry	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	27.5		27.5	27.5	Only one sample, no median calculated
			Wood Canyon-AV01	2008-2009	Resmethrin	Dry	Sediment	Receiving	1	1	0	0%	µg/kg	Dry					
			Wood Canyon-AV01	2008-2009	Fenpropathrin	Dry	Sediment	Receiving	1	1	0	0%	µg/kg	Dry					
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	SFB	Grayson Creek-GRY010	2008-2009	Bifenthrin	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	7.8		7.8	7.8	Only one sample, no median calculated
			Grayson Creek-GRY010	2008-2009	Cyfluthrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry					
			Grayson Creek-GRY010	2008-2009	Cypermethrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry					
			Grayson Creek-GRY010	2008-2009	Deltamethrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry					
			Grayson Creek-GRY010	2008-2009	Fenvalerate/esfenvalerate	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry					
			Grayson Creek-GRY010	2008-2009	Lambda cyhalothrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry					
			Grayson Creek-GRY010	2008-2009	Permethrin cis	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry					
			Grayson Creek-GRY010	2008-2009	Permethrin trans	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry					
			Grayson Creek-GRY010	2008-2009	Resmethrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry					
			Grayson Creek-GRY010	2008-2009	Fenpropathrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry					
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	SFB	Grayson Creek-GRY020	2008-2009	Bifenthrin	Dry	Sediment	Discharge	1	2	2	100%	µg/kg	Dry	15.5	15.5	13.1	17.9	
			Grayson Creek-GRY020	2008-2009	Cyfluthrin	Dry	Sediment	Discharge	1	2	2	100%	µg/kg	Dry	2.5	2.5	2.1	2.9	
			Grayson Creek-GRY020	2008-2009	Cypermethrin	Dry	Sediment	Discharge	1	2	0	0%	µg/kg	Dry					
			Grayson Creek-GRY020	2008-2009	Deltamethrin	Dry	Sediment	Discharge	1	2	1	50%	µg/kg	Dry	1.15	1.15	0.5	1.8	ND substituted as 1/2 the reporting limit (1.0 µg/kg)
			Grayson Creek-GRY020	2008-2009	Fenvalerate/esfenvalerate	Dry	Sediment	Discharge	1	2	0	0%	µg/kg	Dry					
			Grayson Creek-GRY020	2008-2009	Lambda cyhalothrin	Dry	Sediment	Discharge	1	2	2	100%	µg/kg	Dry	3.95	3.95	3.3	4.6	
			Grayson Creek-GRY020	2008-2009	Permethrin cis	Dry	Sediment	Discharge	1	2	2	100%	µg/kg	Dry	2.0	2	1.8	2.2	
			Grayson Creek-GRY020	2008-2009	Permethrin trans	Dry	Sediment	Discharge	1	2	0	0%	µg/kg	Dry					
			Grayson Creek-GRY020	2008-2009	Resmethrin	Dry	Sediment	Discharge	1	2	0	0%	µg/kg	Dry					
			Grayson Creek-GRY020	2008-2009	Fenpropathrin	Dry	Sediment	Discharge	1	2	0	0%	µg/kg	Dry					
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	SFB	Grayson Creek-GRY030	2008-2009	Bifenthrin	Dry	Sediment	Receiving	1	4	4	100%	µg/kg	Dry	17.0	16.5	8.9	26.8	
			Grayson Creek-GRY030	2008-2009	Cyfluthrin	Dry	Sediment	Receiving	1	4	3	75%	µg/kg	Dry	3.83	3.85	0.5	7.1	ND substituted as 1/2 the reporting limit (1.0 µg/kg)
			Grayson Creek-GRY030	2008-2009	Cypermethrin	Dry	Sediment	Receiving	1	4	0	0%	µg/kg	Dry					
			Grayson Creek-GRY030	2008-2009	Deltamethrin	Dry	Sediment	Receiving	1	4	1	25%	µg/kg	Dry	0.95	0.50	0.5	2.3	ND substituted as 1/2 the reporting limit (1.0 µg/kg)
			Grayson Creek-GRY030	2008-2009	Fenvalerate/esfenvalerate	Dry	Sediment	Receiving	1	4	0	0%	µg/kg	Dry					
			Grayson Creek-GRY030	2008-2009	Lambda cyhalothrin	Dry	Sediment	Receiving	1	4	0	0%	µg/kg	Dry					
			Grayson Creek-GRY030	2008-2009	Permethrin cis	Dry	Sediment	Receiving	1	4	4	100%	µg/kg	Dry	4.4	4.25	2.2	7	
			Grayson Creek-GRY030	2008-2009	Permethrin trans	Dry	Sediment	Receiving	1	4	2	50%	µg/kg	Dry	2.85	0.5	0.5	5.2	ND substituted as 1/2 the reporting limit (1.0 µg/kg)
			Grayson Creek-GRY030	2008-2009	Resmethrin	Dry	Sediment	Receiving	1	4	0	0%	µg/kg	Dry					
			Grayson Creek-GRY030	2008-2009	Fenpropathrin	Dry	Sediment	Receiving	1	4	0	0%	µg/kg	Dry					
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	SFB	Martin/Koopman Canyon Creek-MCC010	2008-2009	Bifenthrin	Dry	Sediment	Discharge	1	2	2	100%	µg/kg	Dry	24.7	24.7	11.9	37.5	

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather	Water/ Sediment	Discharge/ Receiving Water	# Sites	# Samples	# Detected	% Detected	Units	Sed. Unit Weight	Mean	Median	Min	Max	Notes
			Martin/Koopman Canyon Creek-MCC010	2008-2009	Cyfluthrin	Dry	Sediment	Discharge	1	2	2	100%	µg/kg	Dry	13.85	13.85	4.3	23.4	
			Martin/Koopman Canyon Creek-MCC010	2008-2009	Cypermethrin	Dry	Sediment	Discharge	1	2	0	0%	µg/kg	Dry					
			Martin/Koopman Canyon Creek-MCC010	2008-2009	Deltamethrin	Dry	Sediment	Discharge	1	2	1	50%	µg/kg	Dry	3.85	3.85	0.5	7.2	ND substituted as 1/2 the reporting limit (1.0 µg/kg)
			Martin/Koopman Canyon Creek-MCC010	2008-2009	Fenvalerate/esfenvalerate	Dry	Sediment	Discharge	1	2	0	0%	µg/kg	Dry					
			Martin/Koopman Canyon Creek-MCC010	2008-2009	Lambda cyhalothrin	Dry	Sediment	Discharge	1	2	1	50%	µg/kg	Dry	1.00	1.0	0.5	1.5	ND substituted as 1/2 the reporting limit (1.0 µg/kg)
			Martin/Koopman Canyon Creek-MCC010	2008-2009	Permethrin cis	Dry	Sediment	Discharge	1	2	2	100%	µg/kg	Dry	4.65	4.65	4.3	5	
			Martin/Koopman Canyon Creek-MCC010	2008-2009	Permethrin trans	Dry	Sediment	Discharge	1	2	2	100%	µg/kg	Dry	4.10	4.1	4.1	4.1	
			Martin/Koopman Canyon Creek-MCC010	2008-2009	Resmethrin	Dry	Sediment	Discharge	1	2	0	0%	µg/kg	Dry					
			Martin/Koopman Canyon Creek-MCC010	2008-2009	Fenpropathrin	Dry	Sediment	Discharge	1	2	0	0%	µg/kg	Dry					
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	SFB	Martin/Koopman Canyon Creek-MCC020	2008-2009	Bifenthrin	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	0.1		0.1	0.1	Only one sample, no median calculated
			Martin/Koopman Canyon Creek-MCC020	2008-2009	Cyfluthrin	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	18.9		18.9	18.9	Only one sample, no median calculated
			Martin/Koopman Canyon Creek-MCC020	2008-2009	Cypermethrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry					
			Martin/Koopman Canyon Creek-MCC020	2008-2009	Deltamethrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry					
			Martin/Koopman Canyon Creek-MCC020	2008-2009	Fenvalerate/esfenvalerate	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry					
			Martin/Koopman Canyon Creek-MCC020	2008-2009	Lambda cyhalothrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry					
			Martin/Koopman Canyon Creek-MCC020	2008-2009	Permethrin cis	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry					
			Martin/Koopman Canyon Creek-MCC020	2008-2009	Permethrin trans	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry					
			Martin/Koopman Canyon Creek-MCC020	2008-2009	Resmethrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry					
			Martin/Koopman Canyon Creek-MCC020	2008-2009	Fenpropathrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry					
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	SFB	Martin/Koopman Canyon Creek-MCC030	2008-2009	Bifenthrin	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	25.5		25.5	25.5	Only one sample, no median calculated
			Martin/Koopman Canyon Creek-MCC030	2008-2009	Cyfluthrin	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	19.6		19.6	19.6	Only one sample, no median calculated
			Martin/Koopman Canyon Creek-MCC030	2008-2009	Cypermethrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry					
			Martin/Koopman Canyon Creek-MCC030	2008-2009	Deltamethrin	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	5.2		5.2	5.2	Only one sample, no median calculated
			Martin/Koopman Canyon Creek-MCC030	2008-2009	Fenvalerate/esfenvalerate	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry					
			Martin/Koopman Canyon Creek-MCC030	2008-2009	Lambda cyhalothrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry					
			Martin/Koopman Canyon Creek-MCC030	2008-2009	Permethrin cis	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	3.8		3.8	3.8	Only one sample, no median calculated
			Martin/Koopman Canyon Creek-MCC030	2008-2009	Permethrin trans	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry					
			Martin/Koopman Canyon Creek-MCC030	2008-2009	Resmethrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry					
			Martin/Koopman Canyon Creek-MCC030	2008-2009	Fenpropathrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry					
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	Sacramento	Pleasant Grove Creek-PGC010	2008-2009	Bifenthrin	Dry	Sediment	Discharge	1	3	3	100%	µg/kg	Dry	386.50	438.4	41.5	679.8	
			Pleasant Grove Creek-PGC010	2008-2009	Cyfluthrin	Dry	Sediment	Discharge	1	3	3	100%	µg/kg	Dry	76.43	75.20	5.5	148.6	
			Pleasant Grove Creek-PGC010	2008-2009	Cypermethrin	Dry	Sediment	Discharge	1	3	2	67%	µg/kg	Dry	33.13	45.30	0.5	53.6	ND substituted as 1/2 the reporting limit (1.0 µg/kg)
			Pleasant Grove Creek-PGC010	2008-2009	Deltamethrin	Dry	Sediment	Discharge	1	3	3	100%	µg/kg	Dry	11.83	13.20	2	20.3	
			Pleasant Grove Creek-PGC010	2008-2009	Fenvalerate/esfenvalerate	Dry	Sediment	Discharge	1	3	0	0%	µg/kg	Dry					
			Pleasant Grove Creek-PGC010	2008-2009	Lambda cyhalothrin	Dry	Sediment	Discharge	1	3	2	67%	µg/kg	Dry	7.80	8.1	0.5	14.8	ND substituted as 1/2 the reporting limit (1.0 µg/kg)
			Pleasant Grove Creek-PGC010	2008-2009	Permethrin cis	Dry	Sediment	Discharge	1	3	3	100%	µg/kg	Dry	68.56	89.20	3.4	113.1	
			Pleasant Grove Creek-PGC010	2008-2009	Permethrin trans	Dry	Sediment	Discharge	1	3	2	67%	µg/kg	Dry	30.56	38.4	0.5	52.8	ND substituted as 1/2 the reporting limit (1.0 µg/kg)
			Pleasant Grove Creek-PGC010	2008-2009	Resmethrin	Dry	Sediment	Discharge	1	3	0	0%	µg/kg	Dry					
			Pleasant Grove Creek-PGC010	2008-2009	Fenpropathrin	Dry	Sediment	Discharge	1	3	0	0%	µg/kg	Dry					
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	Sacramento	Pleasant Grove Creek-PGC020	2008-2009	Bifenthrin	Dry	Sediment	Discharge	1	6	6	100%	µg/kg	Dry	259.28	232.05	61.4	605.6	
			Pleasant Grove Creek-PGC020	2008-2009	Cyfluthrin	Dry	Sediment	Discharge	1	6	6	100%	µg/kg	Dry	32.36	21.65	4.4	83.7	
			Pleasant Grove Creek-PGC020	2008-2009	Cypermethrin	Dry	Sediment	Discharge	1	6	5	83%	µg/kg	Dry	13.73	14.95	0.5	22.7	ND substituted as 1/2 the reporting limit (1.0 µg/kg)

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather	Water/ Sediment	Discharge/ Receiving Water	# Sites	# Samples	# Detected	% Detected	Units	Sed. Unit Weight	Mean	Median	Min	Max	Notes
			Pleasant Grove Creek-PGC020	2008-2009	Deltamethrin	Dry	Sediment	Discharge	1	6	3	50%	µg/kg	Dry	4.30	1.65	0.5	14	ND substituted as 1/2 the reporting limit (1.0 µg/kg)
			Pleasant Grove Creek-PGC020	2008-2009	Fenvalerate/esfenvalerate	Dry	Sediment	Discharge	1	6	1	17%	µg/kg	Dry	1.23	0.5	0.5	4.9	ND substituted as 1/2 the reporting limit (1.0 µg/kg)
			Pleasant Grove Creek-PGC020	2008-2009	Lambda cyhalothrin	Dry	Sediment	Discharge	1	6	4	67%	µg/kg	Dry	3.40	3.35	0.5	6.9	ND substituted as 1/2 the reporting limit (1.0 µg/kg)
			Pleasant Grove Creek-PGC020	2008-2009	Permethrin cis	Dry	Sediment	Discharge	1	6	6	100%	µg/kg	Dry	35.42	31.65	7.4	66.9	
			Pleasant Grove Creek-PGC020	2008-2009	Permethrin trans	Dry	Sediment	Discharge	1	6	6	100%	µg/kg	Dry	23.68	23.85	2.9	45.2	
			Pleasant Grove Creek-PGC020	2008-2009	Resmethrin	Dry	Sediment	Discharge	1	6	1	17%	µg/kg	Dry	4.416	0.5	0.5	24	ND substituted as 1/2 the reporting limit (1.0 µg/kg)
			Pleasant Grove Creek-PGC020	2008-2009	Fenpropathrin	Dry	Sediment	Discharge	1	6	0	0%	µg/kg	Dry					
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	Sacramento	Pleasant Grove Creek-PGC030	2008-2009	Bifenthrin	Dry	Sediment	Discharge	1	2	2	100%	µg/kg	Dry	43.75	43.75	24	63.5	
			Pleasant Grove Creek-PGC030	2008-2009	Cyfluthrin	Dry	Sediment	Discharge	1	2	2	100%	µg/kg	Dry	6.35	6.35	2.9	9.8	
			Pleasant Grove Creek-PGC030	2008-2009	Cypermethrin	Dry	Sediment	Discharge	1	2	1	50%	µg/kg	Dry	2.55	2.55	0.5	4.6	ND substituted as 1/2 the reporting limit (1.0 µg/kg)
			Pleasant Grove Creek-PGC030	2008-2009	Deltamethrin	Dry	Sediment	Discharge	1	2	1	50%	µg/kg	Dry	1.30	1.30	0.5	2.1	ND substituted as 1/2 the reporting limit (1.0 µg/kg)
			Pleasant Grove Creek-PGC030	2008-2009	Fenvalerate/esfenvalerate	Dry	Sediment	Discharge	1	2	0	0%	µg/kg	Dry					
			Pleasant Grove Creek-PGC030	2008-2009	Lambda cyhalothrin	Dry	Sediment	Discharge	1	2	1	50%	µg/kg	Dry	1.25	1.25	0.5	2	ND substituted as 1/2 the reporting limit (1.0 µg/kg)
			Pleasant Grove Creek-PGC030	2008-2009	Permethrin cis	Dry	Sediment	Discharge	1	2	2	100%	µg/kg	Dry	25.10	25.10	5.2	45	
			Pleasant Grove Creek-PGC030	2008-2009	Permethrin trans	Dry	Sediment	Discharge	1	2	2	100%	µg/kg	Dry	13.55	13.55	3.1	24	
			Pleasant Grove Creek-PGC030	2008-2009	Resmethrin	Dry	Sediment	Discharge	1	2	0	0%	µg/kg	Dry					
			Pleasant Grove Creek-PGC030	2008-2009	Fenpropathrin	Dry	Sediment	Discharge	1	2	0	0%	µg/kg	Dry					
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	Orange County	Salt Creek-SC1	2008-2009	Bifenthrin	Dry	Sediment	Discharge	1	2	2	100%	µg/kg	Dry	29.60	29.60	14.2	45	
			Salt Creek-SC1	2008-2009	Cyfluthrin	Dry	Sediment	Discharge	1	2	2	100%	µg/kg	Dry	8.90	8.90	3.7	14.1	
			Salt Creek-SC1	2008-2009	Cypermethrin	Dry	Sediment	Discharge	1	2	0	0%	µg/kg	Dry					
			Salt Creek-SC1	2008-2009	Deltamethrin	Dry	Sediment	Discharge	1	2	2	100%	µg/kg	Dry	4.0	4.0	2.2	5.8	
			Salt Creek-SC1	2008-2009	Fenvalerate/esfenvalerate	Dry	Sediment	Discharge	1	2	0	0%	µg/kg	Dry					
			Salt Creek-SC1	2008-2009	Lambda cyhalothrin	Dry	Sediment	Discharge	1	2	0	0%	µg/kg	Dry					
			Salt Creek-SC1	2008-2009	Permethrin cis	Dry	Sediment	Discharge	1	2	2	100%	µg/kg	Dry	19.95	19.95	16.4	23.5	
			Salt Creek-SC1	2008-2009	Permethrin trans	Dry	Sediment	Discharge	1	2	2	100%	µg/kg	Dry	20.5	20.5	19.5	21.5	
			Salt Creek-SC1	2008-2009	Resmethrin	Dry	Sediment	Discharge	1	2	0	0%	µg/kg	Dry					
			Salt Creek-SC1	2008-2009	Fenpropathrin	Dry	Sediment	Discharge	1	2	0	0%	µg/kg	Dry					
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	Orange County	Salt Creek-SC3	2008-2009	Bifenthrin	Dry	Sediment	Discharge	1	2	1	50%	µg/kg	Dry	20.10	20.10	0.5	39.7	ND substituted as 1/2 the reporting limit (1.0 µg/kg)
			Salt Creek-SC3	2008-2009	Cyfluthrin	Dry	Sediment	Discharge	1	2	1	50%	µg/kg	Dry	19.35	19.35	0.5	38.2	ND substituted as 1/2 the reporting limit (1.0 µg/kg)
			Salt Creek-SC3	2008-2009	Cypermethrin	Dry	Sediment	Discharge	1	2	0	0%	µg/kg	Dry					
			Salt Creek-SC3	2008-2009	Deltamethrin	Dry	Sediment	Discharge	1	2	2	100%	µg/kg	Dry	14.7	14.7	2.7	26.8	
			Salt Creek-SC3	2008-2009	Fenvalerate/esfenvalerate	Dry	Sediment	Discharge	1	2	0	0%	µg/kg	Dry					
			Salt Creek-SC3	2008-2009	Lambda cyhalothrin	Dry	Sediment	Discharge	1	2	2	100%	µg/kg	Dry	6.05	6.05	4.60	7.5	
			Salt Creek-SC3	2008-2009	Permethrin cis	Dry	Sediment	Discharge	1	2	2	100%	µg/kg	Dry	26.05	26.05	6.8	45.3	
			Salt Creek-SC3	2008-2009	Permethrin trans	Dry	Sediment	Discharge	1	2	2	100%	µg/kg	Dry	31.05	31.05	15.6	46.5	
			Salt Creek-SC3	2008-2009	Resmethrin	Dry	Sediment	Discharge	1	2	0	0%	µg/kg	Dry					
			Salt Creek-SC3	2008-2009	Fenpropathrin	Dry	Sediment	Discharge	1	2	0	0%	µg/kg	Dry					
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	Orange County	Salt Creek-SC5	2008-2009	Bifenthrin	Dry	Sediment	Discharge	1	2	1	50%	µg/kg	Dry	12.85	12.85	0.5	25.2	ND substituted as 1/2 the reporting limit (1.0 µg/kg)
			Salt Creek-SC5	2008-2009	Cyfluthrin	Dry	Sediment	Discharge	1	2	1	50%	µg/kg	Dry	3.75	3.75	0.5	7.0	ND substituted as 1/2 the reporting limit (1.0 µg/kg)
			Salt Creek-SC5	2008-2009	Cypermethrin	Dry	Sediment	Discharge	1	2	0	0%	µg/kg	Dry					
			Salt Creek-SC5	2008-2009	Deltamethrin	Dry	Sediment	Discharge	1	2	1	50%	µg/kg	Dry	2.6	2.6	0.5	4.7	ND substituted as 1/2 the reporting limit (1.0 µg/kg)
			Salt Creek-SC5	2008-2009	Fenvalerate/esfenvalerate	Dry	Sediment	Discharge	1	2	0	0%	µg/kg	Dry					
			Salt Creek-SC5	2008-2009	Lambda cyhalothrin	Dry	Sediment	Discharge	1	2	2	100%	µg/kg	Dry	2.50	2.50	1.90	3.1	
			Salt Creek-SC5	2008-2009	Permethrin cis	Dry	Sediment	Discharge	1	2	2	100%	µg/kg	Dry	6.85	6.85	2.2	11.5	
			Salt Creek-SC5	2008-2009	Permethrin trans	Dry	Sediment	Discharge	1	2	2	100%	µg/kg	Dry	5.65	5.65	2.7	8.6	
			Salt Creek-SC5	2008-2009	Resmethrin	Dry	Sediment	Discharge	1	2	1	50%	µg/kg	Dry	4.40	4.40	0.5	8.3	ND substituted as 1/2 the reporting limit (1.0 µg/kg)
			Salt Creek-SC5	2008-2009	Fenpropathrin	Dry	Sediment	Discharge	1	2	0	0%	µg/kg	Dry					
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	San Diego	San Diego River-SDR101	2008-2009	Bifenthrin	Dry	Sediment	Receiving	1	3	3	100%	µg/kg	Dry	2.83	3.80	0.1	4.6	Although the lowest detection value is lower than half the RL (it was not labeled as a n
			San Diego River-SDR101	2008-2009	Cyfluthrin	Dry	Sediment	Receiving	1	3	0	0%	µg/kg	Dry					
			San Diego River-SDR101	2008-2009	Cypermethrin	Dry	Sediment	Receiving	1	3	0	0%	µg/kg	Dry					
			San Diego River-SDR101	2008-2009	Deltamethrin	Dry	Sediment	Receiving	1	3	0	0%	µg/kg	Dry					
			San Diego River-SDR101	2008-2009	Fenvalerate/esfenvalerate	Dry	Sediment	Receiving	1	3	0	0%	µg/kg	Dry					
			San Diego River-SDR101	2008-2009	Lambda cyhalothrin	Dry	Sediment	Receiving	1	3	0	0%	µg/kg	Dry					
			San Diego River-SDR101	2008-2009	Permethrin cis	Dry	Sediment	Receiving	1	3	0	0%	µg/kg	Dry					
			San Diego River-SDR101	2008-2009	Permethrin trans	Dry	Sediment	Receiving	1	3	0	0%	µg/kg	Dry					
			San Diego River-SDR101	2008-2009	Resmethrin	Dry	Sediment	Receiving	1	3	0	0%	µg/kg	Dry					

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather	Water/ Sediment	Discharge/ Receiving Water	# Sites	# Samples	# Detected	% Detected	Units	Sed. Unit Weight	Mean	Median	Min	Max	Notes
			San Diego River-SDR101	2008-2009	Fenpropathrin	Dry	Sediment	Receiving	1	3	0	0%	µg/kg	Dry					
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	San Diego	San Diego River-SDR102	2008-2009	Bifenthrin	Dry	Sediment	Discharge	1	2	2	100%	µg/kg	Dry	1.65	1.65	0.1	3.2	Although the lowest detection value is lower than half the RL (it was not labeled as a n
			San Diego River-SDR102	2008-2009	Cyfluthrin	Dry	Sediment	Discharge	1	2	2	100%	µg/kg	Dry	2.55	2.55	2.0	3.1	
			San Diego River-SDR102	2008-2009	Cypermethrin	Dry	Sediment	Discharge	1	2	0	0%	µg/kg	Dry					
			San Diego River-SDR102	2008-2009	Deltamethrin	Dry	Sediment	Discharge	1	2	0	0%	µg/kg	Dry					
			San Diego River-SDR102	2008-2009	Fenvalerate/esfenvalerate	Dry	Sediment	Discharge	1	2	0	0%	µg/kg	Dry					
			San Diego River-SDR102	2008-2009	Lambda cyhalothrin	Dry	Sediment	Discharge	1	2	0	0%	µg/kg	Dry					
			San Diego River-SDR102	2008-2009	Permethrin cis	Dry	Sediment	Discharge	1	2	2	100%	µg/kg	Dry	4.10	4.10	1.7	6.5	
			San Diego River-SDR102	2008-2009	Permethrin trans	Dry	Sediment	Discharge	1	2	2	100%	µg/kg	Dry	5.0	5.0	1.6	8.4	
			San Diego River-SDR102	2008-2009	Resmethrin	Dry	Sediment	Discharge	1	2	1	50%	µg/kg	Dry	2.75	2.75	0.5	5.0	ND substituted as 1/2 the reporting limit (1.0 µg/kg)
			San Diego River-SDR102	2008-2009	Fenpropathrin	Dry	Sediment	Discharge	1	2	0	0%	µg/kg	Dry					
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	San Diego	San Diego River-SDR151	2008-2009	Bifenthrin	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	3.3		3.3	3.3	Only one sample, no median calculated
			San Diego River-SDR151	2008-2009	Cyfluthrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry					
			San Diego River-SDR151	2008-2009	Cypermethrin	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	1.9		1.9	1.9	Only one sample, no median calculated
			San Diego River-SDR151	2008-2009	Deltamethrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry					
			San Diego River-SDR151	2008-2009	Fenvalerate/esfenvalerate	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry					
			San Diego River-SDR151	2008-2009	Lambda cyhalothrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry					
			San Diego River-SDR151	2008-2009	Permethrin cis	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry					
			San Diego River-SDR151	2008-2009	Permethrin trans	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry					
			San Diego River-SDR151	2008-2009	Resmethrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry					
			San Diego River-SDR151	2008-2009	Fenpropathrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry					
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	San Diego	San Diego River-SDR156	2008-2009	Bifenthrin	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	8.3		8.3	8.3	Only one sample, no median calculated
			San Diego River-SDR156	2008-2009	Cyfluthrin	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	4.2		4.2	4.2	Only one sample, no median calculated
			San Diego River-SDR156	2008-2009	Cypermethrin	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	7.9		7.9	7.9	Only one sample, no median calculated
			San Diego River-SDR156	2008-2009	Deltamethrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry					
			San Diego River-SDR156	2008-2009	Fenvalerate/esfenvalerate	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry					
			San Diego River-SDR156	2008-2009	Lambda cyhalothrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry					
			San Diego River-SDR156	2008-2009	Permethrin cis	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	3.2		3.2	3.2	Only one sample, no median calculated
			San Diego River-SDR156	2008-2009	Permethrin trans	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	2.9		2.9	2.9	Only one sample, no median calculated
			San Diego River-SDR156	2008-2009	Resmethrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry					
			San Diego River-SDR156	2008-2009	Fenpropathrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry					
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	San Diego	San Diego River-SDR158	2008-2009	Bifenthrin	Dry	Sediment	Receiving	1	2	2	100%	µg/kg	Dry	6.00	6.00	1.3	10.7	
			San Diego River-SDR158	2008-2009	Cyfluthrin	Dry	Sediment	Receiving	1	2	1	50%	µg/kg	Dry	3.25	3.25	0.5	6.0	ND substituted as 1/2 the reporting limit (1.0 µg/kg)
			San Diego River-SDR158	2008-2009	Cypermethrin	Dry	Sediment	Receiving	1	2	1	50%	µg/kg	Dry	2.25	2.25	0.5	4.0	ND substituted as 1/2 the reporting limit (1.0 µg/kg)
			San Diego River-SDR158	2008-2009	Deltamethrin	Dry	Sediment	Receiving	1	2	1	50%	µg/kg	Dry	1.15	1.15	0.5	1.8	ND substituted as 1/2 the reporting limit (1.0 µg/kg)
			San Diego River-SDR158	2008-2009	Fenvalerate/esfenvalerate	Dry	Sediment	Receiving	1	2	0	0%	µg/kg	Dry					
			San Diego River-SDR158	2008-2009	Lambda cyhalothrin	Dry	Sediment	Receiving	1	2	0	0%	µg/kg	Dry					
			San Diego River-SDR158	2008-2009	Permethrin cis	Dry	Sediment	Receiving	1	2	1	50%	µg/kg	Dry	1.30	1.30	0.5	2.1	ND substituted as 1/2 the reporting limit (1.0 µg/kg)
			San Diego River-SDR158	2008-2009	Permethrin trans	Dry	Sediment	Receiving	1	2	0	0%	µg/kg	Dry					
			San Diego River-SDR158	2008-2009	Resmethrin	Dry	Sediment	Receiving	1	2	0	0%	µg/kg	Dry					
			San Diego River-SDR158	2008-2009	Fenpropathrin	Dry	Sediment	Receiving	1	2	0	0%	µg/kg	Dry					
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	Orange County	Wood Canyon-WC1	2008-2009	Bifenthrin	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	323.7		323.7	323.7	Only one sample, no median calculated
			Wood Canyon-WC1	2008-2009	Cyfluthrin	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	89.3		89.3	89.3	Only one sample, no median calculated
			Wood Canyon-WC1	2008-2009	Cypermethrin	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	18.2		18.2	18.2	Only one sample, no median calculated
			Wood Canyon-WC1	2008-2009	Deltamethrin	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	15.7		15.7	15.7	Only one sample, no median calculated
			Wood Canyon-WC1	2008-2009	Fenvalerate/esfenvalerate	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	4.0		4.0	4.0	Only one sample, no median calculated
			Wood Canyon-WC1	2008-2009	Lambda cyhalothrin	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	31.9		31.9	31.9	Only one sample, no median calculated
			Wood Canyon-WC1	2008-2009	Permethrin cis	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	149.0		149.0	149.0	Only one sample, no median calculated
			Wood Canyon-WC1	2008-2009	Permethrin trans	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	206.7		206.7	206.7	Only one sample, no median calculated
			Wood Canyon-WC1	2008-2009	Resmethrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry					
			Wood Canyon-WC1	2008-2009	Fenpropathrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry					
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	Orange County	Wood Canyon-WC2	2008-2009	Bifenthrin	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	141.0		141.0	141.0	Only one sample, no median calculated
			Wood Canyon-WC2	2008-2009	Cyfluthrin	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	39.0		39.0	39.0	Only one sample, no median calculated
			Wood Canyon-WC2	2008-2009	Cypermethrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry					
			Wood Canyon-WC2	2008-2009	Deltamethrin	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	6.9		6.9	6.9	Only one sample, no median calculated
			Wood Canyon-WC2	2008-2009	Fenvalerate/esfenvalerate	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	6.6		6.6	6.6	Only one sample, no median calculated
			Wood Canyon-WC2	2008-2009	Lambda cyhalothrin	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	31.0		31.0	31.0	Only one sample, no median calculated
			Wood Canyon-WC2	2008-2009	Permethrin cis	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	62.6		62.6	62.6	Only one sample, no median calculated
			Wood Canyon-WC2	2008-2009	Permethrin trans	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	67.0		67.0	67.0	Only one sample, no median calculated
			Wood Canyon-WC2	2008-2009	Resmethrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry					
			Wood Canyon-WC2	2008-2009	Fenpropathrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry					
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	Orange County	Wood Canyon-WC3	2008-2009	Bifenthrin	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	207.6		207.6	207.6	Only one sample, no median calculated
			Wood Canyon-WC3	2008-2009	Cyfluthrin	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	67.2		67.2	67.2	Only one sample, no median calculated
			Wood Canyon-WC3	2008-2009	Cypermethrin	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	22.0		22.0	22.0	Only one sample, no median calculated
			Wood Canyon-WC3	2008-2009	Deltamethrin	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	50.7		50.7	50.7	Only one sample, no median calculated

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather	Water/ Sediment	Discharge/ Receiving Water	# Sites	# Samples	# Detected	% Detected	Units	Sed. Unit Weight	Mean	Median	Min	Max	Notes
			Wood Canyon-WC3	2008-2009	Fenvalerate/esfenvalerate	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	20.3		20.3	20.3	Only one sample, no median calculated
			Wood Canyon-WC3	2008-2009	Lambda cyhalothrin	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	30.1		30.1	30.1	Only one sample, no median calculated
			Wood Canyon-WC3	2008-2009	Permethrin cis	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	171.0		171.0	171.0	Only one sample, no median calculated
			Wood Canyon-WC3	2008-2009	Permethrin trans	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	207.6		207.6	207.6	Only one sample, no median calculated
			Wood Canyon-WC3	2008-2009	Resmethrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry					
			Wood Canyon-WC3	2008-2009	Fenpropathrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry					
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	Sacramento	Pleasant Grove Creek-PGC010	2008-2009	Desulfinyl fipronil	Dry	Water	Discharge	1	4	0	0%	µg/L						
			Pleasant Grove Creek-PGC010	2008-2009	Desulfinyl FP amide	Dry	Water	Discharge	1	4	0	0%	µg/L						
			Pleasant Grove Creek-PGC010	2008-2009	Fipronil	Dry	Water	Discharge	1	4	0	0%	µg/L						
			Pleasant Grove Creek-PGC010	2008-2009	Fipronil amide	Dry	Water	Discharge	1	4	0	0%	µg/L						
			Pleasant Grove Creek-PGC010	2008-2009	Fipronil sulfide	Dry	Water	Discharge	1	4	0	0%	µg/L						
			Pleasant Grove Creek-PGC010	2008-2009	Fipronil sulfone	Dry	Water	Discharge	1	4	1	25%	µg/L		0.038	0.025	0.025	0.064	ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Pleasant Grove Creek-PGC010	2008-2009	Bifenthrin	Dry	Water	Discharge	1	1	1	100%	ng/L		25.7		25.7	25.7	Only one sample, no median calculated
			Pleasant Grove Creek-PGC010	2008-2009	Cyfluthrin	Dry	Water	Discharge	1	4	0	0%	ng/L						
			Pleasant Grove Creek-PGC010	2008-2009	Cypermethrin	Dry	Water	Discharge	1	4	0	0%	ng/L						
			Pleasant Grove Creek-PGC010	2008-2009	Permethrin cis	Dry	Water	Discharge	1	4	0	0%	ng/L						
			Pleasant Grove Creek-PGC010	2008-2009	Permethrin trans	Dry	Water	Discharge	1	4	0	0%	ng/L						
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	Sacramento	Pleasant Grove Creek-PGC010	2008-2009	Desulfinyl fipronil	Wet	Water	Discharge	1	4	0	0%	µg/L						
			Pleasant Grove Creek-PGC010	2008-2009	Desulfinyl FP amide	Wet	Water	Discharge	1	4	0	0%	µg/L						
			Pleasant Grove Creek-PGC010	2008-2009	Fipronil	Wet	Water	Discharge	1	4	2	50%	µg/L		0.054	0.041	0.025	0.107	ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Pleasant Grove Creek-PGC010	2008-2009	Fipronil amide	Wet	Water	Discharge	1	4	0	0%	µg/L						
			Pleasant Grove Creek-PGC010	2008-2009	Fipronil sulfide	Wet	Water	Discharge	1	4	0	0%	µg/L						
			Pleasant Grove Creek-PGC010	2008-2009	Fipronil sulfone	Wet	Water	Discharge	1	4	1	25%	µg/L		0.335	0.025	0.025	0.059	ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Pleasant Grove Creek-PGC010	2008-2009	Bifenthrin	Wet	Water	Discharge	1	4	3	75%	ng/L		107.26	98.5	20.3	203.0	
			Pleasant Grove Creek-PGC010	2008-2009	Cyfluthrin	Wet	Water	Discharge	1	4	0	0%	ng/L						
			Pleasant Grove Creek-PGC010	2008-2009	Cypermethrin	Wet	Water	Discharge	1	4	2	50%	ng/L		11.34	15.1	0.005	18.9	ND substituted as 1/2 the reporting limit (0.005-0.015 ng/L)
			Pleasant Grove Creek-PGC010	2008-2009	Permethrin cis	Wet	Water	Discharge	1	4	0	0%	ng/L						
			Pleasant Grove Creek-PGC010	2008-2009	Permethrin trans	Wet	Water	Discharge	1	4	0	0%	ng/L						
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	Sacramento	Pleasant Grove Creek-PGC020	2008-2009	Desulfinyl fipronil	Dry	Water	Discharge	1	4	0	0%	µg/L						
			Pleasant Grove Creek-PGC020	2008-2009	Desulfinyl FP amide	Dry	Water	Discharge	1	4	0	0%	µg/L						
			Pleasant Grove Creek-PGC020	2008-2009	Fipronil	Dry	Water	Discharge	1	4	1	25%	µg/L		0.071	0.025	0.025	0.164	ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Pleasant Grove Creek-PGC020	2008-2009	Fipronil amide	Dry	Water	Discharge	1	4	0	0%	µg/L						
			Pleasant Grove Creek-PGC020	2008-2009	Fipronil sulfide	Dry	Water	Discharge	1	4	0	0%	µg/L						
			Pleasant Grove Creek-PGC020	2008-2009	Fipronil sulfone	Dry	Water	Discharge	1	4	0	0%	µg/L						
			Pleasant Grove Creek-PGC020	2008-2009	Bifenthrin	Dry	Water	Discharge	1	4	1	25%	ng/L				8.58	8.58	Other three sample values missing, only one valid value reported, no mean or median
			Pleasant Grove Creek-PGC020	2008-2009	Cyfluthrin	Dry	Water	Discharge	1	4	0	0%	ng/L						
			Pleasant Grove Creek-PGC020	2008-2009	Cypermethrin	Dry	Water	Discharge	1	4	0	0%	ng/L						
			Pleasant Grove Creek-PGC020	2008-2009	Permethrin cis	Dry	Water	Discharge	1	4	0	0%	ng/L						
			Pleasant Grove Creek-PGC020	2008-2009	Permethrin trans	Dry	Water	Discharge	1	4	0	0%	ng/L						
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	Sacramento	Pleasant Grove Creek-PGC020	2008-2009	Desulfinyl fipronil	Wet	Water	Discharge	1	4	0	0%	µg/L						
			Pleasant Grove Creek-PGC020	2008-2009	Desulfinyl FP amide	Wet	Water	Discharge	1	4	0	0%	µg/L						
			Pleasant Grove Creek-PGC020	2008-2009	Fipronil	Wet	Water	Discharge	1	4	2	50%	µg/L		0.079	0.0715	0.025	0.146	ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Pleasant Grove Creek-PGC020	2008-2009	Fipronil amide	Wet	Water	Discharge	1	4	0	0%	µg/L						
			Pleasant Grove Creek-PGC020	2008-2009	Fipronil sulfide	Wet	Water	Discharge	1	4	0	0%	µg/L						

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather	Water/ Sediment	Discharge/ Receiving Water	# Sites	# Samples	# Detected	% Detected	Units	Sed. Unit Weight	Mean	Median	Min	Max	Notes
			Pleasant Grove Creek-PGC020	2008-2009	Fipronil sulfone	Wet	Water	Discharge	1	4	2	50%	µg/L		0.043	0.0415	0.025	0.064	ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Pleasant Grove Creek-PGC020	2008-2009	Bifenthrin	Wet	Water	Discharge	1	4	3	75%	ng/L		27.40	19.2	14.5	48.5	One sample value missing
			Pleasant Grove Creek-PGC020	2008-2009	Cyfluthrin	Wet	Water	Discharge	1	4	0	0%	ng/L						
			Pleasant Grove Creek-PGC020	2008-2009	Cypermethrin	Wet	Water	Discharge	1	4	0	0%	ng/L						
			Pleasant Grove Creek-PGC020	2008-2009	Permethrin cis	Wet	Water	Discharge	1	4	0	0%	ng/L						
			Pleasant Grove Creek-PGC020	2008-2009	Permethrin trans	Wet	Water	Discharge	1	4	0	0%	ng/L						
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	Sacramento	Pleasant Grove Creek-PGC030	2008-2009	Desulfinyl fipronil	Dry	Water	Discharge	1	4	1	25%	µg/L		0.035	0.025	0.025	0.054	ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Pleasant Grove Creek-PGC030	2008-2009	Desulfinyl FP amide	Dry	Water	Discharge	1	4	0	0%	µg/L						
			Pleasant Grove Creek-PGC030	2008-2009	Fipronil	Dry	Water	Discharge	1	4	2	50%	µg/L		0.052	0.064	0.025	0.066	ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Pleasant Grove Creek-PGC030	2008-2009	Fipronil amide	Dry	Water	Discharge	1	4	0	0%	µg/L						
			Pleasant Grove Creek-PGC030	2008-2009	Fipronil sulfide	Dry	Water	Discharge	1	4	0	0%	µg/L						
			Pleasant Grove Creek-PGC030	2008-2009	Fipronil sulfone	Dry	Water	Discharge	1	4	1	25%	µg/L		0.056	0.025	0.025	0.118	ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Pleasant Grove Creek-PGC030	2008-2009	Bifenthrin	Dry	Water	Discharge	1	4	1	25%	ng/L		20.8		20.8	20.8	Only one sample, no median calculated
			Pleasant Grove Creek-PGC030	2008-2009	Cyfluthrin	Dry	Water	Discharge	1	4	1	25%	ng/L		18.9		18.9	18.9	Only one sample, no median calculated
			Pleasant Grove Creek-PGC030	2008-2009	Cypermethrin	Dry	Water	Discharge	1	4	0	0%	ng/L						
			Pleasant Grove Creek-PGC030	2008-2009	Permethrin cis	Dry	Water	Discharge	1	4	1	25%	ng/L		28.5		28.5	28.5	Only one sample, no median calculated
			Pleasant Grove Creek-PGC030	2008-2009	Permethrin trans	Dry	Water	Discharge	1	4	1	25%	ng/L		25.4		25.4	25.4	Only one sample, no median calculated
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	Sacramento	Pleasant Grove Creek-PGC030	2008-2009	Desulfinyl fipronil	Wet	Water	Discharge	1	4	0	0%	µg/L						
			Pleasant Grove Creek-PGC030	2008-2009	Desulfinyl FP amide	Wet	Water	Discharge	1	4	0	0%	µg/L						
			Pleasant Grove Creek-PGC030	2008-2009	Fipronil	Wet	Water	Discharge	1	4	2	50%	µg/L		0.0453	0.0445	0.025	0.067	ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Pleasant Grove Creek-PGC030	2008-2009	Fipronil amide	Wet	Water	Discharge	1	4	0	0%	µg/L						
			Pleasant Grove Creek-PGC030	2008-2009	Fipronil sulfide	Wet	Water	Discharge	1	4	0	0%	µg/L						
			Pleasant Grove Creek-PGC030	2008-2009	Fipronil sulfone	Wet	Water	Discharge	1	4	0	0%	µg/L						
			Pleasant Grove Creek-PGC030	2008-2009	Bifenthrin	Wet	Water	Discharge	1	4	3	75%	ng/L		36.80	43.60	20.10	46.7	One sample value missing
			Pleasant Grove Creek-PGC030	2008-2009	Cyfluthrin	Wet	Water	Discharge	1	4	0	0%	ng/L						
			Pleasant Grove Creek-PGC030	2008-2009	Cypermethrin	Wet	Water	Discharge	1	4	0	0%	ng/L						
			Pleasant Grove Creek-PGC030	2008-2009	Permethrin cis	Wet	Water	Discharge	1	4	0	0%	ng/L						
			Pleasant Grove Creek-PGC030	2008-2009	Permethrin trans	Wet	Water	Discharge	1	4	0	0%	ng/L						
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	Sacramento	Pleasant Grove Creek-PGC040	2008-2009	Desulfinyl fipronil	Dry	Water	Receiving	1	4	0	0%	µg/L						
			Pleasant Grove Creek-PGC040	2008-2009	Desulfinyl FP amide	Dry	Water	Receiving	1	4	0	0%	µg/L						
			Pleasant Grove Creek-PGC040	2008-2009	Fipronil	Dry	Water	Receiving	1	4	1	25%	µg/L		0.0370	0.025	0.025	0.061	One sample value missing and ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Pleasant Grove Creek-PGC040	2008-2009	Fipronil amide	Dry	Water	Receiving	1	4	0	0%	µg/L						
			Pleasant Grove Creek-PGC040	2008-2009	Fipronil sulfide	Dry	Water	Receiving	1	4	0	0%	µg/L						
			Pleasant Grove Creek-PGC040	2008-2009	Fipronil sulfone	Dry	Water	Receiving	1	4	1	25%	µg/L		0.0426	0.025	0.025	0.078	One sample value missing and ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Pleasant Grove Creek-PGC040	2008-2009	Bifenthrin	Dry	Water	Receiving	1	4	0	0%	ng/L						
			Pleasant Grove Creek-PGC040	2008-2009	Cyfluthrin	Dry	Water	Receiving	1	4	0	0%	ng/L						
			Pleasant Grove Creek-PGC040	2008-2009	Cypermethrin	Dry	Water	Receiving	1	4	0	0%	ng/L						
			Pleasant Grove Creek-PGC040	2008-2009	Permethrin cis	Dry	Water	Receiving	1	4	0	0%	ng/L						
			Pleasant Grove Creek-PGC040	2008-2009	Permethrin trans	Dry	Water	Receiving	1	4	0	0%	ng/L						
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	Sacramento	Pleasant Grove Creek-PGC040	2008-2009	Desulfinyl fipronil	Wet	Water	Receiving	1	4	0	0%	µg/L						
			Pleasant Grove Creek-PGC040	2008-2009	Desulfinyl FP amide	Wet	Water	Receiving	1	4	0	0%	µg/L						
			Pleasant Grove Creek-PGC040	2008-2009	Fipronil	Wet	Water	Receiving	1	4	0	0%	µg/L						

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather	Water/ Sediment	Discharge/ Receiving Water	# Sites	# Samples	# Detected	% Detected	Units	Sed. Unit Weight	Mean	Median	Min	Max	Notes
			Pleasant Grove Creek-PGC040	2008-2009	Fipronil amide	Wet	Water	Receiving	1	4	0	0%	µg/L						
			Pleasant Grove Creek-PGC040	2008-2009	Fipronil sulfide	Wet	Water	Receiving	1	4	0	0%	µg/L						
			Pleasant Grove Creek-PGC040	2008-2009	Fipronil sulfone	Wet	Water	Receiving	1	4	0	0%	µg/L						
			Pleasant Grove Creek-PGC040	2008-2009	Bifenthrin	Wet	Water	Receiving	1	4	3	75%	ng/L		11.20	3.87	7.74	17.0	One sample value missing
			Pleasant Grove Creek-PGC040	2008-2009	Cyfluthrin	Wet	Water	Receiving	1	4	0	0%	ng/L						
			Pleasant Grove Creek-PGC040	2008-2009	Cypermethrin	Wet	Water	Receiving	1	4	0	0%	ng/L						
			Pleasant Grove Creek-PGC040	2008-2009	Permethrin cis	Wet	Water	Receiving	1	4	0	0%	ng/L						
			Pleasant Grove Creek-PGC040	2008-2009	Permethrin trans	Wet	Water	Receiving	1	4	0	0%	ng/L						
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	Sacramento	Grayson Creek-GRY010	2008-2009	Desulfinyl fipronil	Wet	Water	Discharge	1	4	0	0%	µg/L						
			Grayson Creek-GRY010	2008-2009	Desulfinyl FP amide	Wet	Water	Discharge	1	4	0	0%	µg/L						
			Grayson Creek-GRY010	2008-2009	Fipronil	Wet	Water	Discharge	1	4	2	50%	µg/L		0.0445	0.0430	0.025	0.067	ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Grayson Creek-GRY010	2008-2009	Fipronil amide	Wet	Water	Discharge	1	4	0	0%	µg/L						
			Grayson Creek-GRY010	2008-2009	Fipronil sulfide	Wet	Water	Discharge	1	4	0	0%	µg/L						
			Grayson Creek-GRY010	2008-2009	Fipronil sulfone	Wet	Water	Discharge	1	4	0	0%	µg/L						
			Grayson Creek-GRY010	2008-2009	Bifenthrin	Wet	Water	Discharge	1	4	1	25%	ng/L		0.024	0.005	0.005	0.079	ND substituted as 1/2 the RL (0.005-0.0015 ng/L)
			Grayson Creek-GRY010	2008-2009	Cyfluthrin	Wet	Water	Discharge	1	4	2	50%	ng/L		8.075	8.02	0.005	16.2	One sample value missing, and ND substituted as 1/2 the RL (0.005-0.0015 ng/L)
			Grayson Creek-GRY010	2008-2009	Cypermethrin	Wet	Water	Discharge	1	4	0	0%	ng/L						
			Grayson Creek-GRY010	2008-2009	Permethrin cis	Wet	Water	Discharge	1	4	0	0%	ng/L						
			Grayson Creek-GRY010	2008-2009	Permethrin trans	Wet	Water	Discharge	1	4	0	0%	ng/L						
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	Sacramento	Grayson Creek-GRY020	2008-2009	Desulfinyl fipronil	Wet	Water	Discharge	1	4	0	0%	µg/L						
			Grayson Creek-GRY020	2008-2009	Desulfinyl FP amide	Wet	Water	Discharge	1	4	0	0%	µg/L						
			Grayson Creek-GRY020	2008-2009	Fipronil	Wet	Water	Discharge	1	4	1	25%	µg/L		0.1333	0.025	0.025	0.458	ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Grayson Creek-GRY020	2008-2009	Fipronil amide	Wet	Water	Discharge	1	4	0	0%	µg/L						
			Grayson Creek-GRY020	2008-2009	Fipronil sulfide	Wet	Water	Discharge	1	4	0	0%	µg/L						
			Grayson Creek-GRY020	2008-2009	Fipronil sulfone	Wet	Water	Discharge	1	4	1	25%	µg/L		0.040	0.025	0.025	0.085	ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Grayson Creek-GRY020	2008-2009	Bifenthrin	Wet	Water	Discharge	1	4	1	25%	ng/L		0.019	0.005	0.005	0.06	One sample value missing, and ND substituted as 1/2 the RL (0.005-0.0015 ng/L)
			Grayson Creek-GRY020	2008-2009	Cyfluthrin	Wet	Water	Discharge	1	4	3	75%	ng/L		16.13	9.2	6.6	32.6	
			Grayson Creek-GRY020	2008-2009	Cypermethrin	Wet	Water	Discharge	1	4	0	0%	ng/L						
			Grayson Creek-GRY020	2008-2009	Permethrin cis	Wet	Water	Discharge	1	4	0	0%	ng/L						
			Grayson Creek-GRY020	2008-2009	Permethrin trans	Wet	Water	Discharge	1	4	1	25%	ng/L		5.2	0.005	0.005	15.5	One sample value missing, and ND substituted as 1/2 the RL (0.005-0.0015 ng/L)
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	Sacramento	Grayson Creek-GRY030	2008-2009	Desulfinyl fipronil	Wet	Water	Discharge	1	4	0	0%	µg/L						
			Grayson Creek-GRY030	2008-2009	Desulfinyl FP amide	Wet	Water	Discharge	1	4	0	0%	µg/L						
			Grayson Creek-GRY030	2008-2009	Fipronil	Wet	Water	Discharge	1	4	0	0%	µg/L						
			Grayson Creek-GRY030	2008-2009	Fipronil amide	Wet	Water	Discharge	1	4	0	0%	µg/L						
			Grayson Creek-GRY030	2008-2009	Fipronil sulfide	Wet	Water	Discharge	1	4	0	0%	µg/L						
			Grayson Creek-GRY030	2008-2009	Fipronil sulfone	Wet	Water	Discharge	1	4	0	0%	µg/L						
			Grayson Creek-GRY030	2008-2009	Bifenthrin	Wet	Water	Discharge	1	4	1	25%	ng/L		0.018	0.005	0.005	0.055	ND substituted as 1/2 the RL (0.005-0.0015 ng/L)
			Grayson Creek-GRY030	2008-2009	Cyfluthrin	Wet	Water	Discharge	1	4	3	75%	ng/L		17.26	20	8.4	23.4	One sample value missing
			Grayson Creek-GRY030	2008-2009	Cypermethrin	Wet	Water	Discharge	1	4	0	0%	ng/L						
			Grayson Creek-GRY030	2008-2009	Permethrin cis	Wet	Water	Discharge	1	4	0	0%	ng/L						
			Grayson Creek-GRY030	2008-2009	Permethrin trans	Wet	Water	Discharge	1	4	0	0%	ng/L						
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	Sacramento	Martin/Koopman Canyon Creek-MCC010	2008-2009	Desulfinyl fipronil	Wet	Water	Discharge	1	3	0	0%	µg/L						
			Martin/Koopman Canyon Creek-MCC010	2008-2009	Desulfinyl FP amide	Wet	Water	Discharge	1	3	0	0%	µg/L						
			Martin/Koopman Canyon Creek-MCC010	2008-2009	Fipronil	Wet	Water	Discharge	1	3	1	33%	µg/L		0.033	0.025	0.025	0.05	ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Martin/Koopman Canyon Creek-MCC010	2008-2009	Fipronil amide	Wet	Water	Discharge	1	3	0	0%	µg/L						
			Martin/Koopman Canyon Creek-MCC010	2008-2009	Fipronil sulfide	Wet	Water	Discharge	1	3	0	0%	µg/L						
			Martin/Koopman Canyon Creek-MCC010	2008-2009	Fipronil sulfone	Wet	Water	Discharge	1	3	0	0%	µg/L						
			Martin/Koopman Canyon Creek-MCC010	2008-2009	Bifenthrin	Wet	Water	Discharge	1	3	1	33%	ng/L		0.028	0.005	0.005	0.075	ND substituted as 1/2 the RL (0.005-0.0015 ng/L)
			Martin/Koopman Canyon Creek-MCC010	2008-2009	Cyfluthrin	Wet	Water	Discharge	1	3	3	100%	ng/L		12.795	12.795	5.89	19.7	One sample value missing
			Martin/Koopman Canyon Creek-MCC010	2008-2009	Cypermethrin	Wet	Water	Discharge	1	3	0	0%	ng/L						
			Martin/Koopman Canyon Creek-MCC010	2008-2009	Permethrin cis	Wet	Water	Discharge	1	3	0	0%	ng/L						
			Martin/Koopman Canyon Creek-MCC010	2008-2009	Permethrin trans	Wet	Water	Discharge	1	3	0	0%	ng/L						
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	Sacramento	Martin/Koopman Canyon Creek-MCC020	2008-2009	Desulfinyl fipronil	Wet	Water	Discharge	1	3	0	0%	µg/L						
			Martin/Koopman Canyon Creek-MCC020	2008-2009	Desulfinyl FP amide	Wet	Water	Discharge	1	3	0	0%	µg/L						

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather	Water/ Sediment	Discharge/ Receiving Water	# Sites	# Samples	# Detected	% Detected	Units	Sed. Unit Weight	Mean	Median	Min	Max	Notes
			Martin/Koopman Canyon Creek-MCC020	2008-2009	Fipronil	Wet	Water	Discharge	1	3	0	0%	µg/L						
			Martin/Koopman Canyon Creek-MCC020	2008-2009	Fipronil amide	Wet	Water	Discharge	1	3	0	0%	µg/L						
			Martin/Koopman Canyon Creek-MCC020	2008-2009	Fipronil sulfide	Wet	Water	Discharge	1	3	0	0%	µg/L						
			Martin/Koopman Canyon Creek-MCC020	2008-2009	Fipronil sulfone	Wet	Water	Discharge	1	3	0	0%	µg/L						
			Martin/Koopman Canyon Creek-MCC020	2008-2009	Bifenthrin	Wet	Water	Discharge	1	3	0	0%	ng/L						
			Martin/Koopman Canyon Creek-MCC020	2008-2009	Cyfluthrin	Wet	Water	Discharge	1	3	2	67%	ng/L		13.80	13.80	13.7	13.9	One sample value missing
			Martin/Koopman Canyon Creek-MCC020	2008-2009	Cypermethrin	Wet	Water	Discharge	1	3	0	0%	ng/L						
			Martin/Koopman Canyon Creek-MCC020	2008-2009	Permethrin cis	Wet	Water	Discharge	1	3	0	0%	ng/L						
			Martin/Koopman Canyon Creek-MCC020	2008-2009	Permethrin trans	Wet	Water	Discharge	1	3	0	0%	ng/L						
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	Sacramento	Martin/Koopman Canyon Creek-MCC030	2008-2009	Desulfinyl fipronil	Wet	Water	Discharge	1	3	0	0%	µg/L						
			Martin/Koopman Canyon Creek-MCC030	2008-2009	Desulfinyl FP amide	Wet	Water	Discharge	1	3	0	0%	µg/L						
			Martin/Koopman Canyon Creek-MCC030	2008-2009	Fipronil	Wet	Water	Discharge	1	3	1	33%	µg/L		0.043	0.025	0.025	0.078	ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Martin/Koopman Canyon Creek-MCC030	2008-2009	Fipronil amide	Wet	Water	Discharge	1	3	0	0%	µg/L						
			Martin/Koopman Canyon Creek-MCC030	2008-2009	Fipronil sulfide	Wet	Water	Discharge	1	3	0	0%	µg/L						
			Martin/Koopman Canyon Creek-MCC030	2008-2009	Fipronil sulfone	Wet	Water	Discharge	1	3	0	0%	µg/L						
			Martin/Koopman Canyon Creek-MCC030	2008-2009	Bifenthrin	Wet	Water	Discharge	1	3	0	0%	ng/L						
			Martin/Koopman Canyon Creek-MCC030	2008-2009	Cyfluthrin	Wet	Water	Discharge	1	3	2	67%	ng/L		16.34	16.34	5.47	27.2	One sample value missing
			Martin/Koopman Canyon Creek-MCC030	2008-2009	Cypermethrin	Wet	Water	Discharge	1	3	0	0%	ng/L						
			Martin/Koopman Canyon Creek-MCC030	2008-2009	Permethrin cis	Wet	Water	Discharge	1	3	1	33%	ng/L		8.05	8.05	0.005	16.1	One sample value missing ND substituted as 1/2 the RL (0.005-0.0015 ng/L)
			Martin/Koopman Canyon Creek-MCC030	2008-2009	Permethrin trans	Wet	Water	Discharge	1	3	1	33%	ng/L		11.95	11.95	0.005	23.9	One sample value missing and ND substituted as 1/2 the RL (0.005-0.0015 ng/L)
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	Sacramento	Martin/Koopman Canyon Creek-MCC040	2008-2009	Desulfinyl fipronil	Wet	Water	Receiving	1	3	0	0%	µg/L						
			Martin/Koopman Canyon Creek-MCC040	2008-2009	Desulfinyl FP amide	Wet	Water	Receiving	1	3	0	0%	µg/L						
			Martin/Koopman Canyon Creek-MCC040	2008-2009	Fipronil	Wet	Water	Receiving	1	3	0	0%	µg/L						
			Martin/Koopman Canyon Creek-MCC040	2008-2009	Fipronil amide	Wet	Water	Receiving	1	3	0	0%	µg/L						
			Martin/Koopman Canyon Creek-MCC040	2008-2009	Fipronil sulfide	Wet	Water	Receiving	1	3	0	0%	µg/L						
			Martin/Koopman Canyon Creek-MCC040	2008-2009	Fipronil sulfone	Wet	Water	Receiving	1	3	0	0%	µg/L						
			Martin/Koopman Canyon Creek-MCC040	2008-2009	Bifenthrin	Wet	Water	Receiving	1	3	0	0%	ng/L						
			Martin/Koopman Canyon Creek-MCC040	2008-2009	Cyfluthrin	Wet	Water	Receiving	1	3	2	67%	ng/L		16.23	16.23	5.25	27.2	One sample value missing
			Martin/Koopman Canyon Creek-MCC040	2008-2009	Cypermethrin	Wet	Water	Receiving	1	3	0	0%	ng/L						
			Martin/Koopman Canyon Creek-MCC040	2008-2009	Permethrin cis	Wet	Water	Receiving	1	3	1	33%	ng/L		8.05	8.05	0.005	16.1	One sample value missing ND substituted as 1/2 the RL (0.005-0.0015 ng/L)
			Martin/Koopman Canyon Creek-MCC040	2008-2009	Permethrin trans	Wet	Water	Receiving	1	3	1	33%	ng/L		11.95	11.95	0.005	23.9	One sample value missing and ND substituted as 1/2 the RL (0.005-0.0015 ng/L)
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	Orange County	Wood Canyon-AV01	2008-2009	Desulfinyl fipronil	Dry	Water	Receiving	1	4	4	100%	µg/L		0.057	0.0565	0.053	0.061	
			Wood Canyon-AV01	2008-2009	Desulfinyl FP amide	Dry	Water	Receiving	1	4	0	0%	µg/L						
			Wood Canyon-AV01	2008-2009	Fipronil	Dry	Water	Receiving	1	4	4	100%	µg/L		0.117	0.086	0.063	0.232	
			Wood Canyon-AV01	2008-2009	Fipronil amide	Dry	Water	Receiving	1	4	0	0%	µg/L						
			Wood Canyon-AV01	2008-2009	Fipronil sulfide	Dry	Water	Receiving	1	4	0	0%	µg/L						
			Wood Canyon-AV01	2008-2009	Fipronil sulfone	Dry	Water	Receiving	1	4	3	75%	µg/L		0.070	0.073	0.025	0.107	ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Wood Canyon-AV01	2008-2009	Bifenthrin	Dry	Water	Receiving	1	4	0	0%	ng/L						
			Wood Canyon-AV01	2008-2009	Fenvalerate/esfenvalerate	Dry	Water	Receiving	1	4	0	0%	ng/L						
			Wood Canyon-AV01	2008-2009	Lambda-cyhalothrin	Dry	Water	Receiving	1	4	0	0%	ng/L						
			Wood Canyon-AV01	2008-2009	Permethrin cis	Dry	Water	Receiving	1	4	0	0%	ng/L						
			Wood Canyon-AV01	2008-2009	Permethrin trans	Dry	Water	Receiving	1	4	0	0%	ng/L						
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	Orange County	Wood Canyon-AV01	2008-2009	Desulfinyl fipronil	Wet	Water	Receiving	1	1	1	100%	µg/L		0.085		0.085	0.085	Only one sample, no median calculated
			Wood Canyon-AV01	2008-2009	Desulfinyl FP amide	Wet	Water	Receiving	1	1	1	100%	µg/L		0.058		0.058	0.058	Only one sample, no median calculated
			Wood Canyon-AV01	2008-2009	Fipronil	Wet	Water	Receiving	1	1	1	100%	µg/L		0.164		0.164	0.164	Only one sample, no median calculated
			Wood Canyon-AV01	2008-2009	Fipronil amide	Wet	Water	Receiving	1	1	1	100%	µg/L		0.088		0.088	0.088	Only one sample, no median calculated
			Wood Canyon-AV01	2008-2009	Fipronil sulfide	Wet	Water	Receiving	1	1	0	0%	µg/L						
			Wood Canyon-AV01	2008-2009	Fipronil sulfone	Wet	Water	Receiving	1	1	1	100%	µg/L		0.141		0.141	0.141	Only one sample, no median calculated

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather	Water/ Sediment	Discharge/ Receiving Water	# Sites	# Samples	# Detected	% Detected	Units	Sed. Unit Weight	Mean	Median	Min	Max	Notes
			Wood Canyon-AV01	2008-2009	Bifenthrin	Wet	Water	Receiving	1	1	0	0%	ng/L						Sample value missing
			Wood Canyon-AV01	2008-2009	Fenvalerate/esfenvalerate	Wet	Water	Receiving	1	1	0	0%	ng/L						Sample value missing
			Wood Canyon-AV01	2008-2009	Lambda-cyhalothrin	Wet	Water	Receiving	1	1	0	0%	ng/L						Sample value missing
			Wood Canyon-AV01	2008-2009	Permethrin cis	Wet	Water	Receiving	1	1	0	0%	ng/L						Sample value missing
			Wood Canyon-AV01	2008-2009	Permethrin trans	Wet	Water	Receiving	1	1	0	0%	ng/L						Sample value missing
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	Orange County	Salt Creek-SC1	2008-2009	Desulfinyl fipronil	Dry	Water	Discharge	1	5	1	20%	µg/L		0.034	0.025	0.025	0.069	ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Salt Creek-SC1	2008-2009	Desulfinyl FP amide	Dry	Water	Discharge	1	5	0	0%	µg/L						
			Salt Creek-SC1	2008-2009	Fipronil	Dry	Water	Discharge	1	5	2	40%	µg/L		0.047	0.025	0.025	0.085	ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Salt Creek-SC1	2008-2009	Fipronil amide	Dry	Water	Discharge	1	5	1	20%	µg/L		0.030	0.025	0.025	0.051	ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Salt Creek-SC1	2008-2009	Fipronil sulfide	Dry	Water	Discharge	1	5	0	0%	µg/L						
			Salt Creek-SC1	2008-2009	Fipronil sulfone	Dry	Water	Discharge	1	5	3	60%	µg/L		0.047	0.051	0.025	0.07	ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Salt Creek-SC1	2008-2009	Bifenthrin	Dry	Water	Discharge	1	5	0	0%	ng/L						All but one sample value missing, other non detect.
			Salt Creek-SC1	2008-2009	Fenvalerate/esfenvalerate	Dry	Water	Discharge	1	5	0	0%	ng/L						All but one sample value missing, other non detect.
			Salt Creek-SC1	2008-2009	Lambda-cyhalothrin	Dry	Water	Discharge	1	5	0	0%	ng/L						All but one sample value missing, other non detect.
			Salt Creek-SC1	2008-2009	Permethrin cis	Dry	Water	Discharge	1	5	0	0%	ng/L						All but one sample value missing, other non detect.
			Salt Creek-SC1	2008-2009	Permethrin trans	Dry	Water	Discharge	1	5	0	0%	ng/L						All but one sample value missing, other non detect.
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	Orange County	Salt Creek-SC1	2008-2009	Desulfinyl fipronil	Wet	Water	Discharge	1	1	0	0%	µg/L						
			Salt Creek-SC1	2008-2009	Desulfinyl FP amide	Wet	Water	Discharge	1	1	0	0%	µg/L						
			Salt Creek-SC1	2008-2009	Fipronil	Wet	Water	Discharge	1	1	1	100%	µg/L		0.103		0.103	0.103	Only one sample, no median calculated
			Salt Creek-SC1	2008-2009	Fipronil amide	Wet	Water	Discharge	1	1	0	0%	µg/L						
			Salt Creek-SC1	2008-2009	Fipronil sulfide	Wet	Water	Discharge	1	1	0	0%	µg/L						
			Salt Creek-SC1	2008-2009	Fipronil sulfone	Wet	Water	Discharge	1	1	1	100%	µg/L		0.076		0.076	0.076	Only one sample, no median calculated
			Salt Creek-SC1	2008-2009	Bifenthrin	Wet	Water	Discharge	1	1	0	0%	ng/L						Sample value missing
			Salt Creek-SC1	2008-2009	Fenvalerate/esfenvalerate	Wet	Water	Discharge	1	1	0	0%	ng/L						Sample value missing
			Salt Creek-SC1	2008-2009	Lambda-cyhalothrin	Wet	Water	Discharge	1	1	0	0%	ng/L						Sample value missing
			Salt Creek-SC1	2008-2009	Permethrin cis	Wet	Water	Discharge	1	1	0	0%	ng/L						Sample value missing
			Salt Creek-SC1	2008-2009	Permethrin trans	Wet	Water	Discharge	1	1	0	0%	ng/L						Sample value missing
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	Orange County	Salt Creek-SC3	2008-2009	Desulfinyl fipronil	Wet	Water	Discharge	1	5	4	80%	µg/L		0.118	0.129	0.025	0.167	ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Salt Creek-SC3	2008-2009	Desulfinyl FP amide	Wet	Water	Discharge	1	5	1	20%	µg/L		0.033	0.025	0.025	0.063	ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Salt Creek-SC3	2008-2009	Fipronil	Wet	Water	Discharge	1	5	4	80%	µg/L		0.242	0.175	0.025	0.518	ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Salt Creek-SC3	2008-2009	Fipronil amide	Wet	Water	Discharge	1	5	0	0%	µg/L						
			Salt Creek-SC3	2008-2009	Fipronil sulfide	Wet	Water	Discharge	1	5	0	0%	µg/L						
			Salt Creek-SC3	2008-2009	Fipronil sulfone	Wet	Water	Discharge	1	5	5	100%	µg/L		0.128	0.11	0.068	0.244	
			Salt Creek-SC3	2008-2009	Bifenthrin	Wet	Water	Discharge	1	5	2	40%	ng/L		25.05	25.05	23.7	26.4	Three sample values missing
			Salt Creek-SC3	2008-2009	Fenvalerate/esfenvalerate	Wet	Water	Discharge	1	5	1	20%	ng/L		13.90	13.90	0.005	27.8	Three sample values missing, ND substituted as 1/2 the reporting limit (0.005-0.015 n
			Salt Creek-SC3	2008-2009	Lambda-cyhalothrin	Wet	Water	Discharge	1	5	1	20%	ng/L		8.953	8.953	0.005	17.9	Three sample values missing, ND substituted as 1/2 the reporting limit (0.005-0.015 n
			Salt Creek-SC3	2008-2009	Permethrin cis	Wet	Water	Discharge	1	5	2	40%	ng/L		23.80	23.80	21.7	25.9	Three sample values missing
			Salt Creek-SC3	2008-2009	Permethrin trans	Wet	Water	Discharge	1	5	2	40%	ng/L		31.80	31.80	25.9	37.7	Three sample values missing
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	Orange County	Salt Creek-SC3	2008-2009	Desulfinyl fipronil	Wet	Water	Discharge	1	1	1	100%	µg/L		0.05		0.05	0.05	Only one sample, no median calculated
			Salt Creek-SC3	2008-2009	Desulfinyl FP amide	Wet	Water	Discharge	1	1	0	0%	µg/L						
			Salt Creek-SC3	2008-2009	Fipronil	Wet	Water	Discharge	1	1	1	100%	µg/L		0.148		0.148	0.148	Only one sample, no median calculated
			Salt Creek-SC3	2008-2009	Fipronil amide	Wet	Water	Discharge	1	1	0	0%	µg/L						
			Salt Creek-SC3	2008-2009	Fipronil sulfide	Wet	Water	Discharge	1	1	0	0%	µg/L						
			Salt Creek-SC3	2008-2009	Fipronil sulfone	Wet	Water	Discharge	1	1	1	100%	µg/L		0.061		0.061	0.061	Only one sample, no median calculated
			Salt Creek-SC3	2008-2009	Bifenthrin	Wet	Water	Discharge	1	1	0	0%	ng/L						Sample value missing
			Salt Creek-SC3	2008-2009	Fenvalerate/esfenvalerate	Wet	Water	Discharge	1	1	0	0%	ng/L						Sample value missing
			Salt Creek-SC3	2008-2009	Lambda-cyhalothrin	Wet	Water	Discharge	1	1	0	0%	ng/L						Sample value missing
			Salt Creek-SC3	2008-2009	Permethrin cis	Wet	Water	Discharge	1	1	0	0%	ng/L						Sample value missing
			Salt Creek-SC3	2008-2009	Permethrin trans	Wet	Water	Discharge	1	1	0	0%	ng/L						Sample value missing
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	Orange County	Salt Creek-SC5	2008-2009	Desulfinyl fipronil	Dry	Water	Receiving	1	5	1	20%	µg/L		0.033	0.025	0.025	0.064	ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Salt Creek-SC5	2008-2009	Desulfinyl FP amide	Dry	Water	Receiving	1	5	0	0%	µg/L						
			Salt Creek-SC5	2008-2009	Fipronil	Dry	Water	Receiving	1	5	3	60%	µg/L		0.059	0.052	0.025	0.132	ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Salt Creek-SC5	2008-2009	Fipronil amide	Dry	Water	Receiving	1	5	0	0%	µg/L						
			Salt Creek-SC5	2008-2009	Fipronil sulfide	Dry	Water	Receiving	1	5	0	0%	µg/L						
			Salt Creek-SC5	2008-2009	Fipronil sulfone	Dry	Water	Receiving	1	5	3	60%	µg/L		0.048	0.056	0.025	0.072	ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Salt Creek-SC5	2008-2009	Bifenthrin	Dry	Water	Receiving	1	5	0	0%	ng/L						Three sample values missing, others non detect
			Salt Creek-SC5	2008-2009	Fenvalerate/esfenvalerate	Dry	Water	Receiving	1	5	0	0%	ng/L						Three sample values missing, others non detect
			Salt Creek-SC5	2008-2009	Lambda-cyhalothrin	Dry	Water	Receiving	1	5	0	0%	ng/L						Three sample values missing, others non detect
			Salt Creek-SC5	2008-2009	Permethrin cis	Dry	Water	Receiving	1	5	0	0%	ng/L						Three sample values missing, others non detect
			Salt Creek-SC5	2008-2009	Permethrin trans	Dry	Water	Receiving	1	5	0	0%	ng/L						Three sample values missing, others non detect
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	Orange County	Salt Creek-SC5	2008-2009	Desulfinyl fipronil	Wet	Water	Receiving	1	1	1	100%	µg/L		0.59		0.59	0.59	Only one sample, no median calculated
			Salt Creek-SC5	2008-2009	Desulfinyl FP amide	Wet	Water	Receiving	1	1	0	0%	µg/L						
			Salt Creek-SC5	2008-2009	Fipronil	Wet	Water	Receiving	1	1	1	100%	µg/L		0.12		0.12	0.12	Only one sample, no median calculated
			Salt Creek-SC5	2008-2009	Fipronil amide	Wet	Water	Receiving	1	1	0	0%	µg/L						
			Salt Creek-SC5	2008-2009	Fipronil sulfide	Wet	Water	Receiving	1	1	0	0%	µg/L						
			Salt Creek-SC5	2008-2009	Fipronil sulfone	Wet	Water	Receiving	1	1	1	100%	µg/L		0.077		0.077	0.077	Only one sample, no median calculated

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather	Water/ Sediment	Discharge/ Receiving Water	# Sites	# Samples	# Detected	% Detected	Units	Sed. Unit Weight	Mean	Median	Min	Max	Notes
			Salt Creek-SC5	2008-2009	Bifenthrin	Wet	Water	Receiving	1	1	0	0%	ng/L						Sample value missing
			Salt Creek-SC5	2008-2009	Fenvalerate/esfenvalerate	Wet	Water	Receiving	1	1	0	0%	ng/L						Sample value missing
			Salt Creek-SC5	2008-2009	Lambda-cyhalothrin	Wet	Water	Receiving	1	1	0	0%	ng/L						Sample value missing
			Salt Creek-SC5	2008-2009	Permethrin cis	Wet	Water	Receiving	1	1	0	0%	ng/L						Sample value missing
			Salt Creek-SC5	2008-2009	Permethrin trans	Wet	Water	Receiving	1	1	0	0%	ng/L						Sample value missing
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	Orange County	Wood Canyon-WC1	2008-2009	Desulfinyl fipronil	Dry	Water	Receiving	1	4	1	25%	µg/L		0.05	0.025	0.025	0.111	ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Wood Canyon-WC1	2008-2009	Desulfinyl FP amide	Dry	Water	Receiving	1	4	0	0%	µg/L						
			Wood Canyon-WC1	2008-2009	Fipronil	Dry	Water	Receiving	1	4	1	25%	µg/L		0.064	0.025	0.025	0.179	ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Wood Canyon-WC1	2008-2009	Fipronil amide	Dry	Water	Receiving	1	4	0	0%	µg/L						
			Wood Canyon-WC1	2008-2009	Fipronil sulfide	Dry	Water	Receiving	1	4	0	0%	µg/L						
			Wood Canyon-WC1	2008-2009	Fipronil sulfone	Dry	Water	Receiving	1	4	2	50%	µg/L		0.046	0.039	0.025	0.08	ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Wood Canyon-WC1	2008-2009	Bifenthrin	Dry	Water	Receiving	1	4	1	25%	ng/L				12.3	12.3	Three sample values missing, no mean or median calculated
			Wood Canyon-WC1	2008-2009	Fenvalerate/esfenvalerate	Dry	Water	Receiving	1	4	0	0%	ng/L						Three sample values missing, other non detect
			Wood Canyon-WC1	2008-2009	Lambda-cyhalothrin	Dry	Water	Receiving	1	4	0	0%	ng/L						Three sample values missing, other non detect
			Wood Canyon-WC1	2008-2009	Permethrin cis	Dry	Water	Receiving	1	4	0	0%	ng/L						Three sample values missing, other non detect
			Wood Canyon-WC1	2008-2009	Permethrin trans	Dry	Water	Receiving	1	4	0	0%	ng/L						Three sample values missing, other non detect
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	Orange County	Wood Canyon-WC2	2008-2009	Desulfinyl fipronil	Dry	Water	Receiving	1	5	3	60%	µg/L		0.044	0.051	0.025	0.061	ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Wood Canyon-WC2	2008-2009	Desulfinyl FP amide	Dry	Water	Receiving	1	5	0	0%	µg/L						
			Wood Canyon-WC2	2008-2009	Fipronil	Dry	Water	Receiving	1	5	4	80%	µg/L		0.091	0.106	0.025	0.14	ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Wood Canyon-WC2	2008-2009	Fipronil amide	Dry	Water	Receiving	1	5	0	0%	µg/L						
			Wood Canyon-WC2	2008-2009	Fipronil sulfide	Dry	Water	Receiving	1	5	0	0%	µg/L						
			Wood Canyon-WC2	2008-2009	Fipronil sulfone	Dry	Water	Receiving	1	5	4	80%	µg/L		0.063	0.066	0.025	0.092	ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Wood Canyon-WC2	2008-2009	Bifenthrin	Dry	Water	Receiving	1	5	0	0%	ng/L						Three sample values missing, others non detect
			Wood Canyon-WC2	2008-2009	Fenvalerate/esfenvalerate	Dry	Water	Receiving	1	5	0	0%	ng/L						Three sample values missing, others non detect
			Wood Canyon-WC2	2008-2009	Lambda-cyhalothrin	Dry	Water	Receiving	1	5	0	0%	ng/L						Three sample values missing, others non detect
			Wood Canyon-WC2	2008-2009	Permethrin cis	Dry	Water	Receiving	1	5	0	0%	ng/L						Three sample values missing, others non detect
			Wood Canyon-WC2	2008-2009	Permethrin trans	Dry	Water	Receiving	1	5	0	0%	ng/L						Three sample values missing, others non detect
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	Orange County	Wood Canyon-WC2	2008-2009	Desulfinyl fipronil	Wet	Water	Receiving	1	1	0	0%	µg/L						
			Wood Canyon-WC2	2008-2009	Desulfinyl FP amide	Wet	Water	Receiving	1	1	0	0%	µg/L						
			Wood Canyon-WC2	2008-2009	Fipronil	Wet	Water	Receiving	1	1	1	100%	µg/L		0.076		0.076	0.076	Only one sample, no median calculated
			Wood Canyon-WC2	2008-2009	Fipronil amide	Wet	Water	Receiving	1	1	0	0%	µg/L						
			Wood Canyon-WC2	2008-2009	Fipronil sulfide	Wet	Water	Receiving	1	1	0	0%	µg/L						
			Wood Canyon-WC2	2008-2009	Fipronil sulfone	Wet	Water	Receiving	1	1	1	100%	µg/L		0.091		0.091	0.091	Only one sample, no median calculated
			Wood Canyon-WC2	2008-2009	Bifenthrin	Wet	Water	Receiving	1	1	0	0%	ng/L						Sample value missing
			Wood Canyon-WC2	2008-2009	Fenvalerate/esfenvalerate	Wet	Water	Receiving	1	1	0	0%	ng/L						Sample value missing
			Wood Canyon-WC2	2008-2009	Lambda-cyhalothrin	Wet	Water	Receiving	1	1	0	0%	ng/L						Sample value missing
			Wood Canyon-WC2	2008-2009	Permethrin cis	Wet	Water	Receiving	1	1	0	0%	ng/L						Sample value missing
			Wood Canyon-WC2	2008-2009	Permethrin trans	Wet	Water	Receiving	1	1	0	0%	ng/L						Sample value missing
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	Orange County	Wood Canyon-WC3	2008-2009	Desulfinyl fipronil	Dry	Water	Discharge	1	5	5	100%	µg/L		0.086	0.093	0.056	0.118	
			Wood Canyon-WC3	2008-2009	Desulfinyl FP amide	Dry	Water	Discharge	1	5	3	60%	µg/L		0.052	0.062	0.025	0.078	ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Wood Canyon-WC3	2008-2009	Fipronil	Dry	Water	Discharge	1	5	5	100%	µg/L		0.618	0.359	0.064	2.11	
			Wood Canyon-WC3	2008-2009	Fipronil amide	Dry	Water	Discharge	1	5	4	80%	µg/L		0.096	0.101	0.025	0.145	ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Wood Canyon-WC3	2008-2009	Fipronil sulfide	Dry	Water	Discharge	1	5	1	20%	µg/L		0.031	0.025	0.025	0.057	ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Wood Canyon-WC3	2008-2009	Fipronil sulfone	Dry	Water	Discharge	1	5	5	100%	µg/L		0.215	0.171	0.069	0.546	
			Wood Canyon-WC3	2008-2009	Bifenthrin	Dry	Water	Discharge	1	5	2	40%	ng/L		8.44	8.44	5.18	11.7	Three sample values missing
			Wood Canyon-WC3	2008-2009	Fenvalerate/esfenvalerate	Dry	Water	Discharge	1	5	0	0%	ng/L						Three sample values missing, others non detects
			Wood Canyon-WC3	2008-2009	Lambda-cyhalothrin	Dry	Water	Discharge	1	5	0	0%	ng/L						Three sample values missing, others non detects
			Wood Canyon-WC3	2008-2009	Permethrin cis	Dry	Water	Discharge	1	5	1	20%	ng/L		7.75	7.75	0.005	15.5	Three sample values missing, and ND substituted as 1/2 the reporting limit (0.005-0.1
			Wood Canyon-WC3	2008-2009	Permethrin trans	Dry	Water	Discharge	1	5	0	0%	ng/L						Three sample values missing, others non detects
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	Orange County	Wood Canyon-WC3	2008-2009	Desulfinyl fipronil	Wet	Water	Discharge	1	1	1	100%	µg/L		0.093		0.093	0.093	Only one sample, no median calculated
			Wood Canyon-WC3	2008-2009	Desulfinyl FP amide	Wet	Water	Discharge	1	1	0	0%	µg/L						
			Wood Canyon-WC3	2008-2009	Fipronil	Wet	Water	Discharge	1	1	1	100%	µg/L		0.196		0.196	0.196	Only one sample, no median calculated
			Wood Canyon-WC3	2008-2009	Fipronil amide	Wet	Water	Discharge	1	1	1	100%	µg/L		0.064		0.064	0.064	Only one sample, no median calculated
			Wood Canyon-WC3	2008-2009	Fipronil sulfide	Wet	Water	Discharge	1	1	0	0%	µg/L						
			Wood Canyon-WC3	2008-2009	Fipronil sulfone	Wet	Water	Discharge	1	1	1	100%	µg/L		0.16		0.16	0.16	Only one sample, no median calculated
			Wood Canyon-WC3	2008-2009	Bifenthrin	Wet	Water	Discharge	1	1	0	0%	ng/L						Sample value missing
			Wood Canyon-WC3	2008-2009	Fenvalerate/esfenvalerate	Wet	Water	Discharge	1	1	0	0%	ng/L						Sample value missing
			Wood Canyon-WC3	2008-2009	Lambda-cyhalothrin	Wet	Water	Discharge	1	1	0	0%	ng/L						Sample value missing
			Wood Canyon-WC3	2008-2009	Permethrin cis	Wet	Water	Discharge	1	1	0	0%	ng/L						Sample value missing
			Wood Canyon-WC3	2008-2009	Permethrin trans	Wet	Water	Discharge	1	1	0	0%	ng/L						Sample value missing
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	San Diego	San Diego River-SDR151	2008-2009	Desulfinyl fipronil	Wet	Water	Discharge	1	1	0	0%	µg/L						
			San Diego River-SDR151	2008-2009	Desulfinyl FP amide	Wet	Water	Discharge	1	1	0	0%	µg/L						
			San Diego River-SDR151	2008-2009	Fipronil	Wet	Water	Discharge	1	1	1	100%	µg/L		0.053		0.053	0.053	Only one sample, no median calculated
			San Diego River-SDR151	2008-2009	Fipronil amide	Wet	Water	Discharge	1	1	0	0%	µg/L						
			San Diego River-SDR151	2008-2009	Fipronil sulfide	Wet	Water	Discharge	1	1	0	0%	µg/L						
			San Diego River-SDR151	2008-2009	Fipronil sulfone	Wet	Water	Discharge	1	1	1	100%	µg/L		0.071		0.071	0.071	Only one sample, no median calculated

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather	Water/ Sediment	Discharge/ Receiving Water	# Sites	# Samples	# Detected	% Detected	Units	Sed. Unit Weight	Mean	Median	Min	Max	Notes
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-2009	San Diego	San Diego River-SDR158	2008-2009	Desulfinyl fipronil	Wet	Water	Receiving	1	1	0	0%	µg/L						
			San Diego River-SDR158	2008-2009	Desulfinyl FP amide	Wet	Water	Receiving	1	1	0	0%	µg/L						
			San Diego River-SDR158	2008-2009	Fipronil	Wet	Water	Receiving	1	1	1	100%	µg/L		0.058		0.058	0.058	Only one sample, no median calculated
			San Diego River-SDR158	2008-2009	Fipronil amide	Wet	Water	Receiving	1	1	0	0%	µg/L						
			San Diego River-SDR158	2008-2009	Fipronil sulfide	Wet	Water	Receiving	1	1	0	0%	µg/L						
			San Diego River-SDR158	2008-2009	Fipronil sulfone	Wet	Water	Receiving	1	1	1	100%	µg/L		0.079		0.079	0.079	Only one sample, no median calculated
Ensminger and Kelley, 2011b	Monitoring Urban Pesticide Runoff in Northern California 2009-2010	Sacramento	Dry Creek, Alder Creek, Willow Creek, Pleasant Grove Creek	2009-2010	Desulfinyl Fipronil	Dry	Water	Discharge	8	11	1	9%	µg/L		0.031	0.025	0.025	0.088	ND and trace detections substituted as 1/2 the reporting limit (0.025 µg/L)
			Dry Creek, Alder Creek, Willow Creek, Pleasant Grove Creek	2009-2010	Desulfinyl Fipronil Amide	Dry	Water	Discharge	8	11	0	0%	µg/L						
			Dry Creek, Alder Creek, Willow Creek, Pleasant Grove Creek	2009-2010	Fipronil	Dry	Water	Discharge	8	11	1	9%	µg/L		0.045	0.025	0.025	0.244	ND and trace detections substituted as 1/2 the reporting limit (0.025 µg/L)
			Dry Creek, Alder Creek, Willow Creek, Pleasant Grove Creek	2009-2010	Fipronil Amide	Dry	Water	Discharge	8	11	0	0%	µg/L						
			Dry Creek, Alder Creek, Willow Creek, Pleasant Grove Creek	2009-2010	Fipronil Sulfide	Dry	Water	Discharge	8	11	0	0%	µg/L						
			Dry Creek, Alder Creek, Willow Creek, Pleasant Grove Creek	2009-2010	Fipronil Sulfone	Dry	Water	Discharge	8	11	1	9%	µg/L		0.029	0.025	0.025	0.066	ND and trace detections substituted as 1/2 the reporting limit (0.025 µg/L)
			Dry Creek, Alder Creek, Willow Creek, Pleasant Grove Creek	2009-2010	Bifenthrin	Dry	Water	Discharge	8	11	6	55%	ng/L		9.987	7.43	0.005	49.100	ND and trace detections substituted as 1/2 the reporting limit (0.005 ng/L)
			Dry Creek, Alder Creek, Willow Creek, Pleasant Grove Creek	2009-2010	Permethrin trans	Dry	Water	Discharge	8	11	0	0%	ng/L						
Ensminger and Kelley, 2011b	Monitoring Urban Pesticide Runoff in Northern California 2009-2010	Sacramento	Dry Creek, Alder Creek, Willow Creek, Pleasant Grove Creek	2009-2010	Desulfinyl Fipronil	Dry	Water	Receiving	2	3	0	0%	µg/L						
			Dry Creek, Alder Creek, Willow Creek, Pleasant Grove Creek	2009-2010	Desulfinyl Fipronil Amide	Dry	Water	Receiving	2	3	0	0%	µg/L						
			Dry Creek, Alder Creek, Willow Creek, Pleasant Grove Creek	2009-2010	Fipronil	Dry	Water	Receiving	2	3	0	0%	µg/L						
			Dry Creek, Alder Creek, Willow Creek, Pleasant Grove Creek	2009-2010	Fipronil Amide	Dry	Water	Receiving	2	3	0	0%	µg/L						
			Dry Creek, Alder Creek, Willow Creek, Pleasant Grove Creek	2009-2010	Fipronil Sulfide	Dry	Water	Receiving	2	3	0	0%	µg/L						
			Dry Creek, Alder Creek, Willow Creek, Pleasant Grove Creek	2009-2010	Fipronil Sulfone	Dry	Water	Receiving	2	3	0	0%	µg/L						
			Dry Creek, Alder Creek, Willow Creek, Pleasant Grove Creek	2009-2010	Bifenthrin	Dry	Water	Receiving	2	3	0	0%	ng/L						
			Dry Creek, Alder Creek, Willow Creek, Pleasant Grove Creek	2009-2010	Permethrin trans	Dry	Water	Receiving	2	3	0	0%	ng/L						
Ensminger and Kelley, 2011b	Monitoring Urban Pesticide Runoff in Northern California 2009-2010	Sacramento	Dry Creek, Alder Creek, Willow Creek, Pleasant Grove Creek	2009-2010	Desulfinyl Fipronil	Wet	Water	Discharge	7	13	0	0%	µg/L						
			Dry Creek, Alder Creek, Willow Creek, Pleasant Grove Creek	2009-2010	Desulfinyl Fipronil Amide	Wet	Water	Discharge	7	13	0	0%	µg/L						
			Dry Creek, Alder Creek, Willow Creek, Pleasant Grove Creek	2009-2010	Fipronil	Wet	Water	Discharge	7	13	5	38%	µg/L		0.054	0.025	0.025	0.203	ND and trace detections substituted as 1/2 the reporting limit (0.025 µg/L)
			Dry Creek, Alder Creek, Willow Creek, Pleasant Grove Creek	2009-2010	Fipronil Amide	Wet	Water	Discharge	7	13	0	0%	µg/L						
			Dry Creek, Alder Creek, Willow Creek, Pleasant Grove Creek	2009-2010	Fipronil Sulfide	Wet	Water	Discharge	7	13	0	0%	µg/L						
			Dry Creek, Alder Creek, Willow Creek, Pleasant Grove Creek	2009-2010	Fipronil Sulfone	Wet	Water	Discharge	7	13	2	15%	µg/L		0.0	0.025	0.025	0.062	ND and trace detections substituted as 1/2 the reporting limit (0.025 µg/L)
			Dry Creek, Alder Creek, Willow Creek, Pleasant Grove Creek	2009-2010	Bifenthrin	Wet	Water	Discharge	7	13	13	100%	ng/L		31.19	33.20	5.37	51.30	
			Dry Creek, Alder Creek, Willow Creek, Pleasant Grove Creek	2009-2010	Permethrin trans	Wet	Water	Discharge	7	13	1	8%	ng/L		1.54	0.005	0.005	20.0	ND and trace detections substituted as 1/2 the reporting limit (.005 ng/L)
Ensminger and Kelley, 2011b	Monitoring Urban Pesticide Runoff in Northern California 2009-2010	Sacramento	Dry Creek, Alder Creek, Willow Creek, Pleasant Grove Creek	2009-2010	Desulfinyl Fipronil	Wet	Water	Receiving	3	4	0	0%	µg/L						
			Dry Creek, Alder Creek, Willow Creek, Pleasant Grove Creek	2009-2010	Desulfinyl Fipronil Amide	Wet	Water	Receiving	3	4	0	0%	µg/L						

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather	Water/ Sediment	Discharge/ Receiving Water	# Sites	# Samples	# Detected	% Detected	Units	Sed. Unit Weight	Mean	Median	Min	Max	Notes
			Dry Creek, Alder Creek, Willow Creek, Pleasant Grove Creek	2009-2010	Fipronil	Wet	Water	Receiving	3	4	1	25%	µg/L		0.039	0.039	0.025	0.053	ND and trace detections substituted as 1/2 the reporting limit (0.025 µg/L)
			Dry Creek, Alder Creek, Willow Creek, Pleasant Grove Creek	2009-2010	Fipronil Amide	Wet	Water	Receiving	3	4	0	0%	µg/L						
			Dry Creek, Alder Creek, Willow Creek, Pleasant Grove Creek	2009-2010	Fipronil Sulfide	Wet	Water	Receiving	3	4	0	0%	µg/L						
			Dry Creek, Alder Creek, Willow Creek, Pleasant Grove Creek	2009-2010	Fipronil Sulfone	Wet	Water	Receiving	3	4	0	0%	µg/L						
			Dry Creek, Alder Creek, Willow Creek, Pleasant Grove Creek	2009-2010	Bifenthrin	Wet	Water	Receiving	3	4	4	100%	ng/L		13.658	13.45	19.5	8.23	
			Dry Creek, Alder Creek, Willow Creek, Pleasant Grove Creek	2009-2010	Permethrin trans	Wet	Water	Receiving	1	4	0	0%	ng/L						
Ensminger and Kelley, 2011b	Monitoring Urban Pesticide Runoff in Northern California 2009-2010	SF Bay Area	Martin Canyon/Koopman Canyon Creek	2009-2010	Desulfinyl Fipronil	Wet	Water	Receiving	1	2	0	0%	µg/L						
			Martin Canyon/Koopman Canyon Creek	2009-2010	Desulfinyl Fipronil Amide	Wet	Water	Receiving	1	2	0	0%	µg/L						
			Martin Canyon/Koopman Canyon Creek	2009-2010	Fipronil	Wet	Water	Receiving	1	2	1	50%	µg/L		0.0425	0.0425	0.025	0.06	ND and trace detections substituted as 1/2 the reporting limit (0.025 µg/L)
			Martin Canyon/Koopman Canyon Creek	2009-2010	Fipronil Amide	Wet	Water	Receiving	1	2	0	0%	µg/L						
			Martin Canyon/Koopman Canyon Creek	2009-2010	Fipronil Sulfide	Wet	Water	Receiving	1	2	0	0%	µg/L						
			Martin Canyon/Koopman Canyon Creek	2009-2010	Fipronil Sulfone	Wet	Water	Receiving	1	2	0	0%	µg/L						
			Martin Canyon/Koopman Canyon Creek	2009-2010	Bifenthrin	Wet	Water	Receiving	1	2	2	100%	ng/L		10.520	10.52	6.84	14.2	
			Martin Canyon/Koopman Canyon Creek	2009-2010	Permethrin trans	Wet	Water	Receiving	1	2	0	0%	ng/L						
Ensminger and Kelley, 2011b	Monitoring Urban Pesticide Runoff in Northern California 2009-2010	SF Bay Area	Martin Canyon/Koopman Canyon Creek	2009-2010	Desulfinyl Fipronil	Wet	Water	Discharge	3	6	0	0%	µg/L						
			Martin Canyon/Koopman Canyon Creek	2009-2010	Desulfinyl Fipronil Amide	Wet	Water	Discharge	3	6	0	0%	µg/L						
			Martin Canyon/Koopman Canyon Creek	2009-2010	Fipronil	Wet	Water	Discharge	3	6	0	0%	µg/L						
			Martin Canyon/Koopman Canyon Creek	2009-2010	Fipronil Amide	Wet	Water	Discharge	3	6	0	0%	µg/L						
			Martin Canyon/Koopman Canyon Creek	2009-2010	Fipronil Sulfide	Wet	Water	Discharge	3	6	0	0%	µg/L						
			Martin Canyon/Koopman Canyon Creek	2009-2010	Fipronil Sulfone	Wet	Water	Discharge	3	6	0	0%	µg/L						
			Martin Canyon/Koopman Canyon Creek	2009-2010	Bifenthrin	Wet	Water	Discharge	3	6	6	100%	ng/L		18.02	15.85	8.92	34.8	
			Martin Canyon/Koopman Canyon Creek	2009-2010	Permethrin trans	Wet	Water	Discharge	3	3	0	0%	ng/L						
Ensminger and Kelley, 2011b	Monitoring Urban Pesticide Runoff in Northern California 2009-2010	Northern California	Dublin and Roseville Outfalls	2009-2010	Bifenthrin	Dry	Sediment	Discharge	8	8	8	100%	µg/kg	Dry	81.3	101.25	3.26	138.14	
			Dublin and Roseville Outfalls	2009-2010	Cyfluthrin	Dry	Sediment	Discharge	8	8	8	100%	µg/kg	Dry	21.0	14.89	1.69	70.74	
			Dublin and Roseville Outfalls	2009-2010	Cypermethrin	Dry	Sediment	Discharge	8	8	5	63%	µg/kg	Dry	8.2	6.11	0.50	36.41	ND substituted as 1/2 the detection limit (1.0 µg/kg)
			Dublin and Roseville Outfalls	2009-2010	Deltamethrin	Dry	Sediment	Discharge	8	8	4	50%	µg/kg	Dry	3.1	1.52	0.50	9.39	ND substituted as 1/2 the detection limit (1.0 µg/kg)
			Dublin and Roseville Outfalls	2009-2010	Fenvalerate/esfenvalerate	Dry	Sediment	Discharge	8	8	0	0%	µg/kg	Dry					
			Dublin and Roseville Outfalls	2009-2010	Lambda-cyhalothrin	Dry	Sediment	Discharge	8	8	5	63%	µg/kg	Dry	3.0	2.77	0.50	6.20	ND substituted as 1/2 the detection limit (1.0 µg/kg)
			Dublin and Roseville Outfalls	2009-2010	Permethrin cis	Dry	Sediment	Discharge	8	8	8	100%	µg/kg	Dry	11.5	11.5	1.69	23.13	
			Dublin and Roseville Outfalls	2009-2010	Permethrin trans	Dry	Sediment	Discharge	8	8	8	100%	µg/kg	Dry	7.7	7.12	1.71	19.88	
			Dublin and Roseville Outfalls	2009-2010	Resmethrin	Dry	Sediment	Discharge	8	8	0	0%	µg/kg	Dry					
			Dublin and Roseville Outfalls	2009-2010	Fenpropathrin	Dry	Sediment	Discharge	8	8	0	0%	µg/kg	Dry					
Ensminger and Kelley, 2011b	Monitoring Urban Pesticide Runoff in Northern California 2009-2010	Northern California	Dublin and Roseville Creeks	2009-2010	Bifenthrin	Dry	Sediment	Receiving	2	2	2	100%	µg/kg	Dry	61.0	61.02	15.89	106.15	
			Dublin and Roseville Creeks	2009-2010	Cyfluthrin	Dry	Sediment	Receiving	2	2	2	100%	µg/kg	Dry	9.9	9.89	3.98	15.79	
			Dublin and Roseville Creeks	2009-2010	Cypermethrin	Dry	Sediment	Receiving	2	2	0	0%	µg/kg	Dry					
			Dublin and Roseville Creeks	2009-2010	Deltamethrin	Dry	Sediment	Receiving	2	2	1	50%	µg/kg	Dry	2.4	2.40	0.50	4.30	ND substituted as 1/2 the detection limit (1.0 µg/kg)
			Dublin and Roseville Creeks	2009-2010	Fenvalerate/esfenvalerate	Dry	Sediment	Receiving	2	2	0	0%	µg/kg	Dry					
			Dublin and Roseville Creeks	2009-2010	Lambda-cyhalothrin	Dry	Sediment	Receiving	2	2	0	0%	µg/kg	Dry					
			Dublin and Roseville Creeks	2009-2010	Permethrin cis	Dry	Sediment	Receiving	2	2	1	50%	µg/kg	Dry	2.2	2.23	0.50	3.96	ND substituted as 1/2 the detection limit (1.0 µg/kg)

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			Dublin and Roseville Creeks	2009-2010	Permethrin trans	Dry	Sediment	Receiving	2	2	2	100%	µg/kg	Dry	1.2	1.22	0.50	1.93	ND substituted as 1/2 the detection limit (1.0 µg/kg)
			Dublin and Roseville Creeks	2009-2010	Resmethrin	Dry	Sediment	Receiving	2	2	0	0%	µg/kg	Dry					
			Dublin and Roseville Creeks	2009-2010	Fenpropathrin	Dry	Sediment	Receiving	2	2	0	0%	µg/kg	Dry					
	Pesticide occurrence and aquatic benchmark exceedances in urban surface waters and sediments in three urban areas of California, USA, 2008–2011																		
Ensminger et al., 2012		Orange County-Laguna Niguel	Salt Creek- SC1	2008-2011	Bifenthrin	Dry	Water	Discharge	1	9	6	67%	ng/L		14.54	9.40	1.75	66.40	Non-detects substituted as 1/2 the reporting limit (RL= 3.5ng/L)
			Salt Creek- SC1	2008-2011	Fipronil	Dry	Water	Discharge	1	13	8	62%	µg/L		0.12	0.076	0.025	0.60	Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Salt Creek- SC1	2008-2011	Fipronil sulfone	Dry	Water	Discharge	1	13	9	69%	µg/L		0.07	0.059	0.025	0.173	Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Salt Creek- SC1	2008-2011	Deltamethrin	Dry	Water	Discharge	1	9	1	11%	ng/L		6.27	5.0	5.0	16.40	Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
			Salt Creek- SC1	2008-2011	Cyfluthrin	Dry	Water	Discharge	1	9	0	0%	ng/L						
			Salt Creek- SC1	2008-2011	L-Cyhalothrin	Dry	Water	Discharge	1	9	0	0%	ng/L						
			Salt Creek- SC1	2008-2011	Permethrin cis	Dry	Water	Discharge	1	9		1%	ng/L		6.84	5.0	5.0	21.60	Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
			Salt Creek- SC1	2008-2011	Permethrin trans	Dry	Water	Discharge	1	9	1	11%	ng/L		6.61	5.0	5.0	19.5	Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
	Pesticide occurrence and aquatic benchmark exceedances in urban surface waters and sediments in three urban areas of California, USA, 2008–2011																		
Ensminger et al., 2012		Orange County-Laguna Niguel	Salt Creek- SC2	2008-2011	Bifenthrin	Dry	Water	Discharge	1	7	5	71%	ng/L		12.3	6.10	1.75	53.20	Non-detects substituted as 1/2 the reporting limit (RL= 3.5ng/L)
			Salt Creek- SC2	2008-2011	Fipronil	Dry	Water	Discharge	1	7	5	71%	µg/L		0.08	0.065	0.025	0.204	Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Salt Creek- SC2	2008-2011	Fipronil sulfone	Dry	Water	Discharge	1	7	7	100%	µg/L		0.09	0.076	0.054	0.183	
			Salt Creek- SC2	2008-2011	Deltamethrin	Dry	Water	Discharge	1	7	0	0%	ng/L						
			Salt Creek- SC2	2008-2011	Cyfluthrin	Dry	Water	Discharge	1	7	0	0%	ng/L						
			Salt Creek- SC2	2008-2011	L-Cyhalothrin	Dry	Water	Discharge	1	7	0	0%	ng/L						
			Salt Creek- SC2	2008-2011	Permethrin cis	Dry	Water	Discharge	1	7	1	14%	ng/L		5.1	5.0	5.0	5.71	Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
			Salt Creek- SC2	2008-2011	Permethrin trans	Dry	Water	Discharge	1	7	1	14%	ng/L		5.19	5.0	5.0	6.67	Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
	Pesticide occurrence and aquatic benchmark exceedances in urban surface waters and sediments in three urban areas of California, USA, 2008–2011																		
Ensminger et al., 2012		Orange County-Laguna Niguel	Salt Creek- SC3	2008-2011	Bifenthrin	Dry	Water	Discharge	1	9	9	100%	ng/L		20.6	17.5	6.05	53.0	
			Salt Creek- SC3	2008-2011	Fipronil	Dry	Water	Discharge	1	13	10	77%	µg/L		0.2	0.15	0.03	0.52	Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Salt Creek- SC3	2008-2011	Fipronil sulfone	Dry	Water	Discharge	1	13	13	100%	µg/L		0.1	0.1097	0.06	0.319	
			Salt Creek- SC3	2008-2011	Deltamethrin	Dry	Water	Discharge	1	9	3	33%	ng/L		12.5	5.0	5.0	42.7	Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
			Salt Creek- SC3	2008-2011	Cyfluthrin	Dry	Water	Discharge	1	9	2	22%	ng/L		9.5	5.0	5.0	27.4	Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
			Salt Creek- SC3	2008-2011	L-Cyhalothrin	Dry	Water	Discharge	1	9	2	22%	ng/L		7.6	5.0	5.0	17.9	Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
			Salt Creek- SC3	2008-2011	Permethrin cis	Dry	Water	Discharge	1	9	4	44%	ng/L		17.5	5.0	5.0	56.4	Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
			Salt Creek- SC3	2008-2011	Permethrin trans	Dry	Water	Discharge	1	9	4	44%	ng/L		25.5	5.0	5.0	101	Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
	Pesticide occurrence and aquatic benchmark exceedances in urban surface waters and sediments in three urban areas of California, USA, 2008–2011																		
Ensminger et al., 2012		Orange County-Laguna Niguel	Salt Creek- SC4	2008-2011	Bifenthrin	Dry	Water	Discharge	1	7	5	71%	ng/L		7.5	5.82	1.75	22.5	Non-detects substituted as 1/2 the reporting limit (RL= 3.5ng/L)
			Salt Creek- SC4	2008-2011	Fipronil	Dry	Water	Discharge	1	7	6	86%	µg/L		0.10	0.09	0.025	0.18	Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Salt Creek- SC4	2008-2011	Fipronil sulfone	Dry	Water	Discharge	1	7	6	86%	µg/L		0.09	0.084	0.025	0.139	Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Salt Creek- SC4	2008-2011	Deltamethrin	Dry	Water	Discharge	1	7	0	0%	ng/L						
			Salt Creek- SC4	2008-2011	Cyfluthrin	Dry	Water	Discharge	1	7	0	0%	ng/L						
			Salt Creek- SC4	2008-2011	L-Cyhalothrin	Dry	Water	Discharge	1	9	2	22%	ng/L		7.6	5.0	5.0	17.9	Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
			Salt Creek- SC4	2008-2011	Permethrin cis	Dry	Water	Discharge	1	7	2	29%	ng/L		7.8	5.0	5.0	21.1	Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
			Salt Creek- SC4	2008-2011	Permethrin trans	Dry	Water	Discharge	1	7	2	29%	ng/L		9.3	5.0	5.0	31.2	Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
	Pesticide occurrence and aquatic benchmark exceedances in urban surface waters and sediments in three urban areas of California, USA, 2008–2011																		
Ensminger et al., 2012		Orange County-Laguna Niguel	Salt Creek- SC5	2008-2011	Bifenthrin	Dry	Water	Receiving	1	4	0	0%	ng/L						
			Salt Creek- SC5	2008-2011	Fipronil	Dry	Water	Receiving	1	8	5	63%	µg/L		0.07	0.057	0.025	0.13	Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Salt Creek- SC5	2008-2011	Fipronil sulfone	Dry	Water	Receiving	1	8	5	63%	µg/L		0.05	0.058	0.025	0.077	Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Salt Creek- SC5	2008-2011	Deltamethrin	Dry	Water	Receiving	1	4	0	0%	ng/L						
			Salt Creek- SC5	2008-2011	Cyfluthrin	Dry	Water	Receiving	1	4	0	0%	ng/L						
			Salt Creek- SC5	2008-2011	L-Cyhalothrin	Dry	Water	Receiving	1	4	0	0%	ng/L						
			Salt Creek- SC5	2008-2011	Permethrin cis	Dry	Water	Receiving	1	4	0	0%	ng/L						
			Salt Creek- SC5	2008-2011	Permethrin trans	Dry	Water	Receiving	1	4	0	0%	ng/L						
	Pesticide occurrence and aquatic benchmark exceedances in urban surface waters and sediments in three urban areas of California, USA, 2008–2011																		
Ensminger et al., 2012		Orange County-Laguna Niguel	Salt Creek- SC6	2008-2011	Bifenthrin	Dry	Water	Receiving	1	7	2	29%	ng/L		3.460	1.75	1.75	10.10	Non-detects substituted as 1/2 the reporting limit (RL= 3.5ng/L)
			Salt Creek- SC6	2008-2011	Fipronil	Dry	Water	Receiving	1	7	2	29%	µg/L		0.047	0.025	0.025	0.111	Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Salt Creek- SC6	2008-2011	Fipronil sulfone	Dry	Water	Receiving	1	7	2	29%	µg/L		0.04	0.025	0.025	0.06	Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Salt Creek- SC6	2008-2011	Deltamethrin	Dry	Water	Receiving	1	7	0	0%	ng/L						
			Salt Creek- SC6	2008-2011	Cyfluthrin	Dry	Water	Receiving	1	7	0	0%	ng/L						
			Salt Creek- SC6	2008-2011	L-Cyhalothrin	Dry	Water	Receiving	1	7	0	0%	ng/L						
			Salt Creek- SC6	2008-2011	Permethrin cis	Dry	Water	Receiving	1	7	0	0%	ng/L						
			Salt Creek- SC6	2008-2011	Permethrin trans	Dry	Water	Receiving	1	7	0	0%	ng/L						
	Pesticide occurrence and aquatic benchmark exceedances in urban surface waters and sediments in three urban areas of California, USA, 2008–2011																		
Ensminger et al., 2012		Orange County-Laguna Niguel	Salt Creek- SC7	2008-2011	Bifenthrin	Dry	Water	Receiving	1	7	5	71%	ng/L		12.37	8.03	1.75	50.20	Non-detects substituted as 1/2 the reporting limit (RL= 3.5ng/L)
			Salt Creek- SC7	2008-2011	Fipronil	Dry	Water	Receiving	1	7	5	71%	µg/L		0.09	0.061	0.025	0.295	Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather	Water/ Sediment	Discharge/ Receiving Water	# Sites	# Samples	# Detected	% Detected	Units	Sed. Unit Weight	Mean	Median	Min	Max	Notes
			Salt Creek- SC7	2008-2011	Fipronil sulfone	Dry	Water	Receiving	1	7	5	71%	µg/L		0.05	0.059	0.025	0.085	Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Salt Creek- SC7	2008-2011	Deltamethrin	Dry	Water	Receiving	1	7	0	0%	ng/L						
			Salt Creek- SC7	2008-2011	Cyfluthrin	Dry	Water	Receiving	1	7	0	0%	ng/L						
			Salt Creek- SC7	2008-2011	L-Cyhalothrin	Dry	Water	Receiving	1	7	0	0%	ng/L						
			Salt Creek- SC7	2008-2011	Permethrin cis	Dry	Water	Receiving	1	7	2	29%	ng/L		42.54	5.0	5.0	260.0	Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
			Salt Creek- SC7	2008-2011	Permethrin trans	Dry	Water	Receiving	1	7	3	43%	ng/L		57.97	5.0	5.0	351.0	Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
	Pesticide occurrence and aquatic benchmark exceedances in urban surface waters and sediments in three urban areas of California, USA, 2008–2011																		
Ensminger et al., 2012		Orange County-Aliso Viejo	Wood Creek-WC1	2008-2011	Bifenthrin	Dry	Water	Discharge	1	8	7	88%	ng/L		14.29	10.24	1.75	52.80	Non-detects substituted as 1/2 the reporting limit (RL= 3.5ng/L)
			Wood Creek-WC1	2008-2011	Fipronil	Dry	Water	Discharge	1	11	4	36%	µg/L		0.06	0.025	0.025	0.179	Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Wood Creek-WC1	2008-2011	Fipronil sulfone	Dry	Water	Discharge	1	11	5	45%	µg/L		0.05	0.025	0.025	0.122	Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Wood Creek-WC1	2008-2011	Deltamethrin	Dry	Water	Discharge	1	8	0	0%	ng/L						
			Wood Creek-WC1	2008-2011	Cyfluthrin	Dry	Water	Discharge	1	8	0	0%	ng/L						
			Wood Creek-WC1	2008-2011	L-Cyhalothrin	Dry	Water	Discharge	1	8	0	0%	ng/L						
			Wood Creek-WC1	2008-2011	Permethrin cis	Dry	Water	Discharge	1	8	0	0%	ng/L						
			Wood Creek-WC1	2008-2011	Permethrin trans	Dry	Water	Discharge	1	8	0	0%	ng/L						
	Pesticide occurrence and aquatic benchmark exceedances in urban surface waters and sediments in three urban areas of California, USA, 2008–2011																		
Ensminger et al., 2012		Orange County-Aliso Viejo	Wood Creek-WC2	2008-2011	Bifenthrin	Dry	Water	Receiving	1	10	6	60%	ng/L		10.53	6.975	1.75	37.10	Non-detects substituted as 1/2 the reporting limit (RL= 3.5ng/L)
			Wood Creek-WC2	2008-2011	Fipronil	Dry	Water	Receiving	1	14	12	86%	µg/L		0.134	0.092	0.025	0.58	Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Wood Creek-WC2	2008-2011	Fipronil sulfone	Dry	Water	Receiving	1	14	13	93%	µg/L		0.077	0.081	0.025	0.106	Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Wood Creek-WC2	2008-2011	Deltamethrin	Dry	Water	Receiving	1	10	0	0%	ng/L						
			Wood Creek-WC2	2008-2011	Cyfluthrin	Dry	Water	Receiving	1	10	0	0%	ng/L						
			Wood Creek-WC2	2008-2011	L-Cyhalothrin	Dry	Water	Receiving	1	10	0	0%	ng/L						
			Wood Creek-WC2	2008-2011	Permethrin cis	Dry	Water	Receiving	1	10	0	0%	ng/L						
			Wood Creek-WC2	2008-2011	Permethrin trans	Dry	Water	Receiving	1	10	0	0%	ng/L						
	Pesticide occurrence and aquatic benchmark exceedances in urban surface waters and sediments in three urban areas of California, USA, 2008–2011																		
Ensminger et al., 2012		Orange County-Aliso Viejo	Wood Creek-WC3	2008-2011	Bifenthrin	Dry	Water	Discharge	1	9	9	100%	ng/L		36.87	19.70	5.18	314.00	Non-detects substituted as 1/2 the reporting limit (RL= 3.5ng/L)
			Wood Creek-WC3	2008-2011	Fipronil	Dry	Water	Discharge	1	13	11	85%	µg/L		0.32	1.35	0.025	2.11	Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Wood Creek-WC3	2008-2011	Fipronil sulfone	Dry	Water	Discharge	1	13	10	77%	µg/L		0.13	0.091	0.025	0.546	Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Wood Creek-WC3	2008-2011	Deltamethrin	Dry	Water	Discharge	1	9	1	11%	ng/L		5.12	5.0	5.0	6.06	Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
			Wood Creek-WC3	2008-2011	Cyfluthrin	Dry	Water	Discharge	1	9	0	0%	ng/L						
			Wood Creek-WC3	2008-2011	L-Cyhalothrin	Dry	Water	Discharge	1	9	0	0%	ng/L						
			Wood Creek-WC3	2008-2011	Permethrin cis	Dry	Water	Discharge	1	9	2	22%	ng/L		29.72	5.0	5.0	217.0	Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
			Wood Creek-WC3	2008-2011	Permethrin trans	Dry	Water	Discharge	1	9	2	22%	ng/L		39.04	5.0	5.0	311.0	Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
	Pesticide occurrence and aquatic benchmark exceedances in urban surface waters and sediments in three urban areas of California, USA, 2008–2011																		
Ensminger et al., 2012		Orange County-Aliso Viejo	Wood Creek-WC5	2008-2011	Bifenthrin	Dry	Water	Receiving	1	2	0	0%	ng/L						
			Wood Creek-WC5	2008-2011	Fipronil	Dry	Water	Receiving	1	6	6	100%	µg/L		0.13	0.125	0.06343	0.23	
			Wood Creek-WC5	2008-2011	Fipronil sulfone	Dry	Water	Receiving	1	6	5	83%	µg/L		0.1	0.092	0.025	0.141	Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Wood Creek-WC5	2008-2011	Deltamethrin	Dry	Water	Receiving	1	2	0	0%	ng/L						
			Wood Creek-WC5	2008-2011	Cyfluthrin	Dry	Water	Receiving	1	2	0	0%	ng/L						
			Wood Creek-WC5	2008-2011	L-Cyhalothrin	Dry	Water	Receiving	1	2	0	0%	ng/L						
			Wood Creek-WC5	2008-2011	Permethrin cis	Dry	Water	Receiving	1	2	0	0%	ng/L						
			Wood Creek-WC5	2008-2011	Permethrin trans	Dry	Water	Receiving	1	2	0	0%	ng/L						
	Pesticide occurrence and aquatic benchmark exceedances in urban surface waters and sediments in three urban areas of California, USA, 2008–2011																		
Ensminger et al., 2012		Sacramento (SAC)	Alder Creek- FOL001	2008-2011	Bifenthrin	Dry	Water	Discharge	1	4	2	50%	ng/L		15.28	14.13	1.75	31.10	Non-detects substituted as 1/2 the reporting limit (RL= 3.5ng/L)
			Alder Creek- FOL001	2008-2011	Fipronil	Dry	Water	Discharge	1	4	1	25%	µg/L		0.04	0.025	0.025	0.087	Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Alder Creek- FOL001	2008-2011	Fipronil sulfone	Dry	Water	Discharge	1	4	1	25%	µg/L		0.03	0.025	0.025	0.062	Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Alder Creek- FOL001	2008-2011	Deltamethrin	Dry	Water	Discharge	1	4	0	0%	ng/L						
			Alder Creek- FOL001	2008-2011	Cyfluthrin	Dry	Water	Discharge	1	4	0	0%	ng/L						
			Alder Creek- FOL001	2008-2011	L-Cyhalothrin	Dry	Water	Discharge	1	4	0	0%	ng/L						
			Alder Creek- FOL001	2008-2011	Permethrin cis	Dry	Water	Discharge	1	4	0	0%	ng/L						
			Alder Creek- FOL001	2008-2011	Permethrin trans	Dry	Water	Discharge	1	4	0	0%	ng/L						
	Pesticide occurrence and aquatic benchmark exceedances in urban surface waters and sediments in three urban areas of California, USA, 2008–2011																		
Ensminger et al., 2012		Sacramento (SAC) Folsom	Alder Creek- FOL002	2008-2011	Bifenthrin	Dry	Water	Discharge	1	4	3	75%	ng/L		20.01	19.45	1.75	39.40	Non-detects substituted as 1/2 the reporting limit (RL= 3.5ng/L)
			Alder Creek- FOL002	2008-2011	Fipronil	Dry	Water	Discharge	1	4	0	0%	µg/L						
			Alder Creek- FOL002	2008-2011	Fipronil sulfone	Dry	Water	Discharge	1	4	0	0%	µg/L						
			Alder Creek- FOL002	2008-2011	Deltamethrin	Dry	Water	Discharge	1	4	0	0%	ng/L						
			Alder Creek- FOL002	2008-2011	Cyfluthrin	Dry	Water	Discharge	1	4	0	0%	ng/L						
			Alder Creek- FOL002	2008-2011	L-Cyhalothrin	Dry	Water	Discharge	1	4	0	0%	ng/L						
			Alder Creek- FOL002	2008-2011	Permethrin cis	Dry	Water	Discharge	1	4	0	0%	ng/L						
			Alder Creek- FOL002	2008-2011	Permethrin trans	Dry	Water	Discharge	1	4	0	0%	ng/L						

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather	Water/ Sediment	Discharge/ Receiving Water	# Sites	# Samples	# Detected	% Detected	Units	Sed. Unit Weight	Mean	Median	Min	Max	Notes
Ensminger et al., 2012	Pesticide occurrence and aquatic benchmark exceedances in urban surface waters and sediments in three urban areas of California, USA, 2008–2011	Sacramento (SAC) Folsom	Alder Creek- FOL100	2008-2011	Bifenthrin	Dry	Water	Receiving	1	3	2	67%	ng/L		8.49	8.23	1.75	15.50	Non-detects substituted as 1/2 the reporting limit (RL= 3.5ng/L)
			Alder Creek- FOL100	2008-2011	Fipronil	Dry	Water	Receiving	1	3	0	0%	µg/L						
			Alder Creek- FOL100	2008-2011	Fipronil sulfone	Dry	Water	Receiving	1	3	0	0%	µg/L						
			Alder Creek- FOL100	2008-2011	Deltamethrin	Dry	Water	Receiving	1	3	0	0%	ng/L						
			Alder Creek- FOL100	2008-2011	Cyfluthrin	Dry	Water	Receiving	1	3	0	0%	ng/L						
			Alder Creek- FOL100	2008-2011	L-Cyhalothrin	Dry	Water	Receiving	1	3	0	0%	ng/L						
			Alder Creek- FOL100	2008-2011	Permethrin cis	Dry	Water	Receiving	1	3	0	0%	ng/L						
			Alder Creek- FOL100	2008-2011	Permethrin trans	Dry	Water	Receiving	1	3	0	0%	ng/L						
Ensminger et al., 2012	Pesticide occurrence and aquatic benchmark exceedances in urban surface waters and sediments in three urban areas of California, USA, 2008–2011	Sacramento (SAC) Roseville	Pleasant Grove Creek-KBC100	2008-2011	Bifenthrin	Dry	Water	Receiving	1	3	3	100%	ng/L		15.23	6.73	2.15	36.80	
			Pleasant Grove Creek-KBC100	2008-2011	Fipronil	Dry	Water	Receiving	1	3	1	33%	µg/L		0.033	0.025	0.025	0.058	Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Pleasant Grove Creek-KBC100	2008-2011	Fipronil sulfone	Dry	Water	Receiving	1	3	0	0%	µg/L						
			Pleasant Grove Creek-KBC100	2008-2011	Deltamethrin	Dry	Water	Receiving	1	3	0	0%	ng/L						
			Pleasant Grove Creek-KBC100	2008-2011	Cyfluthrin	Dry	Water	Receiving	1	3	1	33%	ng/L		5.02	5.0	5.0	5.05	Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
			Pleasant Grove Creek-KBC100	2008-2011	L-Cyhalothrin	Dry	Water	Receiving	1	3	0	0%	ng/L						
			Pleasant Grove Creek-KBC100	2008-2011	Permethrin cis	Dry	Water	Receiving	1	3	0	0%	ng/L						
			Pleasant Grove Creek-KBC100	2008-2011	Permethrin trans	Dry	Water	Receiving	1	3	0	0%	ng/L						
Ensminger et al., 2012	Pesticide occurrence and aquatic benchmark exceedances in urban surface waters and sediments in three urban areas of California, USA, 2008–2011	Sacramento (SAC) Roseville	Pleasant Grove Creek-PGC010	2008-2011	Bifenthrin	Dry	Water	Discharge	1	13	13	100%	ng/L		51.277	33.20	14.1	203.00	
			Pleasant Grove Creek-PGC010	2008-2011	Fipronil	Dry	Water	Discharge	1	16	8	50%	µg/L		0.06	0.039	0.025	0.244	Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Pleasant Grove Creek-PGC010	2008-2011	Fipronil sulfone	Dry	Water	Discharge	1	16	3	19%	µg/L		0.03	0.025	0.025	0.066	Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Pleasant Grove Creek-PGC010	2008-2011	Deltamethrin	Dry	Water	Discharge	1	13	0	0%	ng/L						
			Pleasant Grove Creek-PGC010	2008-2011	Cyfluthrin	Dry	Water	Discharge	1	13	2	15%	ng/L		5.5	5.0	5.0	11	Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
			Pleasant Grove Creek-PGC010	2008-2011	L-Cyhalothrin	Dry	Water	Discharge	1	13	1	8%	ng/L		5.98	5.0	5.0	17.8	Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
			Pleasant Grove Creek-PGC010	2008-2011	Permethrin cis	Dry	Water	Discharge	1	13	0	0%	ng/L						
			Pleasant Grove Creek-PGC010	2008-2011	Permethrin trans	Dry	Water	Discharge	1	13	0	0%	ng/L						
Ensminger et al., 2012	Pesticide occurrence and aquatic benchmark exceedances in urban surface waters and sediments in three urban areas of California, USA, 2008–2011	Sacramento (SAC) Roseville	Pleasant Grove Creek-PGC015	2008-2011	Bifenthrin	Dry	Water	Receiving	1	5	4	80%	ng/L		41.15	35.80	1.75	71.10	Non-detects substituted as 1/2 the reporting limit (RL= 3.5ng/L)
			Pleasant Grove Creek-PGC015	2008-2011	Fipronil	Dry	Water	Receiving	1	5	1	20%	µg/L		0.05	0.025	0.025	0.125	Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Pleasant Grove Creek-PGC015	2008-2011	Fipronil sulfone	Dry	Water	Receiving	1	5	0	0%	µg/L						
			Pleasant Grove Creek-PGC015	2008-2011	Deltamethrin	Dry	Water	Receiving	1	5	0	0%	ng/L						
			Pleasant Grove Creek-PGC015	2008-2011	Cyfluthrin	Dry	Water	Receiving	1	5	2	40%	ng/L		11.8	5.0	5.0	35.8	Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
			Pleasant Grove Creek-PGC015	2008-2011	L-Cyhalothrin	Dry	Water	Receiving	1	5	0	0%	ng/L						
			Pleasant Grove Creek-PGC015	2008-2011	Permethrin cis	Dry	Water	Receiving	1	5	0	0%	ng/L						
			Pleasant Grove Creek-PGC015	2008-2011	Permethrin trans	Dry	Water	Receiving	1	5	0	0%	ng/L						
Ensminger et al., 2012	Pesticide occurrence and aquatic benchmark exceedances in urban surface waters and sediments in three urban areas of California, USA, 2008–2011	Sacramento (SAC) Roseville	Pleasant Grove Creek-PGC019	2008-2011	Bifenthrin	Dry	Water	Discharge	1	5	5	100%	ng/L		46.20	22.50	10.6	124.00	
			Pleasant Grove Creek-PGC019	2008-2011	Fipronil	Dry	Water	Discharge	1	5	4	80%	µg/L		0.09	0.062	0.025	0.252	Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Pleasant Grove Creek-PGC019	2008-2011	Fipronil sulfone	Dry	Water	Discharge	1	5	1	20%	µg/L		0.04	0.025	0.025	0.085	Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Pleasant Grove Creek-PGC019	2008-2011	Deltamethrin	Dry	Water	Discharge	1	5	0	0%	ng/L						
			Pleasant Grove Creek-PGC019	2008-2011	Cyfluthrin	Dry	Water	Discharge	1	5	3	60%	ng/L		9.1	5.11	5.0	22.4	Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
			Pleasant Grove Creek-PGC019	2008-2011	L-Cyhalothrin	Dry	Water	Discharge	1	5	0	0%	ng/L						
			Pleasant Grove Creek-PGC019	2008-2011	Permethrin cis	Dry	Water	Discharge	1	5	0	0%	ng/L						
			Pleasant Grove Creek-PGC019	2008-2011	Permethrin trans	Dry	Water	Discharge	1	5	0	0%	ng/L						

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather	Water/ Sediment	Discharge/ Receiving Water	# Sites	# Samples	# Detected	% Detected	Units	Sed. Unit Weight	Mean	Median	Min	Max	Notes
Ensminger et al., 2012	Pesticide occurrence and aquatic benchmark exceedances in urban surface waters and sediments in three urban areas of California, USA, 2008–2011	Sacramento (SAC) Roseville	Pleasant Grove Creek-PGC020	2008-2011	Bifenthrin	Dry	Water	Discharge	1	9	9	100%	ng/L		23.16	14.60	5.53	51.30	
			Pleasant Grove Creek-PGC020	2008-2011	Fipronil	Dry	Water	Discharge	1	12	4	33%	µg/L		0.07	0.025	0.025	0.203	Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Pleasant Grove Creek-PGC020	2008-2011	Fipronil sulfone	Dry	Water	Discharge	1	12	3	25%	µg/L		0.03	0.025	0.025	0.064	Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Pleasant Grove Creek-PGC020	2008-2011	Deltamethrin	Dry	Water	Discharge	1	9	0	0%	ng/L						
			Pleasant Grove Creek-PGC020	2008-2011	Cyfluthrin	Dry	Water	Discharge	1	9	0	0%	ng/L						
			Pleasant Grove Creek-PGC020	2008-2011	L-Cyhalothrin	Dry	Water	Discharge	1	9	0	0%	ng/L						
			Pleasant Grove Creek-PGC020	2008-2011	Permethrin cis	Dry	Water	Discharge	1	9	0	0%	ng/L						
			Pleasant Grove Creek-PGC020	2008-2011	Permethrin trans	Dry	Water	Discharge	1	9	0	0%	ng/L						
Ensminger et al., 2012	Pesticide occurrence and aquatic benchmark exceedances in urban surface waters and sediments in three urban areas of California, USA, 2008–2011	Sacramento (SAC) Roseville	Pleasant Grove Creek-PGC025	2008-2011	Bifenthrin	Dry	Water	Receiving	1	5	5	100%	ng/L		29.83	21.50	5.33	73.20	
			Pleasant Grove Creek-PGC025	2008-2011	Fipronil	Dry	Water	Receiving	1	5	4	80%	µg/L		0.10	0.063	0.025	0.275	Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Pleasant Grove Creek-PGC025	2008-2011	Fipronil sulfone	Dry	Water	Receiving	1	5	2	40%	µg/L		0.05	0.025	0.025	0.089	Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Pleasant Grove Creek-PGC025	2008-2011	Deltamethrin	Dry	Water	Receiving	1	5	0	0%	ng/L						
			Pleasant Grove Creek-PGC025	2008-2011	Cyfluthrin	Dry	Water	Receiving	1	5	1	20%	ng/L		5.76	5.0	5.0	8.8	Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
			Pleasant Grove Creek-PGC025	2008-2011	L-Cyhalothrin	Dry	Water	Receiving	1	5	0	0%	ng/L						
			Pleasant Grove Creek-PGC025	2008-2011	Permethrin cis	Dry	Water	Receiving	1	5	0	0%	ng/L						
			Pleasant Grove Creek-PGC025	2008-2011	Permethrin trans	Dry	Water	Receiving	1	5	0	0%	ng/L						
Ensminger et al., 2012	Pesticide occurrence and aquatic benchmark exceedances in urban surface waters and sediments in three urban areas of California, USA, 2008–2011	Sacramento (SAC) Roseville	Pleasant Grove Creek-PGC030	2008-2011	Bifenthrin	Dry	Water	Discharge	1	13	13	100%	ng/L		39.46	38.20	13.5	110.00	
			Pleasant Grove Creek-PGC030	2008-2011	Fipronil	Dry	Water	Discharge	1	16	7	44%	µg/L		0.06	0.025	0.025	0.254	Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Pleasant Grove Creek-PGC030	2008-2011	Fipronil sulfone	Dry	Water	Discharge	1	16	3	19%	µg/L		0.04	0.025	0.025	0.118	Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Pleasant Grove Creek-PGC030	2008-2011	Deltamethrin	Dry	Water	Discharge	1	13	0	0%	ng/L						
			Pleasant Grove Creek-PGC030	2008-2011	Cyfluthrin	Dry	Water	Discharge	1	13	4	31%	ng/L		6.80	5.0	5.0	18.9	Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
			Pleasant Grove Creek-PGC030	2008-2011	L-Cyhalothrin	Dry	Water	Discharge	1	13	0	0%	ng/L						
			Pleasant Grove Creek-PGC030	2008-2011	Permethrin cis	Dry	Water	Discharge	1	13	5	38%	ng/L		11.94	5.0	5.0	35.5	Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
			Pleasant Grove Creek-PGC030	2008-2011	Permethrin trans	Dry	Water	Discharge	1	13	5	38%	ng/L		10.3	5.0	5.0	33.7	Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
Ensminger et al., 2012	Pesticide occurrence and aquatic benchmark exceedances in urban surface waters and sediments in three urban areas of California, USA, 2008–2011	Sacramento (SAC) Roseville	Pleasant Grove Creek-PGC040	2008-2011	Bifenthrin	Dry	Water	Receiving	1	13	7	54%	ng/L		12.50	7.59	1.75	79.90	Non-detects substituted as 1/2 the reporting limit (RL= 3.5ng/L)
			Pleasant Grove Creek-PGC040	2008-2011	Fipronil	Dry	Water	Receiving	1	16	2	13%	µg/L		0.03	0.025	0.025	0.061	Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Pleasant Grove Creek-PGC040	2008-2011	Fipronil sulfone	Dry	Water	Receiving	1	16	1	6%	µg/L		0.03	0.025	0.025	0.078	Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Pleasant Grove Creek-PGC040	2008-2011	Deltamethrin	Dry	Water	Receiving	1	13	0	0%	ng/L						
			Pleasant Grove Creek-PGC040	2008-2011	Cyfluthrin	Dry	Water	Receiving	1	13	0	0%	ng/L						
			Pleasant Grove Creek-PGC040	2008-2011	L-Cyhalothrin	Dry	Water	Receiving	1	13	0	0%	ng/L						
			Pleasant Grove Creek-PGC040	2008-2011	Permethrin cis	Dry	Water	Receiving	1	13	0	0%	ng/L						
			Pleasant Grove Creek-PGC040	2008-2011	Permethrin trans	Dry	Water	Receiving	1	13	0	0%	ng/L						
Ensminger et al., 2012	Pesticide occurrence and aquatic benchmark exceedances in urban surface waters and sediments in three urban areas of California, USA, 2008–2011	Sacramento (SAC) Roseville	Pleasant Grove Creek-PGC050	2008-2011	Bifenthrin	Dry	Water	Receiving	1	3	3	100%	ng/L		12.37	9.41	2.59	25.10	
			Pleasant Grove Creek-PGC050	2008-2011	Fipronil	Dry	Water	Receiving	1	3	0	0%	µg/L						
			Pleasant Grove Creek-PGC050	2008-2011	Fipronil sulfone	Dry	Water	Receiving	1	3	0	0%	µg/L						
			Pleasant Grove Creek-PGC050	2008-2011	Deltamethrin	Dry	Water	Receiving	1	3	0	0%	ng/L						
			Pleasant Grove Creek-PGC050	2008-2011	Cyfluthrin	Dry	Water	Receiving	1	3	0	0%	ng/L						

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather	Water/ Sediment	Discharge/ Receiving Water	# Sites	# Samples	# Detected	% Detected	Units	Sed. Unit Weight	Mean	Median	Min	Max	Notes
			Pleasant Grove Creek-PGC050	2008-2011	L-Cyhalothrin	Dry	Water	Receiving	1	3	0	0%	ng/L						
			Pleasant Grove Creek-PGC050	2008-2011	Permethrin cis	Dry	Water	Receiving	1	3	0	0%	ng/L						
			Pleasant Grove Creek-PGC050	2008-2011	Permethrin trans	Dry	Water	Receiving	1	3	0	0%	ng/L						
	Pesticide occurrence and aquatic benchmark exceedances in urban surface waters and sediments in three urban areas of California, USA, 2008–2011																		
Ensminger et al., 2012		San Francisco Bay (SFB)	Grayson Creek- GRY010	2008-2011	Bifenthrin	Dry	Water	Discharge	1	5	2	40%	ng/L		5.89	1.75	1.75	16.20	Non-detects substituted as 1/2 the reporting limit (RL= 3.5ng/L)
			Grayson Creek- GRY010	2008-2011	Fipronil	Dry	Water	Discharge	1	8	2	25%	µg/L		0.03	0.025	0.025	0.067	Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Grayson Creek- GRY010	2008-2011	Fipronil sulfone	Dry	Water	Discharge	1	8	0	0%	µg/L						
			Grayson Creek- GRY010	2008-2011	Deltamethrin	Dry	Water	Discharge	1	5	0	0%	ng/L						
			Grayson Creek- GRY010	2008-2011	Cyfluthrin	Dry	Water	Discharge	1	5	0	0%	ng/L						
			Grayson Creek- GRY010	2008-2011	L-Cyhalothrin	Dry	Water	Discharge	1	5	0	0%	ng/L						
			Grayson Creek- GRY010	2008-2011	Permethrin cis	Dry	Water	Discharge	1	5	0	0%	ng/L						
			Grayson Creek- GRY010	2008-2011	Permethrin trans	Dry	Water	Discharge	1	5	0	0%	ng/L						
	Pesticide occurrence and aquatic benchmark exceedances in urban surface waters and sediments in three urban areas of California, USA, 2008–2011																		
Ensminger et al., 2012		San Francisco Bay (SFB)	Grayson Creek- GRY020	2008-2011	Bifenthrin	Dry	Water	Discharge	1	5	3	60%	ng/L		10.4	6.60	1.75	32.60	Non-detects substituted as 1/2 the reporting limit (RL= 3.5ng/L)
			Grayson Creek- GRY020	2008-2011	Fipronil	Dry	Water	Discharge	1	8	1	13%	µg/L		0.08	0.025	0.025	0.458	Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Grayson Creek- GRY020	2008-2011	Fipronil sulfone	Dry	Water	Discharge	1	8	1	13%	µg/L		0.03	0.025	0.025	0.085	Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Grayson Creek- GRY020	2008-2011	Deltamethrin	Dry	Water	Discharge	1	5	0	0%	ng/L						
			Grayson Creek- GRY020	2008-2011	Cyfluthrin	Dry	Water	Discharge	1	5	0	0%	ng/L						
			Grayson Creek- GRY020	2008-2011	L-Cyhalothrin	Dry	Water	Discharge	1	5	0	0%	ng/L						
			Grayson Creek- GRY020	2008-2011	Permethrin cis	Dry	Water	Discharge	1	5	0	0%	ng/L						
			Grayson Creek- GRY020	2008-2011	Permethrin trans	Dry	Water	Discharge	1	5	1	20%	ng/L		7.1	5.0	5.0	15.5	Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
	Pesticide occurrence and aquatic benchmark exceedances in urban surface waters and sediments in three urban areas of California, USA, 2008–2011																		
Ensminger et al., 2012		San Francisco Bay (SFB)	Grayson Creek- GRY030	2008-2011	Bifenthrin	Dry	Water	Receiving	1	5	3	60%	ng/L		11.06	8.40	1.75	23.40	Non-detects substituted as 1/2 the reporting limit (RL= 3.5ng/L)
			Grayson Creek- GRY030	2008-2011	Fipronil	Dry	Water	Receiving	1	8	0	0%	µg/L						
			Grayson Creek- GRY030	2008-2011	Fipronil sulfone	Dry	Water	Receiving	1	8	0	0%	µg/L						
			Grayson Creek- GRY030	2008-2011	Deltamethrin	Dry	Water	Receiving	1	5	0	0%	ng/L						
			Grayson Creek- GRY030	2008-2011	Cyfluthrin	Dry	Water	Receiving	1	5	0	0%	ng/L						
			Grayson Creek- GRY030	2008-2011	L-Cyhalothrin	Dry	Water	Receiving	1	5	0	0%	ng/L						
			Grayson Creek- GRY030	2008-2011	Permethrin cis	Dry	Water	Receiving	1	5	0	0%	ng/L						
			Grayson Creek- GRY030	2008-2011	Permethrin trans	Dry	Water	Receiving	1	5	0	0%	ng/L						
	Pesticide occurrence and aquatic benchmark exceedances in urban surface waters and sediments in three urban areas of California, USA, 2008–2011																		
Ensminger et al., 2012		San Francisco Bay (SFB)	Alamo Creek- MCC010	2008-2011	Bifenthrin	Dry	Water	Discharge	1	7	4	57%	ng/L		9.2	5.80	1.75	19.70	Non-detects substituted as 1/2 the reporting limit (RL= 3.5ng/L)
			Alamo Creek- MCC010	2008-2011	Fipronil	Dry	Water	Discharge	1	10	1	10%	µg/L		0.0275	0.025	0.025	0.05	Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Alamo Creek- MCC010	2008-2011	Fipronil sulfone	Dry	Water	Discharge	1	10	10	100%	µg/L						
			Alamo Creek- MCC010	2008-2011	Deltamethrin	Dry	Water	Discharge	1	7	0	0%	ng/L						
			Alamo Creek- MCC010	2008-2011	Cyfluthrin	Dry	Water	Discharge	1	7	0	0%	ng/L						
			Alamo Creek- MCC010	2008-2011	L-Cyhalothrin	Dry	Water	Discharge	1	7	0	0%	ng/L						
			Alamo Creek- MCC010	2008-2011	Permethrin cis	Dry	Water	Discharge	1	7	0	0%	ng/L						
			Alamo Creek- MCC010	2008-2011	Permethrin trans	Dry	Water	Discharge	1	7	0	0%	ng/L						
	Pesticide occurrence and aquatic benchmark exceedances in urban surface waters and sediments in three urban areas of California, USA, 2008–2011																		
Ensminger et al., 2012		San Francisco Bay (SFB)	Alamo Creek- MCC020	2008-2011	Bifenthrin	Dry	Water	Discharge	1	7	4	57%	ng/L		11.64	13.70	1.75	34.80	Non-detects substituted as 1/2 the reporting limit (RL= 3.5ng/L)
			Alamo Creek- MCC020	2008-2011	Fipronil	Dry	Water	Discharge	1	10	0	0%	µg/L						
			Alamo Creek- MCC020	2008-2011	Fipronil sulfone	Dry	Water	Discharge	1	10	0	0%	µg/L						
			Alamo Creek- MCC020	2008-2011	Deltamethrin	Dry	Water	Discharge	1	7	0	0%	ng/L						
			Alamo Creek- MCC020	2008-2011	Cyfluthrin	Dry	Water	Discharge	1	7	0	0%	ng/L						
			Alamo Creek- MCC020	2008-2011	L-Cyhalothrin	Dry	Water	Discharge	1	7	0	0%	ng/L						
			Alamo Creek- MCC020	2008-2011	Permethrin cis	Dry	Water	Discharge	1	7	0	0%	ng/L						
			Alamo Creek- MCC020	2008-2011	Permethrin trans	Dry	Water	Discharge	1	7	0	0%	ng/L						
	Pesticide occurrence and aquatic benchmark exceedances in urban surface waters and sediments in three urban areas of California, USA, 2008–2011																		
Ensminger et al., 2012		San Francisco Bay (SFB)	Alamo Creek- MCC030	2008-2011	Bifenthrin	Dry	Water	Discharge	1	7	4	57%	ng/L		7.28	5.47	1.75	16.90	Non-detects substituted as 1/2 the reporting limit (RL= 3.5ng/L)
			Alamo Creek- MCC030	2008-2011	Fipronil	Dry	Water	Discharge	1	10	1	10%	µg/L		0.03	0.025	0.025	0.78	Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Alamo Creek- MCC030	2008-2011	Fipronil sulfone	Dry	Water	Discharge	1	10	0	0%	µg/L						
			Alamo Creek- MCC030	2008-2011	Deltamethrin	Dry	Water	Discharge	1	7	0	0%	ng/L						
			Alamo Creek- MCC030	2008-2011	Cyfluthrin	Dry	Water	Discharge	1	7	0	0%	ng/L						
			Alamo Creek- MCC030	2008-2011	L-Cyhalothrin	Dry	Water	Discharge	1	7	0	0%	ng/L						
			Alamo Creek- MCC030	2008-2011	Permethrin cis	Dry	Water	Discharge	1	7	0	0%	ng/L						
			Alamo Creek- MCC030	2008-2011	Permethrin trans	Dry	Water	Discharge	1	7	0	0%	ng/L						
	Pesticide occurrence and aquatic benchmark exceedances in urban surface waters and sediments in three urban areas of California, USA, 2008–2011																		
Ensminger et al., 2012		San Francisco Bay (SFB)	Alamo Creek- MCC040	2008-2011	Bifenthrin	Dry	Water	Receiving	1	7	4	57%	ng/L		8.39	5.25	1.75	27.20	Non-detects substituted as 1/2 the reporting limit (RL= 3.5ng/L)
			Alamo Creek- MCC040	2008-2011	Fipronil	Dry	Water	Receiving	1	10	1	10%	µg/L		0.03	0.025	0.025	0.06	Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather	Water/ Sediment	Discharge/ Receiving Water	# Sites	# Samples	# Detected	% Detected	Units	Sed. Unit Weight	Mean	Median	Min	Max	Notes
			Alamo Creek- MCC040	2008-2011	Fipronil sulfone	Dry	Water	Receiving	1	10	0	0%	µg/L						
			Alamo Creek- MCC040	2008-2011	Deltamethrin	Dry	Water	Receiving	1	7	0	0%	ng/L						
			Alamo Creek- MCC040	2008-2011	Cyfluthrin	Dry	Water	Receiving	1	7	0	0%	ng/L						
			Alamo Creek- MCC040	2008-2011	L-Cyhalothrin	Dry	Water	Receiving	1	7	0	0%	ng/L						
			Alamo Creek- MCC040	2008-2011	Permethrin cis	Dry	Water	Receiving	1	7	1	14%	ng/L		6.59	5.0	5.0	16.1	Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
			Alamo Creek- MCC040	2008-2011	Permethrin trans	Dry	Water	Receiving	1	7	1	14%	ng/L		7.7	5.0	5.0	23.9	Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
Gan et al., 2012	Occurrence of Fipronil and Its Biologically Active Derivatives in Urban Residential Runoff	Sacramento	N1	2006-2008	Fipronil	Dry	Water	Discharge	1	82		85%	ng/L			5.60	<DL	108.00	<DL= below detection limit (1.5 ng/L) No mean provided
			N1	2006-2008	Fipronil desulfinyl	Dry	Water	Discharge	1	82		82%	ng/L			2.90	<DL	33.60	<DL= below detection limit (1.5 ng/L) No mean provided
			N1	2006-2008	fipronil sulfone	Dry	Water	Discharge	1	82		99%	ng/L			8.00	<DL	44.80	<DL= below detection limit (1.5 ng/L) No mean provided
			N1	2006-2008	fipronil sulfide	Dry	Water	Discharge	1	82		58%	ng/L			1.10	<DL	54.20	<DL= below detection limit (1.5 ng/L) No mean provided
Gan et al., 2012	Occurrence of Fipronil and Its Biologically Active Derivatives in Urban Residential Runoff	Sacramento	N2	2006-2008	Fipronil	Dry	Water	Discharge	1	79		66%	ng/L			3.10	<DL	2053.00	<DL= below detection limit (1.5 ng/L) No mean provided
			N2	2006-2008	Fipronil desulfinyl	Dry	Water	Discharge	1	79		72%	ng/L			1.60	<DL	26.20	<DL= below detection limit (1.5 ng/L) No mean provided
			N2	2006-2008	fipronil sulfone	Dry	Water	Discharge	1	79		64%	ng/L			4.70	<DL	391.00	<DL= below detection limit (1.5 ng/L) No mean provided
			N2	2006-2008	fipronil sulfide	Dry	Water	Discharge	1	79		47%	ng/L			<DL	<DL	26.20	<DL= below detection limit (1.5 ng/L) No mean provided
Gan et al., 2012	Occurrence of Fipronil and Its Biologically Active Derivatives in Urban Residential Runoff	Orange County	S1	2006-2008	Fipronil	Dry	Water	Discharge	1	69	69	100%	ng/L			131.00	13.5	1721.00	No mean provided
			S1	2006-2008	Fipronil desulfinyl	Dry	Water	Discharge	1	69	69	100%	ng/L			77.10	8.1	892.00	No mean provided
			S1	2006-2008	fipronil sulfone	Dry	Water	Discharge	1	69	69	100%	ng/L			145.00	3.8	925.00	No mean provided
			S1	2006-2008	fipronil sulfide	Dry	Water	Discharge	1	69	69	100%	ng/L			19.8	1.4	154.00	No mean provided
Gan et al., 2012	Occurrence of Fipronil and Its Biologically Active Derivatives in Urban Residential Runoff	Orange County	S2	2006-2008	Fipronil	Dry	Water	Discharge	1	98	98	100%	ng/L			81.10	2.8	2730.00	No mean provided
			S2	2006-2008	Fipronil desulfinyl	Dry	Water	Discharge	1	68	68	100%	ng/L			42.10	2.4	335.00	No mean provided
			S2	2006-2008	fipronil sulfone	Dry	Water	Discharge	1	68	68	100%	ng/L			64.30	3.2	238.00	No mean provided
			S2	2006-2008	fipronil sulfide	Dry	Water	Discharge	1	68		98%	ng/L			9.6	<DL	59.50	<DL= below detection limit (1.5 ng/L) No mean provided
Gan et al., 2012	Occurrence of Fipronil and Its Biologically Active Derivatives in Urban Residential Runoff	Orange County	S3	2006-2008	Fipronil	Dry	Water	Discharge	1	68		98%	ng/L			114.00	6.5	2481.00	No mean provided
			S3	2006-2008	Fipronil desulfinyl	Dry	Water	Discharge	1	68		98%	ng/L			68.60	5.4	735.00	No mean provided
			S3	2006-2008	fipronil sulfone	Dry	Water	Discharge	1	68		98%	ng/L			59.10	<DL	1961.00	<DL= below detection limit (1.5 ng/L) No mean provided
			S3	2006-2008	fipronil sulfide	Dry	Water	Discharge	1	68		97%	ng/L			18.5	<DL	203.00	<DL= below detection limit (1.5 ng/L) No mean provided
Gan et al., 2012	Occurrence of Fipronil and Its Biologically Active Derivatives in Urban Residential Runoff	Orange County	S4	2006-2008	Fipronil	Dry	Water	Discharge	1	61		100%	ng/L			79.00	1.8	10004.00	No mean provided
			S4	2006-2008	Fipronil desulfinyl	Dry	Water	Discharge	1	61		98%	ng/L			52.10	5.3	1123.00	No mean provided
			S4	2006-2008	fipronil sulfone	Dry	Water	Discharge	1	61		100%	ng/L			91.70	2.1	1169.00	No mean provided
			S4	2006-2008	fipronil sulfide	Dry	Water	Discharge	1	61		98%	ng/L			15.1	<DL	330.00	<DL= below detection limit (1.5 ng/L) No mean provided
Hladik et al., 2009	Concentrations and loads of suspended sediment-associated pesticides in the San Joaquin River, California and Tributaries during storm events	Northern California	San Joaquin River and tributaries	2008	Bifenthrin	Wet	Sediment	Receiving	9	16	16	100%	ng/g	Dry	5.5	1.35	0.2	51	
			San Joaquin River and tributaries	2008	Cyhalothrin	Wet	Sediment	Receiving	9	16	6	38%	ng/g	Dry	0.8	0.1	0.1	4.9	ND and trace detections substituted as 1/2 the detection limit (.01 ng/g)
			San Joaquin River and tributaries	2008	Esfenvalerate	Wet	Sediment	Receiving	9	16	10	63%	ng/g	Dry	0.5	0.3	0.1	1.5	ND and trace detections substituted as 1/2 the detection limit (.01 ng/g)
			San Joaquin River and tributaries	2008	Fenpropathrin	Wet	Sediment	Receiving	9	16	2	13%	ng/g	Dry	0.3	0.1	0.1	2.3	ND and trace detections substituted as 1/2 the detection limit (.01 ng/g)
			San Joaquin River and tributaries	2008	Permethrin	Wet	Sediment	Receiving	9	16	8	50%	ng/g	Dry	2.9	0.65	0.1	16	ND and trace detections substituted as 1/2 the detection limit (.01 ng/g)
			San Joaquin River and tributaries	2008	Resmethrin	Wet	Sediment	Receiving	9	16	1	6%	ng/g	Dry	1.3	0.1	0.1	19	ND and trace detections substituted as 1/2 the detection limit (.01 ng/g)
Hladik and Kuivila, 2012	Pyrethroid insecticides in bed sediments from urban and agricultural streams across the United States	Central Valley	Arcade Creek near Del Paso Heights	2009	Bifenthrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	1.2		1.2	1.2	Only one sample, no median calculated
			Heights	2009	Cyfluthrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	7.7		7.7	7.7	Only one sample, no median calculated
			Heights	2009	Cyhalothrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Heights	2009	Cypermethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Heights	2009	Delta/Tralomethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Heights	2009	Permethrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	0.4		0.4	0.4	Only one sample, no median calculated
			Arcade Creek near Del Paso Heights	2009	Resmethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
Holmes et al., 2008	Pesticides in Sediment Toxicity in California's Urban Waterways	North Coast	Ducker Creek	2006-2007	Bifenthrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	46.90		46.90	46.90	Only one sample, no median calculated
			Ducker Creek	2006-2007	Cyfluthrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Ducker Creek	2006-2007	Cypermethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Ducker Creek	2006-2007	Deltamethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Ducker Creek	2006-2007	Esfenvalerate	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Ducker Creek	2006-2007	Lambda-cyhalothrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Ducker Creek	2006-2007	Permethrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	23.70		23.70	23.70	Only one sample, no median calculated

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather	Water/ Sediment	Discharge/ Receiving Water	# Sites	# Samples	# Detected	% Detected	Units	Sed. Unit Weight	Mean	Median	Min	Max	Notes
Holmes et al., 2008	Statewide Investigation of the Role of Pyrethroid Pesticides in Sediment Toxicity in California's Urban Waterways	North Coast	Hinebaugh Creek	2006-2007	Bifenthrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	9.73		9.73	9.73	Only one sample, no median calculated
			Hinebaugh Creek	2006-2007	Cyfluthrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	8.00		8.00	8.00	Only one sample, no median calculated
			Hinebaugh Creek	2006-2007	Cypermethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Hinebaugh Creek	2006-2007	Deltamethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Hinebaugh Creek	2006-2007	Esfenvalerate	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Hinebaugh Creek	2006-2007	Lambda-cyhalothrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Hinebaugh Creek	2006-2007	Permethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry	4.00		4.00	4.00	Trace indicates below reporting limit, substituted 1/2 the reporting limit (permethrin <
Holmes et al., 2008	Statewide Investigation of the Role of Pyrethroid Pesticides in Sediment Toxicity in California's Urban Waterways	SF Bay	Blue Rock Springs	2006-2007	Bifenthrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	9.01		9.01	9.01	Only one sample, no median calculated
			Blue Rock Springs	2006-2007	Cyfluthrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	20.10		20.10	20.10	Only one sample, no median calculated
			Blue Rock Springs	2006-2007	Cypermethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Blue Rock Springs	2006-2007	Deltamethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Blue Rock Springs	2006-2007	Esfenvalerate	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Blue Rock Springs	2006-2007	Lambda-cyhalothrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Blue Rock Springs	2006-2007	Permethrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	8.61		8.61	8.61	Only one sample, no median calculated
Holmes et al., 2008	Statewide Investigation of the Role of Pyrethroid Pesticides in Sediment Toxicity in California's Urban Waterways	SF Bay	Corte Madera Creek	2006-2007	Bifenthrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	2.83		2.83	2.83	Only one sample, no median calculated
			Corte Madera Creek	2006-2007	Cyfluthrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	2.19		2.19	2.19	Only one sample, no median calculated
			Corte Madera Creek	2006-2007	Cypermethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Corte Madera Creek	2006-2007	Deltamethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Corte Madera Creek	2006-2007	Esfenvalerate	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Corte Madera Creek	2006-2007	Lambda-cyhalothrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Corte Madera Creek	2006-2007	Permethrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	9.10		9.10	9.10	Only one sample, no median calculated
Holmes et al., 2008	Statewide Investigation of the Role of Pyrethroid Pesticides in Sediment Toxicity in California's Urban Waterways	SF Bay	Coyote Creek	2006-2007	Bifenthrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	12.20		12.20	12.20	Only one sample, no median calculated
			Coyote Creek	2006-2007	Cyfluthrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	13.70		13.70	13.70	Only one sample, no median calculated
			Coyote Creek	2006-2007	Cypermethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Coyote Creek	2006-2007	Deltamethrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	9.31		9.31	9.31	Only one sample, no median calculated
			Coyote Creek	2006-2007	Esfenvalerate	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Coyote Creek	2006-2007	Lambda-cyhalothrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	2.19		2.19	2.19	Only one sample, no median calculated
			Coyote Creek	2006-2007	Permethrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	34.20		34.20	34.20	Only one sample, no median calculated
Holmes et al., 2008	Statewide Investigation of the Role of Pyrethroid Pesticides in Sediment Toxicity in California's Urban Waterways	SF Bay	Rheem Creek	2006-2007	Bifenthrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	9.80		9.80	9.80	Only one sample, no median calculated
			Rheem Creek	2006-2007	Cyfluthrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Rheem Creek	2006-2007	Cypermethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Rheem Creek	2006-2007	Deltamethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Rheem Creek	2006-2007	Esfenvalerate	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Rheem Creek	2006-2007	Lambda-cyhalothrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Rheem Creek	2006-2007	Permethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
Holmes et al., 2008	Statewide Investigation of the Role of Pyrethroid Pesticides in Sediment Toxicity in California's Urban Waterways	SF Bay	Stevens Creek	2006-2007	Bifenthrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	11.70		11.70	11.70	Only one sample, no median calculated
			Stevens Creek	2006-2007	Cyfluthrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	18.60		18.60	18.60	Only one sample, no median calculated
			Stevens Creek	2006-2007	Cypermethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Stevens Creek	2006-2007	Deltamethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Stevens Creek	2006-2007	Esfenvalerate	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Stevens Creek	2006-2007	Lambda-cyhalothrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Stevens Creek	2006-2007	Permethrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	24.00		24.00	24.00	Only one sample, no median calculated
Holmes et al., 2008	Statewide Investigation of the Role of Pyrethroid Pesticides in Sediment Toxicity in California's Urban Waterways	Central Coast	Del Rey Oaks Creek	2006-2007	Bifenthrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	3.33		3.33	3.33	Only one sample, no median calculated
			Del Rey Oaks Creek	2006-2007	Cyfluthrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	6.07		6.07	6.07	Only one sample, no median calculated
			Del Rey Oaks Creek	2006-2007	Cypermethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Del Rey Oaks Creek	2006-2007	Deltamethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Del Rey Oaks Creek	2006-2007	Esfenvalerate	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Del Rey Oaks Creek	2006-2007	Lambda-cyhalothrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Del Rey Oaks Creek	2006-2007	Permethrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	26.50		26.50	26.50	Only one sample, no median calculated
Holmes et al., 2008	Statewide Investigation of the Role of Pyrethroid Pesticides in Sediment Toxicity in California's Urban Waterways	Central Coast	Franklin Creek	2006-2007	Bifenthrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	7.16		7.16	7.16	Only one sample, no median calculated
			Franklin Creek	2006-2007	Cyfluthrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	6.98		6.98	6.98	Only one sample, no median calculated
			Franklin Creek	2006-2007	Cypermethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Franklin Creek	2006-2007	Deltamethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Franklin Creek	2006-2007	Esfenvalerate	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Franklin Creek	2006-2007	Lambda-cyhalothrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	24.20		24.20	24.20	Only one sample, no median calculated
			Franklin Creek	2006-2007	Permethrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	10.40		10.40	10.40	Only one sample, no median calculated
Holmes et al., 2008	Statewide Investigation of the Role of Pyrethroid Pesticides in Sediment Toxicity in California's Urban Waterways	Los Angeles	Arroyo Simi Creek	2006-2007	Bifenthrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	8.93		8.93	8.93	Only one sample, no median calculated

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather	Water/ Sediment	Discharge/ Receiving Water	# Sites	# Samples	# Detected	% Detected	Units	Sed. Unit Weight	Mean	Median	Min	Max	Notes
			Arroyo Simi Creek	2006-2007	Cyfluthrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Arroyo Simi Creek	2006-2007	Cypermethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Arroyo Simi Creek	2006-2007	Deltamethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Arroyo Simi Creek	2006-2007	Esfenvalerate	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Arroyo Simi Creek	2006-2007	Lambda-cyhalothrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Arroyo Simi Creek	2006-2007	Permethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry	4.00		4.00	4.00	Trace indicates below reporting limit, substituted 1/2 the reporting limit (permethrin < 4
Holmes et al., 2008	Statewide Investigation of the Role of Pyrethroid Pesticides in Sediment Toxicity in California's Urban Waterways	Los Angeles	Ballona Creek	2006-2007	Bifenthrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	5.02		5.02	5.02	Only one sample, no median calculated
			Ballona Creek	2006-2007	Cyfluthrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Ballona Creek	2006-2007	Cypermethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Ballona Creek	2006-2007	Deltamethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Ballona Creek	2006-2007	Esfenvalerate	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Ballona Creek	2006-2007	Lambda-cyhalothrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Ballona Creek	2006-2007	Permethrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	14.10		14.10	14.10	Only one sample, no median calculated
Holmes et al., 2008	Statewide Investigation of the Role of Pyrethroid Pesticides in Sediment Toxicity in California's Urban Waterways	Los Angeles	Bouquet Canyon Creek	2006-2007	Bifenthrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	173.00		173.00	173.00	Only one sample, no median calculated
			Bouquet Canyon Creek	2006-2007	Cyfluthrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	67.30		67.30	67.30	Only one sample, no median calculated
			Bouquet Canyon Creek	2006-2007	Cypermethrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	30.40		30.40	30.40	Only one sample, no median calculated
			Bouquet Canyon Creek	2006-2007	Deltamethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Bouquet Canyon Creek	2006-2007	Esfenvalerate	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Bouquet Canyon Creek	2006-2007	Lambda-cyhalothrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	9.80		9.80	9.80	Only one sample, no median calculated
			Bouquet Canyon Creek	2006-2007	Permethrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	53.10		53.10	53.10	Only one sample, no median calculated
Holmes et al., 2008	Statewide Investigation of the Role of Pyrethroid Pesticides in Sediment Toxicity in California's Urban Waterways	Los Angeles	Los Angeles River	2006-2007	Bifenthrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	6.52		6.52	6.52	Only one sample, no median calculated
			Los Angeles River	2006-2007	Cyfluthrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Los Angeles River	2006-2007	Cypermethrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	5.65		5.65	5.65	Only one sample, no median calculated
			Los Angeles River	2006-2007	Deltamethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Los Angeles River	2006-2007	Esfenvalerate	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Los Angeles River	2006-2007	Lambda-cyhalothrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Los Angeles River	2006-2007	Permethrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	18.00		18.00	18.00	Only one sample, no median calculated
Holmes et al., 2008	Statewide Investigation of the Role of Pyrethroid Pesticides in Sediment Toxicity in California's Urban Waterways	Los Angeles	Walnut Creek	2006-2007	Bifenthrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	24.20		24.20	24.20	Only one sample, no median calculated
			Walnut Creek	2006-2007	Cyfluthrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	20.40		20.40	20.40	Only one sample, no median calculated
			Walnut Creek	2006-2007	Cypermethrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	16.70		16.70	16.70	Only one sample, no median calculated
			Walnut Creek	2006-2007	Deltamethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Walnut Creek	2006-2007	Esfenvalerate	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Walnut Creek	2006-2007	Lambda-cyhalothrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	5.21		5.21	5.21	Only one sample, no median calculated
			Walnut Creek	2006-2007	Permethrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	35.70		35.70	35.70	Only one sample, no median calculated
Holmes et al., 2008	Statewide Investigation of the Role of Pyrethroid Pesticides in Sediment Toxicity in California's Urban Waterways	Central Valley	Carson Creek	2006-2007	Bifenthrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	112.00		112.00	112.00	Only one sample, no median calculated
			Carson Creek	2006-2007	Cyfluthrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	14.50		14.50	14.50	Only one sample, no median calculated
			Carson Creek	2006-2007	Cypermethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Carson Creek	2006-2007	Deltamethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Carson Creek	2006-2007	Esfenvalerate	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Carson Creek	2006-2007	Lambda-cyhalothrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Carson Creek	2006-2007	Permethrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	28.70		28.70	28.70	Only one sample, no median calculated
Holmes et al., 2008	Statewide Investigation of the Role of Pyrethroid Pesticides in Sediment Toxicity in California's Urban Waterways	Central Valley	Clover Creek	2006-2007	Bifenthrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	219.00		219.00	219.00	Only one sample, no median calculated
			Clover Creek	2006-2007	Cyfluthrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	21.10		21.10	21.10	Only one sample, no median calculated
			Clover Creek	2006-2007	Cypermethrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	14.70		14.70	14.70	Only one sample, no median calculated
			Clover Creek	2006-2007	Deltamethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Clover Creek	2006-2007	Esfenvalerate	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Clover Creek	2006-2007	Lambda-cyhalothrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Clover Creek	2006-2007	Permethrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	47.60		47.60	47.60	Only one sample, no median calculated
Lowe et al., 2007	Final Project Report: Investigations of Sources and Effects of Pyrethroid Pesticides in Watersheds of the San Francisco Estuary	Tributaries to SF Estuary	Petaluma River	2004-2005	Bifenthrin	Dry	Sediment	Receiving	2	4	1	25%	µg/kg	Dry	6.7		6.7	6.7	Only one sample, no median calculated
			Petaluma River	2004-2005	Cyfluthrin	Dry	Sediment	Receiving	2	4	0	0%	µg/kg	Dry					
			Petaluma River	2004-2005	Cypermethrin	Dry	Sediment	Receiving	2	4	0	0%	µg/kg	Dry					
			Petaluma River	2004-2005	Permethrin	Dry	Sediment	Receiving	2	4	0	0%	µg/kg	Dry					
Lowe et al., 2007	Final Project Report: Investigations of Sources and Effects of Pyrethroid Pesticides in Watersheds of the San Francisco Estuary	Tributaries to SF Estuary	Napa River	2004-2005	Bifenthrin	Dry	Sediment	Receiving	2	4	2	50%	µg/kg	Dry	1.6	1.55	1.1	2	
			Napa River	2004-2005	Cyfluthrin	Dry	Sediment	Receiving	2	4	0	0%	µg/kg	Dry					
			Napa River	2004-2005	Cypermethrin	Dry	Sediment	Receiving	2	4	0	0%	µg/kg	Dry					
			Napa River	2004-2005	Permethrin	Dry	Sediment	Receiving	2	4	0	0%	µg/kg	Dry					
Lowe et al., 2007	Final Project Report: Investigations of Sources and Effects of Pyrethroid Pesticides in Watersheds of the San Francisco Estuary	Tributaries to SF Estuary	Suisun Creek	2004-2005	Bifenthrin	Dry	Sediment	Receiving	2	4	1	25%	µg/kg	Dry			3.6	3.6	Only one sample, no median calculated

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather	Water/ Sediment	Discharge/ Receiving Water	# Sites	# Samples	# Detected	% Detected	Units	Sed. Unit Weight	Mean	Median	Min	Max	Notes
			Suisun Creek	2004-2005	Cyfluthrin	Dry	Sediment	Receiving	2	4	0	0%	µg/kg	Dry					
			Suisun Creek	2004-2005	Cypermethrin	Dry	Sediment	Receiving	2	4	0	0%	µg/kg	Dry					
			Suisun Creek	2004-2005	Permethrin	Dry	Sediment	Receiving	2	4	1	25%	µg/kg	Dry	3.2		3.2	3.2	Only one sample, no median calculated
Lowe et al., 2007	Final Project Report: Investigations of Sources and Effects of Pyrethroid Pesticides in Watersheds of the San Francisco Estuary	Tributaries to SF Estuary	San Lorenzo Creek	2004-2005	Bifenthrin	Dry	Sediment	Receiving	2	4	2	50%	µg/kg	Dry	3.3	3.25	2.1	4.4	
			San Lorenzo Creek	2004-2005	Cyfluthrin	Dry	Sediment	Receiving	2	4	0	0%	µg/kg	Dry					
			San Lorenzo Creek	2004-2005	Cypermethrin	Dry	Sediment	Receiving	2	4	0	0%	µg/kg	Dry					
			San Lorenzo Creek	2004-2005	Permethrin	Dry	Sediment	Receiving	2	4	1	25%	µg/kg	Dry	3.8		3.8	3.8	Only one sample, no median calculated
Lowe et al., 2007	Final Project Report: Investigations of Sources and Effects of Pyrethroid Pesticides in Watersheds of the San Francisco Estuary	Tributaries to SF Estuary	Coyote Creek	2004-2005	Bifenthrin	Dry	Sediment	Receiving	2	4	3	75%	µg/kg	Dry					
			Coyote Creek	2004-2005	Cyfluthrin	Dry	Sediment	Receiving	2	4	0	0%	µg/kg	Dry	1.6	1.9	0.9	2	
			Coyote Creek	2004-2005	Cypermethrin	Dry	Sediment	Receiving	2	4	0	0%	µg/kg	Dry					
			Coyote Creek	2004-2005	Permethrin	Dry	Sediment	Receiving	2	4	0	0%	µg/kg	Dry					
Lowe et al., 2007	Final Project Report: Investigations of Sources and Effects of Pyrethroid Pesticides in Watersheds of the San Francisco Estuary	Tributaries to SF Estuary	San Mateo Creek	2004-2005	Bifenthrin	Dry	Sediment	Receiving	2	4	3	75%	µg/kg	Dry	6.5	6.7	2.4	10.3	
			San Mateo Creek	2004-2005	Cyfluthrin	Dry	Sediment	Receiving	2	4	1	25%	µg/kg	Dry	8.6		8.6	8.6	Only one sample, no median calculated
			San Mateo Creek	2004-2005	Cypermethrin	Dry	Sediment	Receiving	2	4	1	25%	µg/kg	Dry	4.2		4.2	4.2	Only one sample, no median calculated
			San Mateo Creek	2004-2005	Permethrin	Dry	Sediment	Receiving	2	4	2	50%	µg/kg	Dry	11.9	11.85	3.2	20.5	
Ng et al., 2008	Patterns of Pyrethroid Contamination and Toxicity in Agricultural and Urban Stream Segments	Central California	Gabilan, Natividad and Alisal Creeks, Salinas	2005	Bifenthrin	Dry	Sediment	Receiving	5	5	5	100%	ng/g	Dry	7.0	8.8	1.2	10.7	Urban sites are downstream from ag areas
			Gabilan, Natividad and Alisal Creeks, Salinas	2005	Cyfluthrin	Dry	Sediment	Receiving	5	5	3	60%	ng/g	Dry	1.9	1.1	0.5	3.7	ND substituted as 1/2 the detection limit (0.5 ng/g)
			Gabilan, Natividad and Alisal Creeks, Salinas	2005	Cypermethrin	Dry	Sediment	Receiving	5	5	5	100%	ng/g	Dry	4.1	4.6	1	7	
			Gabilan, Natividad and Alisal Creeks, Salinas	2005	Esfenvalerate	Dry	Sediment	Receiving	5	5	3	60%	ng/g	Dry	1.4	1	0.5	3.4	ND substituted as 1/2 the detection limit (0.5 ng/g)
			Gabilan, Natividad and Alisal Creeks, Salinas	2005	Lambda-cyhalothrin	Dry	Sediment	Receiving	5	5	2	40%	ng/g	Dry	2.3	0.5	0.5	6.8	ND substituted as 1/2 the detection limit (0.5 ng/g)
			Gabilan, Natividad and Alisal Creeks, Salinas	2005	Permethrin	Dry	Sediment	Receiving	5	5	5	100%	ng/g	Dry	23.3	9.3	5.4	82.5	
Riverside County, 2011	Santa Margarita River Watershed Annual Monitoring Report - Appendix G	Southern California	Cole Creek	2010-2011	Cyfluthrin	Wet	Water	Receiving	1	3	3	100%	ng/L		0.7	0.5	0.5	1.0	ND results substituted as 1/2 the detection limit (0.0005 µg/L); Unit conversions made for consistency
Riverside County, 2011	Santa Margarita River Watershed Annual Monitoring Report - Appendix G	Southern California	Long Canyon Channel	2010-2011	Bifenthrin	Wet	Water	Receiving	1	2	2	100%	ng/L		35.0	35.0	30.0	40.0	
			Long Canyon Channel	2010-2011	Cyfluthrin	Wet	Water	Receiving	1	2	2	100%	ng/L		17.0	34.0	34.0	34.0	
			Long Canyon Channel	2010-2011	Cypermethrin	Wet	Water	Receiving	1	2	2	100%	ng/L		2.8	2.75	0.5	5.0	ND results substituted as 1/2 the detection limit (0.0005 µg/L); Unit conversions made for consistency
			Long Canyon Channel	2010-2011	Esfenvalerate	Wet	Water	Receiving	1	2	2	100%	ng/L		0.6	0.55	0.5	0.6	ND results substituted as 1/2 the detection limit (0.0005 µg/L); Unit conversions made for consistency
			Long Canyon Channel	2010-2011	Lambda-cyhalothrin	Wet	Water	Receiving	1	2	2	100%	ng/L		3.0	3.0	3.0	3.0	
Riverside County, 2011	Santa Margarita River Watershed Annual Monitoring Report - Appendix G	Southern California	Murrieta Creek	2010-2011	Bifenthrin	Wet	Water	Receiving	1	3	3	100%	ng/L		47.7	20.0	3.0	120.0	
			Murrieta Creek	2010-2011	Cyfluthrin	Wet	Water	Receiving	1	3	3	100%	ng/L		3.3	0.5	0.5	9.0	ND results substituted as 1/2 the detection limit (0.0005 µg/L); Unit conversions made for consistency
			Murrieta Creek	2010-2011	Cypermethrin	Wet	Water	Receiving	1	3	3	100%	ng/L		1.0	0.5	0.5	2.0	ND results substituted as 1/2 the detection limit (0.0005 µg/L); Unit conversions made for consistency
			Murrieta Creek	2010-2011	Lambda-cyhalothrin	Wet	Water	Receiving	1	3	3	100%	ng/L		1.0	0.5	0.5	2.0	ND results substituted as 1/2 the detection limit (0.0005 µg/L); Unit conversions made for consistency
Riverside County, 2011	Santa Margarita River Watershed Annual Monitoring Report - Appendix G	Southern California	Redhawk Channel	2010-2011	Bifenthrin	Dry	Water	Receiving	1	2	2	100%	ng/L		4.3	4.25	0.5	8.0	ND results substituted as 1/2 the detection limit (0.0005 µg/L); Unit conversions made for consistency
Riverside County, 2011	Santa Margarita River Watershed Annual Monitoring Report - Appendix G	Southern California	Santa Gertrudis Channel	2010-2011	Bifenthrin	Wet	Water	Receiving	1	2	2	100%	ng/L		20.0	20.0	10.0	30.0	
			Santa Gertrudis Channel	2010-2011	Cyfluthrin	Wet	Water	Receiving	1	2	2	100%	ng/L		5.3	5.25	0.5	10.0	ND results substituted as 1/2 the detection limit (0.0005 µg/L); Unit conversions made for consistency
			Santa Gertrudis Channel	2010-2011	Cypermethrin	Wet	Water	Receiving	1	2	2	100%	ng/L		1.8	1.75	0.5	3.0	ND results substituted as 1/2 the detection limit (0.0005 µg/L); Unit conversions made for consistency
			Santa Gertrudis Channel	2010-2011	Lambda-cyhalothrin	Wet	Water	Receiving	1	2	2	100%	ng/L		2.0	2.0	1.0	3.0	
			Santa Gertrudis Channel	2010-2011	Permethrin	Wet	Water	Receiving	1	1	1	100%	ng/L		410.0			410.0	Only mean and max provided in data set
			Santa Gertrudis Channel	2010-2011	Permethrin cis	Wet	Water	Receiving	1	1	1	100%	ng/L		30.0			30.0	Only mean and max provided in data set
			Santa Gertrudis Channel	2010-2011	Permethrin trans	Wet	Water	Receiving	1	1	1	100%	ng/L		60.0			60.0	Only mean and max provided in data set
Riverside County, 2011	Santa Margarita River Watershed Annual Monitoring Report - Appendix G	Southern California	Temecula Creek	2010-2011	Bifenthrin	Wet	Water	Receiving	1	3	3	100%	ng/L		76.8	80.0	0.5	150.0	ND results substituted as 1/2 the detection limit (0.0005 µg/L); Unit conversions made for consistency
			Temecula Creek	2010-2011	Cyfluthrin	Wet	Water	Receiving	1	3	3	100%	ng/L		18.2	4.0	0.5	50.0	ND results substituted as 1/2 the detection limit (0.0005 µg/L); Unit conversions made for consistency
			Temecula Creek	2010-2011	Cypermethrin	Wet	Water	Receiving	1	3	3	100%	ng/L		2.3	0.5	0.5	6.0	ND results substituted as 1/2 the detection limit (0.0005 µg/L); Unit conversions made for consistency
			Temecula Creek	2010-2011	Esfenvalerate	Wet	Water	Receiving	1	3	3	100%	ng/L		0.6	0.5	0.5	0.7	ND results substituted as 1/2 the detection limit (0.0005 µg/L); Unit conversions made for consistency
			Temecula Creek	2010-2011	Fenvalerate	Wet	Water	Receiving	1	3	3	100%	ng/L		0.5	0.5	0.5	0.6	ND results substituted as 1/2 the detection limit (0.0005 µg/L); Unit conversions made for consistency
			Temecula Creek	2010-2011	Lambda-cyhalothrin	Wet	Water	Receiving	1	3	3	100%	ng/L		3.8	3.0	0.5	8.0	ND results substituted as 1/2 the detection limit (0.0005 µg/L); Unit conversions made for consistency
			Temecula Creek	2010-2011	Permethrin	Wet	Water	Receiving	1	1	1	100%	ng/L		30				Only mean provided in data set
Riverside County, 2011	Santa Margarita River Watershed Annual Monitoring Report - Appendix G	Southern California	Warm Springs Channel	2010-2011	Bifenthrin	Wet	Water	Receiving	1	2	2	100%	ng/L		39.0	39.0	8.0	70.0	
			Warm Springs Channel		Cyfluthrin	Wet	Water	Receiving	1	2	2				42.0	42.0	4.0	80.0	ND results substituted as 1/2 the detection limit (0.0005 µg/L); Unit conversions made for consistency

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather	Water/ Sediment	Discharge/ Receiving Water	# Sites	# Samples	# Detected	% Detected	Units	Sed. Unit Weight	Mean	Median	Min	Max	Notes
				2010-2011								100%	ng/L						ND results substituted as 1/2 the detection limit (0.0005 µg/L); Unit conversions
			Warm Springs Channel		Cypermethrin	Wet	Water	Receiving	1	2	2				0.8	0.75	0.5	1.0	made for consistency
			Warm Springs Channel	2010-2011	Lambda-cyhalothrin	Wet	Water	Receiving	1	2	2	100%	ng/L		1.8	1.8	0.6	3.0	
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Natomas STA2	2008	Allethrin	Wet	Water	Discharge	1	2	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2008	Bifenthrin	Wet	Water	Discharge	1	2	2	100%	ng/L		20.367	18.4	15.2	27.5	
			Natomas STA2	2008	Cyfluthrin	Wet	Water	Discharge	1	2	1	50%	ng/L		3.625		0.25	7.0	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2008	Cypermethrin	Wet	Water	Discharge	1	2	2	100%	ng/L		3.3		2.7	3.9	
			Natomas STA2	2008	Danitol	Wet	Water	Discharge	1	2	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2008	Deltamethrin	Wet	Water	Discharge	1	2	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2008	Esfenvalerate	Wet	Water	Discharge	1	2	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2008	Fenvalerate	Wet	Water	Discharge	1	2	1	50%	ng/L		1.075		0.25	1.9	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2008	Fluvalinate	Wet	Water	Discharge	1	2	1	50%	ng/L		1.975		0.25	3.7	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2008	L-Cyhalothrin	Wet	Water	Discharge	1	2	1	50%	ng/L		0.625		0.25	1.0	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2008	Permethrin	Wet	Water	Discharge	1	2	0	0%	ng/L		2.5		2.5	2.5	ND substituted as 1/2 the reporting limit (5 ng/L).
			Natomas STA2	2008	Permethrin, cis-	Wet	Water	Discharge	1	1	0	0%	ng/L		2.5		2.5	2.5	ND substituted as 1/2 the reporting limit (5 ng/L).
			Natomas STA2	2008	Permethrin, trans-	Wet	Water	Discharge	1	1	0	0%	ng/L		2.5		2.5	2.5	ND substituted as 1/2 the reporting limit (5 ng/L).
			Natomas STA2	2008	Prallethrin	Wet	Water	Discharge	1	2	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2008	Resmethrin	Wet	Water	Discharge	1	2	0	0%	ng/L		2.5		2.5	2.5	ND substituted as 1/2 the reporting limit (5 ng/L).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Arcade Creek at Watt Avenue	2008	Allethrin	Wet	Sediment	Receiving	1	1	0	0%	ng/L	Dry	0.75		0.75	0.75	ND substituted as 1/2 the reporting limit (1.5 ng/L).
			Arcade Creek at Watt Avenue	2008	Bifenthrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.5		0.5	0.5	ND substituted as 1/2 the reporting limit (1.0 µg/kg).
			Arcade Creek at Watt Avenue	2008	Cyfluthrin	Wet	Sediment	Receiving	1	1	0	0%	ng/L	Dry	0.75		0.75	0.75	ND substituted as 1/2 the reporting limit (1.5 ng/L).
			Arcade Creek at Watt Avenue	2008	Cypermethrin	Wet	Sediment	Receiving	1	1	0	0%	ng/L	Dry	0.75		0.75	0.75	ND substituted as 1/2 the reporting limit (1.5 ng/L).
			Arcade Creek at Watt Avenue	2008	Deltamethrin	Wet	Sediment	Receiving	1	1	0	0%	ng/L	Dry	0.75		0.75	0.75	ND substituted as 1/2 the reporting limit (1.5 ng/L).
			Arcade Creek at Watt Avenue	2008	Esfenvalerate	Wet	Sediment	Receiving	1	1	0	0%	ng/L	Dry	0.75		0.75	0.75	ND substituted as 1/2 the reporting limit (1.5 ng/L).
			Arcade Creek at Watt Avenue	2008	Fenpropathrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.5		0.5	0.5	ND substituted as 1/2 the reporting limit (1.0 µg/kg).
			Arcade Creek at Watt Avenue	2008	L-Cyhalothrin	Wet	Sediment	Receiving	1	1	0	0%	ng/L	Dry	0.75		0.75	0.75	ND substituted as 1/2 the reporting limit (1.5 ng/L).
			Arcade Creek at Watt Avenue	2008	Permethrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.5		0.5	0.5	ND substituted as 1/2 the reporting limit (1.0 µg/kg).
			Arcade Creek at Watt Avenue	2008	Phenothrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.75		0.75	0.75	ND substituted as 1/2 the reporting limit (1.5 µg/kg).
			Arcade Creek at Watt Avenue	2008	Resmethrin	Wet	Sediment	Receiving	1	1	0	0%	ng/L	Dry	0.75		0.75	0.75	ND substituted as 1/2 the reporting limit (1.5 ng/L).
			Arcade Creek at Watt Avenue	2008	Tau-Fluvalinate	Wet	Sediment	Receiving	1	1	0	0%	ng/L	Dry	0.75		0.75	0.75	ND substituted as 1/2 the reporting limit (1.5 ng/L).
			Arcade Creek at Watt Avenue	2008	Tetramethrin	Wet	Sediment	Receiving	1	1	0	0%	ng/L	Dry	0.75		0.75	0.75	ND substituted as 1/2 the reporting limit (1.5 ng/L).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Laguna Creek at Franklin	2008	Allethrin	Wet	Sediment	Receiving	1	1	0	0%	ng/L	Dry	0.75		0.75	0.75	ND substituted as 1/2 the reporting limit (1.5 ng/L).
			Laguna Creek at Franklin	2008	Bifenthrin	Wet	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	4		4	4	Only one sample, no median calculated
			Laguna Creek at Franklin	2008	Cyfluthrin	Wet	Sediment	Receiving	1	1	0	0%	ng/L	Dry	0.75		0.75	0.75	ND substituted as 1/2 the reporting limit (1.5 ng/L).
			Laguna Creek at Franklin	2008	Cypermethrin	Wet	Sediment	Receiving	1	1	0	0%	ng/L	Dry	0.75		0.75	0.75	ND substituted as 1/2 the reporting limit (1.5 ng/L).
			Laguna Creek at Franklin	2008	Deltamethrin	Wet	Sediment	Receiving	1	1	0	0%	ng/L	Dry	0.75		0.75	0.75	ND substituted as 1/2 the reporting limit (1.5 ng/L).
			Laguna Creek at Franklin	2008	Esfenvalerate	Wet	Sediment	Receiving	1	1	0	0%	ng/L	Dry	0.75		0.75	0.75	ND substituted as 1/2 the reporting limit (1.5 ng/L).
			Laguna Creek at Franklin	2008	Fenpropathrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.5		0.5	0.5	ND substituted as 1/2 the reporting limit (1.0 µg/kg).
			Laguna Creek at Franklin	2008	L-Cyhalothrin	Wet	Sediment	Receiving	1	1	0	0%	ng/L	Dry	0.75		0.75	0.75	ND substituted as 1/2 the reporting limit (1.5 ng/L).
			Laguna Creek at Franklin	2008	Permethrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.5		0.5	0.5	ND substituted as 1/2 the reporting limit (1.0 µg/kg).
			Laguna Creek at Franklin	2008	Phenothrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.75		0.75	0.75	ND substituted as 1/2 the reporting limit (1.5 µg/kg).
			Laguna Creek at Franklin	2008	Resmethrin	Wet	Sediment	Receiving	1	1	0	0%	ng/L	Dry	0.75		0.75	0.75	ND substituted as 1/2 the reporting limit (1.5 ng/L).
			Laguna Creek at Franklin	2008	Tau-Fluvalinate	Wet	Sediment	Receiving	1	1	0	0%	ng/L	Dry	0.75		0.75	0.75	ND substituted as 1/2 the reporting limit (1.5 ng/L).
			Laguna Creek at Franklin	2008	Tetramethrin	Wet	Sediment	Receiving	1	1	0	0%	ng/L	Dry	0.75		0.75	0.75	ND substituted as 1/2 the reporting limit (1.5 ng/L).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Willow Creek at Blue Ravine Road	2008	Allethrin	Wet	Sediment	Receiving	1	1	0	0%	ng/L	Dry	0.75		0.75	0.75	ND substituted as 1/2 the reporting limit (1.5 ng/L).
			Willow Creek at Blue Ravine Road	2008	Bifenthrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.5		0.5	0.5	ND substituted as 1/2 the reporting limit (1.0 µg/kg).
			Willow Creek at Blue Ravine Road	2008	Cyfluthrin	Wet	Sediment	Receiving	1	1	0	0%	ng/L	Dry	0.75		0.75	0.75	ND substituted as 1/2 the reporting limit (1.5 ng/L).
			Willow Creek at Blue Ravine Road	2008	Cypermethrin	Wet	Sediment	Receiving	1	1	0	0%	ng/L	Dry	0.75		0.75	0.75	ND substituted as 1/2 the reporting limit (1.5 ng/L).
			Road	2008	Deltamethrin	Wet	Sediment	Receiving	1	1	0	0%	ng/L	Dry	0.75		0.75	0.75	ND substituted as 1/2 the reporting limit (1.5 ng/L).
			Willow Creek at Blue Ravine Road	2008	Esfenvalerate	Wet	Sediment	Receiving	1	1	0	0%	ng/L	Dry	0.75		0.75	0.75	ND substituted as 1/2 the reporting limit (1.5 ng/L).
			Willow Creek at Blue Ravine Road	2008	Fenpropathrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.5		0.5	0.5	ND substituted as 1/2 the reporting limit (1.0 µg/kg).
			Willow Creek at Blue Ravine Road	2008	L-Cyhalothrin	Wet	Sediment	Receiving	1	1	0	0%	ng/L	Dry	0.75		0.75	0.75	ND substituted as 1/2 the reporting limit (1.5 ng/L).
			Willow Creek at Blue Ravine Road	2008	Permethrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.5		0.5	0.5	ND substituted as 1/2 the reporting limit (1.0 µg/kg).
			Willow Creek at Blue Ravine Road	2008	Phenothrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.75		0.75	0.75	ND substituted as 1/2 the reporting limit (1.5 µg/kg).
			Willow Creek at Blue Ravine Road	2008	Resmethrin	Wet	Sediment	Receiving	1	1	0	0%	ng/L	Dry	0.75		0.75	0.75	ND substituted as 1/2 the reporting limit (1.5 ng/L).
			Willow Creek at Blue Ravine Road	2008	Tau-Fluvalinate	Wet	Sediment	Receiving	1	1	0	0%	ng/L	Dry	0.75		0.75	0.75	ND substituted as 1/2 the reporting limit (1.5 ng/L).
			Willow Creek at Blue Ravine Road	2008	Tetramethrin	Wet	Sediment	Receiving	1	1	0	0%	ng/L	Dry	0.75		0.75	0.75	ND substituted as 1/2 the reporting limit (1.5 ng/L).

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather	Water/ Sediment	Discharge/ Receiving Water	# Sites	# Samples	# Detected	% Detected	Units	Sed. Unit Weight	Mean	Median	Min	Max	Notes
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Natomas STA2	2009	Allethrin	Dry	Water	Discharge	1	2	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2009	Bifenthrin	Dry	Water	Discharge	1	2	1	50%	ng/L		1.475		0.25	2.7	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2009	Cyfluthrin	Dry	Water	Discharge	1	2	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2009	Cypermethrin	Dry	Water	Discharge	1	2	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2009	Danitol	Dry	Water	Discharge	1	2	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2009	Deltamethrin	Dry	Water	Discharge	1	2	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2009	Esfenvalerate	Dry	Water	Discharge	1	1	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2009	Esfenvalerate/Fenvalerate	Dry	Water	Discharge	1	1	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2009	Fenvalerate	Dry	Water	Discharge	1	2	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2009	Fluvalinate	Dry	Water	Discharge	1	2	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2009	L-Cyhalothrin	Dry	Water	Discharge	1	2	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2009	Permethrin	Dry	Water	Discharge	1	2	0	0%	ng/L		2.5		2.5	2.5	ND substituted as 1/2 the reporting limit (5 ng/L).
			Natomas STA2	2009	Prallethrin	Dry	Water	Discharge	1	2	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2009	Resmethrin	Dry	Water	Discharge	1	2	0	0%	ng/L		2.5		2.5	2.5	ND substituted as 1/2 the reporting limit (5 ng/L).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Strong Ranch Slough	2009	Allethrin	Dry	Water	Discharge	1	1	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Strong Ranch Slough	2009	Bifenthrin	Dry	Water	Discharge	1	1	1	100%	ng/L		2.1		2.1	2.1	Only one sample, no median calculated
			Strong Ranch Slough	2009	Cyfluthrin	Dry	Water	Discharge	1	1	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Strong Ranch Slough	2009	Cypermethrin	Dry	Water	Discharge	1	1	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Strong Ranch Slough	2009	Danitol	Dry	Water	Discharge	1	1	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Strong Ranch Slough	2009	Deltamethrin	Dry	Water	Discharge	1	1	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Strong Ranch Slough	2009	Esfenvalerate	Dry	Water	Discharge	1	1	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Strong Ranch Slough	2009	Fenvalerate	Dry	Water	Discharge	1	1	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Strong Ranch Slough	2009	Fluvalinate	Dry	Water	Discharge	1	1	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Strong Ranch Slough	2009	L-Cyhalothrin	Dry	Water	Discharge	1	1	1	100%	ng/L		0.8		0.8	0.8	Only one sample, no median calculated
			Strong Ranch Slough	2009	Permethrin	Dry	Water	Discharge	1	1	0	0%	ng/L		2.5		2.5	2.5	ND substituted as 1/2 the reporting limit (5 ng/L).
			Strong Ranch Slough	2009	Prallethrin	Dry	Water	Discharge	1	1	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Strong Ranch Slough	2009	Resmethrin	Dry	Water	Discharge	1	1	0	0%	ng/L		2.5		2.5	2.5	ND substituted as 1/2 the reporting limit (5 ng/L).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Sump 111	2009	Allethrin	Dry	Water	Discharge	1	1	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Sump 111	2009	Bifenthrin	Dry	Water	Discharge	1	1	1	100%	ng/L		12.7		12.7	12.7	Only one sample, no median calculated
			Sump 111	2009	Cyfluthrin	Dry	Water	Discharge	1	1	1	100%	ng/L		6.0		6.0	6.0	Only one sample, no median calculated
			Sump 111	2009	Cypermethrin	Dry	Water	Discharge	1	1	1	100%	ng/L		12.8		12.8	12.8	Only one sample, no median calculated
			Sump 111	2009	Danitol	Dry	Water	Discharge	1	1	1	100%	ng/L		3.8		3.8	3.8	Only one sample, no median calculated
			Sump 111	2009	Deltamethrin	Dry	Water	Discharge	1	1	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Sump 111	2009	Esfenvalerate	Dry	Water	Discharge	1	1	1	100%	ng/L		2.7		2.7	2.7	Only one sample, no median calculated
			Sump 111	2009	Fenvalerate	Dry	Water	Discharge	1	1	1	100%	ng/L		2.4		2.4	2.4	Only one sample, no median calculated
			Sump 111	2009	Fluvalinate	Dry	Water	Discharge	1	1	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Sump 111	2009	L-Cyhalothrin	Dry	Water	Discharge	1	1	1	100%	ng/L		3.4		3.4	3.4	Only one sample, no median calculated
			Sump 111	2009	Permethrin	Dry	Water	Discharge	1	1	1	100%	ng/L		170.5		170.5	170.5	Only one sample, no median calculated
			Sump 111	2009	Prallethrin	Dry	Water	Discharge	1	1	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Sump 111	2009	Resmethrin	Dry	Water	Discharge	1	1	0	0%	ng/L		2.5		2.5	2.5	ND substituted as 1/2 the reporting limit (5 ng/L).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Natomas STA2	2009	Allethrin	Wet	Water	Discharge	1	3	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2009	Bifenthrin	Wet	Water	Discharge	1	3	3	100%	ng/L		24.8333		15.2	40.7	
			Natomas STA2	2009	Cyfluthrin	Wet	Water	Discharge	1	3	2	67%	ng/L		43.35		0.25	124.3	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2009	Cypermethrin	Wet	Water	Discharge	1	3	1	33%	ng/L		5.7333		0.25	16.7	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2009	Danitol	Wet	Water	Discharge	1	3	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2009	Deltamethrin	Wet	Water	Discharge	1	3	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2009	Esfenvalerate	Wet	Water	Discharge	1	3	1	33%	ng/L		0.4		0.25	0.7	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2009	Fenvalerate	Wet	Water	Discharge	1	3	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2009	Fluvalinate	Wet	Water	Discharge	1	3	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2009	L-Cyhalothrin	Wet	Water	Discharge	1	3	2	67%	ng/L		5.25		1.1	14.4	
			Natomas STA2	2009	Permethrin	Wet	Water	Discharge	1	3	0	0%	ng/L		2.5		2.5	2.5	ND substituted as 1/2 the reporting limit (5 ng/L).
			Natomas STA2	2009	Prallethrin	Wet	Water	Discharge	1	3	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2009	Resmethrin	Wet	Water	Discharge	1	3	0	0%	ng/L		2.5		2.5	2.5	ND substituted as 1/2 the reporting limit (5 ng/L).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Strong Ranch Slough	2009	Allethrin	Wet	Water	Discharge	1	3	0	0%	ng/L		0.2167		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Strong Ranch Slough	2009	Bifenthrin	Wet	Water	Discharge	1	3	3	100%	ng/L		104.8333		63.6	150.9	
			Strong Ranch Slough	2009	Cyfluthrin	Wet	Water	Discharge	1	3	3	100%	ng/L		70.4		47.3	148.9	
			Strong Ranch Slough	2009	Cypermethrin	Wet	Water	Discharge	1	3	3	100%	ng/L		61.4		57.5	113.7	
			Strong Ranch Slough	2009	Danitol	Wet	Water	Discharge	1	2	2	100%	ng/L		1.4		0.8	2.0	
			Strong Ranch Slough	2009	Deltamethrin	Wet	Water	Discharge	1	2	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Strong Ranch Slough	2009	Deltamethrin/Tralomethrin	Wet	Water	Discharge	1	1	0	0%	ng/L		0.3		0.3	0.3	ND substituted as 1/2 the reporting limit (0.6 ng/L).
			Strong Ranch Slough	2009	Esfenvalerate	Wet	Water	Discharge	1	2	2	100%	ng/L		2.85		1.2	4.5	
			Strong Ranch Slough	2009	Esfenvalerate/Fenvalerate	Wet	Water	Discharge	1	1	1	100%	ng/L		0.4		0.4	0.4	Only one sample, no median calculated
			Strong Ranch Slough	2009	Fenpropathrin	Wet	Water	Discharge	1	1	0	0%	ng/L		0.15		0.15	0.15	ND substituted as 1/2 the reporting limit (0.3 ng/L).
			Strong Ranch Slough	2009	Fenvalerate	Wet	Water	Discharge	1	2	2	100%	ng/L		1.75		0.8	2.7	
			Strong Ranch Slough	2009	Fluvalinate	Wet	Water	Discharge	1	3	0	0%	ng/L		0.2167		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Strong Ranch Slough	2009	L-Cyhalothrin	Wet	Water	Discharge	1	3	3	100%	ng/L		17.3333		3.2	46.8	
			Strong Ranch Slough	2009	Permethrin	Wet	Water	Discharge	1	3	2	67%	ng/L		130.5		2.5	344	
			Strong Ranch Slough	2009	Prallethrin	Wet	Water	Discharge	1	2	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Strong Ranch Slough	2009	Resmethrin	Wet	Water	Discharge	1	2	0	0%	ng/L		2.5		2.5	2.5	ND substituted as 1/2 the reporting limit (5 ng/L).
			Strong Ranch Slough	2009	Tetramethrin	Wet	Water	Discharge	1	1	0	0%	ng/L		0.15		0.15	0.15	ND substituted as 1/2 the reporting limit (0.3 ng/L).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Sump 111	2009	Allethrin	Wet	Water	Discharge	1	3	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Sump 111	2009	Bifenthrin	Wet	Water	Discharge	1	3	3	100%	ng/L		28.0333		21.8	46.3	
			Sump 111	2009	Cyfluthrin	Wet	Water	Discharge	1	3	3	100%	ng/L		45.0		31.1	96.9	
			Sump 111	2009	Cypermethrin	Wet	Water	Discharge	1	3	3	100%	ng/L		39.2		19.4	91.2	
			Sump 111	2009	Danitol	Wet	Water	Discharge	1	2	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Sump 111	2009	Deltamethrin	Wet	Water	Discharge	1	2	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather	Water/ Sediment	Discharge/ Receiving Water	# Sites	# Samples	# Detected	% Detected	Units	Sed. Unit Weight	Mean	Median	Min	Max	Notes
			Sump 111	2009	Deltamethrin/Tralomethrin	Wet	Water	Discharge	1	1	1	100%	ng/L		2.0		2.0	2.0	Only one sample, no median calculated
			Sump 111	2009	Esfenvalerate	Wet	Water	Discharge	1	2	1	50%	ng/L		1.175		0.25	2.1	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Sump 111	2009	Esfenvalerate/Fenvalerate	Wet	Water	Discharge	1	1	1	100%	ng/L		0.2		0.2	0.2	Only one sample, no median calculated
			Sump 111	2009	Fenpropathrin	Wet	Water	Discharge	1	1	0	0%	ng/L		0.15		0.15	0.15	ND substituted as 1/2 the reporting limit (0.3 ng/L).
			Sump 111	2009	Fenvalerate	Wet	Water	Discharge	1	2	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Sump 111	2009	Fluvalinate	Wet	Water	Discharge	1	3	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Sump 111	2009	L-Cyhalothrin	Wet	Water	Discharge	1	3	2	67%	ng/L		10.2167		0.6	29.8	
			Sump 111	2009	Permethrin	Wet	Water	Discharge	1	3	1	33%	ng/L		5.6667		2.5	12.0	ND substituted as 1/2 the reporting limit (5 ng/L).
			Sump 111	2009	Prallethrin	Wet	Water	Discharge	1	2	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Sump 111	2009	Resmethrin	Wet	Water	Discharge	1	2	0	0%	ng/L		2.5		2.5	2.5	ND substituted as 1/2 the reporting limit (5 ng/L).
			Sump 111	2009	Tetramethrin	Wet	Water	Discharge	1	1	0	0%	ng/L		0.15		0.15	0.15	ND substituted as 1/2 the reporting limit (0.3 ng/L).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Arcade Creek at Watt Avenue	2009	Allethrin	Dry	Sediment	Receiving	1	2	0	0%	µg/kg	Dry	0.0308		0.0305	0.031	ND substituted as half the RL
			Arcade Creek at Watt Avenue	2009	Bifenthrin	Dry	Sediment	Receiving	1	2	2	100%	µg/kg	Dry	7.35		6.1	8.6	
			Arcade Creek at Watt Avenue	2009	Cyfluthrin	Dry	Sediment	Receiving	1	2	2	100%	µg/kg	Dry	0.79		0.69	0.89	
			Arcade Creek at Watt Avenue	2009	Cypermethrin	Dry	Sediment	Receiving	1	2	2	100%	µg/kg	Dry	1.865		0.83	2.9	
			Arcade Creek at Watt Avenue	2009	Deltamethrin	Dry	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.075		0.075	0.075	ND substituted as 1/2 the reporting limit (0.14 µg/kg).
			Arcade Creek at Watt Avenue	2009	Deltamethrin/Tralomethrin	Dry	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.075		0.075	0.075	ND substituted as 1/2 the reporting limit (0.14 µg/kg).
			Arcade Creek at Watt Avenue	2009	Esfenvalerate	Dry	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.08		0.08	0.08	ND substituted as 1/2 the reporting limit (0.16 µg/kg).
			Arcade Creek at Watt Avenue	2009	Esfenvalerate/Fenvalerate	Dry	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.08		0.08	0.08	ND substituted as 1/2 the reporting limit (0.16 µg/kg).
			Arcade Creek at Watt Avenue	2009	Fenpropathrin	Dry	Sediment	Receiving	1	2	0	0%	µg/kg	Dry	0.0433		0.043	0.0435	ND substituted as half the RL
			Arcade Creek at Watt Avenue	2009	Fluvalinate	Dry	Sediment	Receiving	1	2	0	0%	µg/kg	Dry	0.0248		0.0245	0.025	ND substituted as half the RL
			Arcade Creek at Watt Avenue	2009	L-Cyhalothrin	Dry	Sediment	Receiving	1	2	2	100%	µg/kg	Dry	0.115		0.11	0.12	
			Arcade Creek at Watt Avenue	2009	Permethrin	Dry	Sediment	Receiving	1	2	1	50%	µg/kg	Dry	2.5825		0.065	5.1	ND substituted as 1/2 the reporting limit (0.13 µg/kg).
			Arcade Creek at Watt Avenue	2009	Tetramethrin	Dry	Sediment	Receiving	1	2	0	0%	µg/kg	Dry	0.0373		0.037	0.0375	ND substituted as half the RL
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Laguna Creek at Hwy 99	2009	Allethrin	Dry	Sediment	Receiving	1	2	0	0%	µg/kg	Dry	0.0385		0.033	0.044	ND substituted as half the RL
			Laguna Creek at Hwy 99	2009	Bifenthrin	Dry	Sediment	Receiving	1	2	2	100%	µg/kg	Dry	2.02		0.64	3.4	
			Laguna Creek at Hwy 99	2009	Cyfluthrin	Dry	Sediment	Receiving	1	2	0	0%	µg/kg	Dry	0.085		0.075	0.095	ND substituted as half the RL
			Laguna Creek at Hwy 99	2009	Cypermethrin	Dry	Sediment	Receiving	1	2	0	0%	µg/kg	Dry	0.0775		0.065	0.09	ND substituted as half the RL
			Laguna Creek at Hwy 99	2009	Deltamethrin	Dry	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.105		0.105	0.105	ND substituted as 1/2 the reporting limit (0.21 µg/kg).
			Laguna Creek at Hwy 99	2009	Deltamethrin/Tralomethrin	Dry	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.08		0.08	0.08	ND substituted as 1/2 the reporting limit (0.16 µg/kg).
			Laguna Creek at Hwy 99	2009	Esfenvalerate	Dry	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.115		0.115	0.115	ND substituted as 1/2 the reporting limit (0.23 µg/kg).
			Laguna Creek at Hwy 99	2009	Esfenvalerate/Fenvalerate	Dry	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.085		0.085	0.085	ND substituted as 1/2 the reporting limit (0.17 µg/kg).
			Laguna Creek at Hwy 99	2009	Fenpropathrin	Dry	Sediment	Receiving	1	2	0	0%	µg/kg	Dry	0.05325		0.0465	0.06	ND substituted as half the RL
			Laguna Creek at Hwy 99	2009	Fluvalinate	Dry	Sediment	Receiving	1	2	0	0%	µg/kg	Dry	0.03075		0.0265	0.035	ND substituted as half the RL
			Laguna Creek at Hwy 99	2009	L-Cyhalothrin	Dry	Sediment	Receiving	1	2	0	0%	µg/kg	Dry	0.0475		0.04	0.055	ND substituted as half the RL
			Laguna Creek at Hwy 99	2009	Permethrin	Dry	Sediment	Receiving	1	2	1	50%	µg/kg	Dry	3.3975		0.095	6.7	ND substituted as 1/2 the reporting limit (0.19 µg/kg).
			Laguna Creek at Hwy 99	2009	Tetramethrin	Dry	Sediment	Receiving	1	2	0	0%	µg/kg	Dry	0.0475		0.04	0.055	ND substituted as half the RL
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Willow Creek at Blue Ravine Road	2009	Allethrin	Dry	Sediment	Receiving	1	2	0	0%	µg/kg	Dry	0.036		0.035	0.037	ND substituted as half the RL
			Willow Creek at Blue Ravine Road	2009	Bifenthrin	Dry	Sediment	Receiving	1	2	2	100%	µg/kg	Dry	2.4		2.3	2.5	
			Road	2009	Cyfluthrin	Dry	Sediment	Receiving	1	2	1	50%	µg/kg	Dry	0.155		0.08	0.23	ND substituted as 1/2 the reporting limit (0.16 µg/kg).
			Willow Creek at Blue Ravine Road	2009	Cypermethrin	Dry	Sediment	Receiving	1	2	0	0%	µg/kg	Dry	0.073		0.07	0.075	ND substituted as half the RL
			Willow Creek at Blue Ravine Road	2009	Deltamethrin	Dry	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.09		0.09	0.09	ND substituted as half the RL
			Willow Creek at Blue Ravine Road	2009	Deltamethrin/Tralomethrin	Dry	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.085		0.085	0.085	ND substituted as half the RL
			Willow Creek at Blue Ravine Road	2009	Esfenvalerate	Dry	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.095		0.095	0.095	ND substituted as half the RL
			Willow Creek at Blue Ravine Road	2009	Esfenvalerate/Fenvalerate	Dry	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.09		0.09	0.09	ND substituted as half the RL
			Willow Creek at Blue Ravine Road	2009	Fenpropathrin	Dry	Sediment	Receiving	1	2	0	0%	µg/kg	Dry	0.049		0.049	0.050	ND substituted as half the RL
			Willow Creek at Blue Ravine Road	2009	Fluvalinate	Dry	Sediment	Receiving	1	2	0	0%	µg/kg	Dry	0.029		0.028	0.030	ND substituted as half the RL
			Willow Creek at Blue Ravine Road	2009	L-Cyhalothrin	Dry	Sediment	Receiving	1	2	0	0%	µg/kg	Dry	0.043		0.0415	0.044	ND substituted as half the RL
			Willow Creek at Blue Ravine Road	2009	Permethrin	Dry	Sediment	Receiving	1	2	0	0%	µg/kg	Dry	0.078		0.075	0.08	ND substituted as half the RL
			Willow Creek at Blue Ravine Road	2009	Tetramethrin	Dry	Sediment	Receiving	1	2	0	0%	µg/kg	Dry	0.043		0.0415	0.044	ND substituted as half the RL
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Avenue	2009	Allethrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.031		0.031	0.031	ND substituted as 1/2 the reporting limit (0.18 µg/kg).
			Arcade Creek at Watt Avenue	2009	Bifenthrin	Wet	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	1.7		1.7	1.7	Only one sample, no median calculated
			Arcade Creek at Watt Avenue	2009	Cyfluthrin	Wet	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	0.38		0.38	0.38	Only one sample, no median calculated
			Arcade Creek at Watt Avenue	2009	Cypermethrin	Wet	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	0.31		0.31	0.31	Only one sample, no median calculated
			Arcade Creek at Watt Avenue	2009	Deltamethrin/Tralomethrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.075		0.075	0.075	ND substituted as 1/2 the reporting limit (0.15 µg/kg).

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather	Water/ Sediment	Discharge/ Receiving Water	# Sites	# Samples	# Detected	% Detected	Units	Sed. Unit Weight	Mean	Median	Min	Max	Notes
			Arcade Creek at Watt Avenue	2009	Esfenvalerate/Fenvalerate	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.08		0.08	0.08	ND substituted as 1/2 the reporting limit (0.16 µg/kg).
			Arcade Creek at Watt Avenue	2009	Fenpropathrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.0435		0.0435	0.0435	ND substituted as 1/2 the reporting limit (0.087 µg/kg).
			Arcade Creek at Watt Avenue	2009	Fluvalinate	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.025		0.025	0.025	ND substituted as 1/2 the reporting limit (0.05 µg/kg).
			Arcade Creek at Watt Avenue	2009	L-Cyhalothrin	Wet	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	0.077		0.077	0.077	
			Arcade Creek at Watt Avenue	2009	Permethrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.07		0.07	0.07	ND substituted as 1/2 the reporting limit (0.14 µg/kg).
			Arcade Creek at Watt Avenue	2009	Tetramethrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.037		0.037	0.037	ND substituted as 1/2 the reporting limit (0.74 µg/kg).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Laguna Creek at Hwy 99	2009	Allethrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.025		0.025	0.025	ND substituted as 1/2 the reporting limit (0.05 µg/kg).
			Laguna Creek at Hwy 99	2009	Bifenthrin	Wet	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	3.5		3.5	3.5	Only one sample, no median calculated
			Laguna Creek at Hwy 99	2009	Cyfluthrin	Wet	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	0.28		0.28	0.28	Only one sample, no median calculated
			Laguna Creek at Hwy 99	2009	Cypermethrin	Wet	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	0.17		0.17	0.17	Only one sample, no median calculated
			Laguna Creek at Hwy 99	2009	Deltamethrin/Tralomethrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.06		0.06	0.06	ND substituted as 1/2 the reporting limit (0.12 µg/kg).
			Laguna Creek at Hwy 99	2009	Esfenvalerate/Fenvalerate	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.065		0.065	0.065	ND substituted as 1/2 the reporting limit (0.13 µg/kg).
			Laguna Creek at Hwy 99	2009	Fenpropathrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.035		0.035	0.035	ND substituted as 1/2 the reporting limit (0.07 µg/kg).
			Laguna Creek at Hwy 99	2009	Fluvalinate	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.02		0.02	0.02	ND substituted as 1/2 the reporting limit (0.04 µg/kg).
			Laguna Creek at Hwy 99	2009	L-Cyhalothrin	Wet	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	0.14		0.14	0.14	Only one sample, no median calculated
			Laguna Creek at Hwy 99	2009	Permethrin	Wet	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	0.7		0.7	0.7	Only one sample, no median calculated
			Laguna Creek at Hwy 99	2009	Tetramethrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.03		0.03	0.03	ND substituted as 1/2 the reporting limit (0.06 µg/kg).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Road	2009	Allethrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.032		0.032	0.032	ND substituted as 1/2 the reporting limit (0.06 µg/kg).
			Willow Creek at Blue Ravine Road	2009	Bifenthrin	Wet	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	0.28		0.28	0.28	Only one sample, no median calculated
			Willow Creek at Blue Ravine Road	2009	Cyfluthrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.07		0.07	0.07	ND substituted as 1/2 the reporting limit (0.14 µg/kg).
			Willow Creek at Blue Ravine Road	2009	Cypermethrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.065		0.065	0.065	ND substituted as 1/2 the reporting limit (0.13 µg/kg).
			Willow Creek at Blue Ravine Road	2009	Deltamethrin/Tralomethrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.075		0.075	0.075	ND substituted as 1/2 the reporting limit (0.15 µg/kg).
			Willow Creek at Blue Ravine Road	2009	Esfenvalerate/Fenvalerate	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.085		0.085	0.085	ND substituted as 1/2 the reporting limit (0.17 µg/kg).
			Willow Creek at Blue Ravine Road	2009	Fenpropathrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.045		0.045	0.045	ND substituted as 1/2 the reporting limit (0.09 µg/kg).
			Willow Creek at Blue Ravine Road	2009	Fluvalinate	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.026		0.026	0.026	ND substituted as 1/2 the reporting limit (0.051 µg/kg).
			Willow Creek at Blue Ravine Road	2009	L-Cyhalothrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.039		0.039	0.039	ND substituted as 1/2 the reporting limit (0.077 µg/kg).
			Willow Creek at Blue Ravine Road	2009	Permethrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.07		0.07	0.07	ND substituted as 1/2 the reporting limit (0.14 µg/kg).
			Willow Creek at Blue Ravine Road	2009	Tetramethrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.039		0.039	0.039	ND substituted as 1/2 the reporting limit (0.077 µg/kg).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Road	2009	Allethrin	Dry	Water	Receiving	1	1	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Willow Creek at Blue Ravine Road	2009	Bifenthrin	Dry	Water	Receiving	1	1	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Willow Creek at Blue Ravine Road	2009	Cyfluthrin	Dry	Water	Receiving	1	1	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Willow Creek at Blue Ravine Road	2009	Cypermethrin	Dry	Water	Receiving	1	1	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Willow Creek at Blue Ravine Road	2009	Danitol	Dry	Water	Receiving	1	1	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Willow Creek at Blue Ravine Road	2009	Deltamethrin	Dry	Water	Receiving	1	1	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Willow Creek at Blue Ravine Road	2009	Esfenvalerate	Dry	Water	Receiving	1	1	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Willow Creek at Blue Ravine Road	2009	Fenvalerate	Dry	Water	Receiving	1	1	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Willow Creek at Blue Ravine Road	2009	Fluvalinate	Dry	Water	Receiving	1	1	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Willow Creek at Blue Ravine Road	2009	L-Cyhalothrin	Dry	Water	Receiving	1	1	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Willow Creek at Blue Ravine Road	2009	Permethrin	Dry	Water	Receiving	1	1	0	0%	ng/L		2.5		2.5	2.5	ND substituted as 1/2 the reporting limit (5 ng/L).
			Road	2009	Prallethrin	Dry	Water	Receiving	1	1	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Willow Creek at Blue Ravine Road	2009	Resmethrin	Dry	Water	Receiving	1	1	0	0%	ng/L		2.5		2.5	2.5	ND substituted as 1/2 the reporting limit (5 ng/L).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Arcade Creek at Watt Avenue	2009	Allethrin	Wet	Water	Receiving	1	2	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Arcade Creek at Watt Avenue	2009	Bifenthrin	Wet	Water	Receiving	1	2	2	100%	ng/L		150.6		72.2	229	
			Arcade Creek at Watt Avenue	2009	Cyfluthrin	Wet	Water	Receiving	1	2	2	100%	ng/L		68.5		53.3	83.7	
			Arcade Creek at Watt Avenue	2009	Cypermethrin	Wet	Water	Receiving	1	2	2	100%	ng/L		76.45		47.6	105.3	
			Arcade Creek at Watt Avenue	2009	Danitol	Wet	Water	Receiving	1	2	2	100%	ng/L		1.75		1.1	2.4	
			Arcade Creek at Watt Avenue	2009	Deltamethrin	Wet	Water	Receiving	1	2	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Arcade Creek at Watt Avenue	2009	Esfenvalerate	Wet	Water	Receiving	1	2	1	50%	ng/L		1.725		0.25	3.2	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Arcade Creek at Watt Avenue	2009	Fenvalerate	Wet	Water	Receiving	1	2	1	50%	ng/L		1.175		0.25	2.1	ND substituted as 1/2 the reporting limit (0.5 ng/L).

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather	Water/ Sediment	Discharge/ Receiving Water	# Sites	# Samples	# Detected	% Detected	Units	Sed. Unit Weight	Mean	Median	Min	Max	Notes
			Arcade Creek at Watt Avenue	2009	Fluvalinate	Wet	Water	Receiving	1	2	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Avenue	2009	L-Cyhalothrin	Wet	Water	Receiving	1	2	2	100%	ng/L		31.9		29.3	34.5	
			Arcade Creek at Watt Avenue	2009	Permethrin	Wet	Water	Receiving	1	2	1	50%	ng/L		127.65		2.5	252.8	ND substituted as 1/2 the reporting limit (5 ng/L).
			Arcade Creek at Watt Avenue	2009	Prallethrin	Wet	Water	Receiving	1	2	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Arcade Creek at Watt Avenue	2009	Resmethrin	Wet	Water	Receiving	1	2	0	0%	ng/L		2.5		2.5	2.5	ND substituted as 1/2 the reporting limit (5 ng/L).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Laguna Creek at Hwy 99	2009	Allethrin	Wet	Water	Receiving	1	2	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Laguna Creek at Hwy 99	2009	Bifenthrin	Wet	Water	Receiving	1	2	2	100%	ng/L		14.75		7.7	21.8	
			Laguna Creek at Hwy 99	2009	Cyfluthrin	Wet	Water	Receiving	1	2	1	50%	ng/L		10.425		0.25	20.6	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Laguna Creek at Hwy 99	2009	Cypermethrin	Wet	Water	Receiving	1	2	1	50%	ng/L		9.825		0.25	19.4	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Laguna Creek at Hwy 99	2009	Danitol	Wet	Water	Receiving	1	2	1	50%	ng/L		1.725		0.25	3.2	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Laguna Creek at Hwy 99	2009	Deltamethrin	Wet	Water	Receiving	1	2	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Laguna Creek at Hwy 99	2009	Esfenvalerate	Wet	Water	Receiving	1	2	1	50%	ng/L		3.175		0.25	6.1	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Laguna Creek at Hwy 99	2009	Fenvalerate	Wet	Water	Receiving	1	2	1	50%	ng/L		3.375		0.25	6.5	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Laguna Creek at Hwy 99	2009	Fluvalinate	Wet	Water	Receiving	1	2	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Laguna Creek at Hwy 99	2009	L-Cyhalothrin	Wet	Water	Receiving	1	2	1	50%	ng/L		5.425		0.25	10.6	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Laguna Creek at Hwy 99	2009	Permethrin	Wet	Water	Receiving	1	2	0	0%	ng/L		2.5		2.5	2.5	ND substituted as 1/2 the reporting limit (5 ng/L).
			Laguna Creek at Hwy 99	2009	Prallethrin	Wet	Water	Receiving	1	2	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Laguna Creek at Hwy 99	2009	Resmethrin	Wet	Water	Receiving	1	2	0	0%	ng/L		2.5		2.5	2.5	ND substituted as 1/2 the reporting limit (5 ng/L).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Willow Creek at Blue Ravine Road	2009	Allethrin	Wet	Water	Receiving	1	2	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Willow Creek at Blue Ravine Road	2009	Bifenthrin	Wet	Water	Receiving	1	2	1	50%	ng/L		3.175		0.25	6.1	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Willow Creek at Blue Ravine Road	2009	Cyfluthrin	Wet	Water	Receiving	1	2	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Willow Creek at Blue Ravine Road	2009	Cypermethrin	Wet	Water	Receiving	1	2	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Willow Creek at Blue Ravine Road	2009	Danitol	Wet	Water	Receiving	1	2	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Willow Creek at Blue Ravine Road	2009	Deltamethrin	Wet	Water	Receiving	1	2	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Willow Creek at Blue Ravine Road	2009	Esfenvalerate	Wet	Water	Receiving	1	2	1	50%	ng/L		0.475		0.25	0.7	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Willow Creek at Blue Ravine Road	2009	Fenvalerate	Wet	Water	Receiving	1	2	1	50%	ng/L		0.575		0.25	0.9	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Willow Creek at Blue Ravine Road	2009	Fluvalinate	Wet	Water	Receiving	1	2	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Willow Creek at Blue Ravine Road	2009	L-Cyhalothrin	Wet	Water	Receiving	1	2	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Willow Creek at Blue Ravine Road	2009	Permethrin	Wet	Water	Receiving	1	2	0	0%	ng/L		2.5		2.5	2.5	ND substituted as 1/2 the reporting limit (5 ng/L).
			Willow Creek at Blue Ravine Road	2009	Prallethrin	Wet	Water	Receiving	1	2	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Willow Creek at Blue Ravine Road	2009	Resmethrin	Wet	Water	Receiving	1	2	0	0%	ng/L		2.5		2.5	2.5	ND substituted as 1/2 the reporting limit (5 ng/L).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Natomas STA2	2010	Allethrin	Wet	Water	Discharge	1	2	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2010	Bifenthrin	Wet	Water	Discharge	1	2	2	100%	ng/L		61.95		21.8	102.1	
			Natomas STA2	2010	Cyfluthrin	Wet	Water	Discharge	1	2	1	50%	ng/L		2.475		0.25	4.7	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2010	Cypermethrin	Wet	Water	Discharge	1	2	1	50%	ng/L		1.175		0.25	2.1	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2010	Danitol	Wet	Water	Discharge	1	2	1	50%	ng/L		3.425		0.25	6.6	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2010	Deltamethrin	Wet	Water	Discharge	1	2	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2010	Esfenvalerate	Wet	Water	Discharge	1	2	1	50%	ng/L		1.475		0.25	2.7	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2010	Fenvalerate	Wet	Water	Discharge	1	2	1	50%	ng/L		1.225		0.25	2.2	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2010	Fluvalinate	Wet	Water	Discharge	1	2	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2010	L-Cyhalothrin	Wet	Water	Discharge	1	2	1	50%	ng/L		18.025		0.25	35.8	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2010	Permethrin	Wet	Water	Discharge	1	2	0	0%	ng/L		2.5		2.5	2.5	ND substituted as 1/2 the reporting limit (5 ng/L).
			Natomas STA2	2010	Prallethrin	Wet	Water	Discharge	1	2	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2010	Resmethrin	Wet	Water	Discharge	1	1	0	0%	ng/L		2.5		2.5	2.5	ND substituted as 1/2 the reporting limit (5 ng/L).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Strong Ranch Slough	2010	Allethrin	Wet	Water	Discharge	1	2	0	0%	ng/L		0.2		0.15	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Strong Ranch Slough	2010	Bifenthrin	Wet	Water	Discharge	1	2	2	100%	ng/L		88.25		74	102.5	
			Strong Ranch Slough	2010	Cyfluthrin	Wet	Water	Discharge	1	2	2	100%	ng/L		23.45		17	29.9	
			Strong Ranch Slough	2010	Cypermethrin	Wet	Water	Discharge	1	2	2	100%	ng/L		20		20	20	
			Strong Ranch Slough	2010	Danitol	Wet	Water	Discharge	1	1	1	100%	ng/L		11.8		11.8	11.8	Only one sample, no median calculated
			Strong Ranch Slough	2010	Deltamethrin	Wet	Water	Discharge	1	1	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Strong Ranch Slough	2010	Deltamethrin/Tralomethrin	Wet	Water	Discharge	1	1	1	100%	ng/L		3		3	3	Only one sample, no median calculated
			Strong Ranch Slough	2010	Esfenvalerate	Wet	Water	Discharge	1	1	1	100%	ng/L		1.5		1.5	1.5	Only one sample, no median calculated
			Strong Ranch Slough	2010	Esfenvalerate/Fenvalerate	Wet	Water	Discharge	1	1	1	100%	ng/L		2		2	2	Only one sample, no median calculated
			Strong Ranch Slough	2010	Fenpropathrin	Wet	Water	Discharge	1	1	0	0%	ng/L		0.15		0.15	0.15	ND substituted as 1/2 the reporting limit (0.3 ng/L).
			Strong Ranch Slough	2010	Fenvalerate	Wet	Water	Discharge	1	1	1	100%	ng/L		10.3		10.3	10.3	Only one sample, no median calculated
			Strong Ranch Slough	2010	Fluvalinate	Wet	Water	Discharge	1	2	0	0%	ng/L		0.2		0.15	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L and 0.3 ng/L).
			Strong Ranch Slough	2010	L-Cyhalothrin	Wet	Water	Discharge	1	2	2	100%	ng/L		8.75		1	16.5	
			Strong Ranch Slough	2010	Permethrin	Wet	Water	Discharge	1	2	1	50%	ng/L		18.75		2.5	35	ND substituted as 1/2 the reporting limit (5 ng/L).
			Strong Ranch Slough	2010	Prallethrin	Wet	Water	Discharge	1	1	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Strong Ranch Slough	2010	Resmethrin	Wet	Water	Discharge	1	1	0	0%	ng/L		2.5		2.5	2.5	ND substituted as 1/2 the reporting limit (5 ng/L).
			Strong Ranch Slough	2010	Tetramethrin	Wet	Water	Discharge	1	1	0	0%	ng/L		0.15		0.15	0.15	ND substituted as 1/2 the reporting limit (0.3 ng/L).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Sump 111	2010	Allethrin	Wet	Water	Discharge	1	2	0	0%	ng/L		0.2		0.15	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L and 0.3 ng/L).
			Sump 111	2010	Bifenthrin	Wet	Water	Discharge	1	2	2	100%	ng/L		39.75		25	54.5	
			Sump 111	2010	Cyfluthrin	Wet	Water	Discharge	1	2	2	100%	ng/L		10.45		6	14.9	

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather	Water/ Sediment	Discharge/ Receiving Water	# Sites	# Samples	# Detected	% Detected	Units	Sed. Unit Weight	Mean	Median	Min	Max	Notes
			Sump 111	2010	Cypermethrin	Wet	Water	Discharge	1	2	2	100%	ng/L		8.95		7	10.9	
			Sump 111	2010	Danitol	Wet	Water	Discharge	1	1	1	100%	ng/L		6		6	6	Only one sample, no median calculated
			Sump 111	2010	Deltamethrin	Wet	Water	Discharge	1	1	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Sump 111	2010	Deltamethrin/Tralomethrin	Wet	Water	Discharge	1	1	1	100%	ng/L		6		6	6	Only one sample, no median calculated
			Sump 111	2010	Esfenvalerate	Wet	Water	Discharge	1	1	1	100%	ng/L		4.1		4.1	4.1	Only one sample, no median calculated
			Sump 111	2010	Esfenvalerate/Fenvalerate	Wet	Water	Discharge	1	1	1	100%	ng/L		3		3	3	Only one sample, no median calculated
			Sump 111	2010	Fenpropathrin	Wet	Water	Discharge	1	1	0	0%	ng/L		0.15		0.15	0.15	ND substituted as 1/2 the reporting limit (0.3 ng/L).
			Sump 111	2010	Fenvalerate	Wet	Water	Discharge	1	1	1	100%	ng/L		8.5		8.5	8.5	Only one sample, no median calculated
			Sump 111	2010	Fluvalinate	Wet	Water	Discharge	1	2	0	0%	ng/L		0.2		0.15	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L and 0.3 ng/L).
			Sump 111	2010	L-Cyhalothrin	Wet	Water	Discharge	1	2	2	100%	ng/L		11.2		0.6	21.8	
			Sump 111	2010	Permethrin	Wet	Water	Discharge	1	2	0	0%	ng/L		3.25		2.5	4	ND substituted as 1/2 the reporting limit (5 ng/L and 8 ng/L).
			Sump 111	2010	Prallethrin	Wet	Water	Discharge	1	1	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Sump 111	2010	Resmethrin	Wet	Water	Discharge	1	1	0	0%	ng/L		2.5		2.5	2.5	ND substituted as 1/2 the reporting limit (5 ng/L).
			Sump 111	2010	Tetramethrin	Wet	Water	Discharge	1	1	0	0%	ng/L		0.15		0.15	0.15	ND substituted as 1/2 the reporting limit (0.3 ng/L).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Arcade Creek at Watt Avenue	2010	Allethrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.026		0.026	0.026	ND substituted as half the RL
			Arcade Creek at Watt Avenue	2010	Bifenthrin	Wet	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	1.1		1.1	1.1	Only one sample, no median calculated
			Arcade Creek at Watt Avenue	2010	Cyfluthrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.055		0.055	0.055	ND substituted as 1/2 the reporting limit (0.11 µg/kg).
			Avenue	2010	Cypermethrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.05		0.05	0.05	ND substituted as 1/2 the reporting limit (0.1 µg/kg).
			Arcade Creek at Watt Avenue	2010	Deltamethrin/Tralomethrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.06		0.06	0.06	ND substituted as 1/2 the reporting limit (0.12 µg/kg).
			Arcade Creek at Watt Avenue	2010	Esfenvalerate/Fenvalerate	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.065		0.065	0.065	ND substituted as half the RL
			Arcade Creek at Watt Avenue	2010	Fenpropathrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.036		0.036	0.036	ND substituted as half the RL
			Arcade Creek at Watt Avenue	2010	L-Cyhalothrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.031		0.031	0.031	ND substituted as half the RL
			Arcade Creek at Watt Avenue	2010	Permethrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.055		0.055	0.055	ND substituted as 1/2 the reporting limit (0.11 µg/kg).
			Arcade Creek at Watt Avenue	2010	Tau-Fluvalinate	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.021		0.021	0.021	ND substituted as half the RL
			Arcade Creek at Watt Avenue	2010	Tetramethrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.031		0.031	0.031	ND substituted as half the RL
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Laguna Creek at Hwy 99	2010	Allethrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.026		0.026	0.026	ND substituted as 1/2 the reporting limit (0.052 µg/kg).
			Laguna Creek at Hwy 99	2010	Bifenthrin	Wet	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	4.5		4.5	4.5	Only one sample, no median calculated
			Laguna Creek at Hwy 99	2010	Cyfluthrin	Wet	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	0.31		0.31	0.31	Only one sample, no median calculated
			Laguna Creek at Hwy 99	2010	Cypermethrin	Wet	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	0.13		0.13	0.13	Only one sample, no median calculated
			Laguna Creek at Hwy 99	2010	Deltamethrin/Tralomethrin	Wet	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	0.14		0.14	0.14	Only one sample, no median calculated
			Laguna Creek at Hwy 99	2010	Esfenvalerate/Fenvalerate	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.065		0.065	0.065	ND substituted as 1/2 the reporting limit (0.13 µg/kg).
			Laguna Creek at Hwy 99	2010	Fenpropathrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.036		0.036	0.036	ND substituted as 1/2 the reporting limit (0.072 µg/kg).
			Laguna Creek at Hwy 99	2010	L-Cyhalothrin	Wet	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	0.093		0.093	0.093	Only one sample, no median calculated
			Laguna Creek at Hwy 99	2010	Permethrin	Wet	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	0.62		0.62	0.62	Only one sample, no median calculated
			Laguna Creek at Hwy 99	2010	Tau-Fluvalinate	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.021		0.021	0.021	ND substituted as 1/2 the reporting limit (0.042 µg/kg).
			Laguna Creek at Hwy 99	2010	Tetramethrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.031		0.031	0.031	ND substituted as 1/2 the reporting limit (0.062 µg/kg).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Willow Creek at Blue Ravine Road	2010	Allethrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.026		0.026	0.026	ND substituted as 1/2 the reporting limit (0.052 µg/kg).
			Willow Creek at Blue Ravine Road	2010	Bifenthrin	Wet	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	1.1		1.1	1.1	Only one sample, no median calculated
			Willow Creek at Blue Ravine Road	2010	Cyfluthrin	Wet	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	0.12		0.12	0.12	Only one sample, no median calculated
			Willow Creek at Blue Ravine Road	2010	Cypermethrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.05		0.05	0.05	ND substituted as 1/2 the reporting limit (0.1 µg/kg).
			Willow Creek at Blue Ravine Road	2010	Deltamethrin/Tralomethrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.06		0.06	0.06	ND substituted as 1/2 the reporting limit (0.12 µg/kg).
			Willow Creek at Blue Ravine Road	2010	Esfenvalerate/Fenvalerate	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.065		0.065	0.065	ND substituted as 1/2 the reporting limit (0.13 µg/kg).
			Willow Creek at Blue Ravine Road	2010	Fenpropathrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.036		0.036	0.036	ND substituted as 1/2 the reporting limit (0.072 µg/kg).
			Willow Creek at Blue Ravine Road	2010	L-Cyhalothrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.031		0.031	0.031	ND substituted as 1/2 the reporting limit (0.062 µg/kg).
			Willow Creek at Blue Ravine Road	2010	Permethrin	Wet	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	0.64		0.64	0.64	Only one sample, no median calculated
			Willow Creek at Blue Ravine Road	2010	Tau-Fluvalinate	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.02		0.02	0.02	ND substituted as 1/2 the reporting limit (0.04 µg/kg).
			Willow Creek at Blue Ravine Road	2010	Tetramethrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.031		0.031	0.031	ND substituted as 1/2 the reporting limit (0.062 µg/kg).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Arcade Creek at Watt Avenue	2010	Allethrin	Wet	Water	Receiving	1	3	0	0%	ng/L		0.117		0.05	0.25	ND substituted as half the RL
			Arcade Creek at Watt Avenue	2010	Bifenthrin	Wet	Water	Receiving	1	3	3	100%	ng/L		26.367		27	28.1	
			Arcade Creek at Watt Avenue	2010	Cyfluthrin	Wet	Water	Receiving	1	3	3	100%	ng/L		13.9		9.9	28.4	
			Arcade Creek at Watt Avenue	2010	Cypermethrin	Wet	Water	Receiving	1	3	3	100%	ng/L		9.5		3.5	22.2	
			Arcade Creek at Watt Avenue	2010	Danitol	Wet	Water	Receiving	1	1	1	100%	ng/L		1.7		1.7	1.7	Only one sample, no median calculated
			Arcade Creek at Watt Avenue	2010	Deltamethrin	Wet	Water	Receiving	1	1	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Arcade Creek at Watt Avenue	2010	Deltamethrin/Tralomethrin	Wet	Water	Receiving	1	2	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather	Water/ Sediment	Discharge/ Receiving Water	# Sites	# Samples	# Detected	% Detected	Units	Sed. Unit Weight	Mean	Median	Min	Max	Notes
			Arcade Creek at Watt Avenue	2010	Esfenvalerate	Wet	Water	Receiving	1	1	1	100%	ng/L		1.3		1.3	1.3	Only one sample, no median calculated
			Arcade Creek at Watt Avenue	2010	Esfenvalerate/Fenvalerate	Wet	Water	Receiving	1	2	2	50%	ng/L		0.2		0.1	0.3	
			Arcade Creek at Watt Avenue	2010	Fenpropathrin	Wet	Water	Receiving	1	2	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Arcade Creek at Watt Avenue	2010	Fenvalerate	Wet	Water	Receiving	1	1	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Arcade Creek at Watt Avenue	2010	Fluvalinate	Wet	Water	Receiving	1	1	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Arcade Creek at Watt Avenue	2010	L-Cyhalothrin	Wet	Water	Receiving	1	3	3	100%	ng/L		3.033		0.3	8.5	
			Arcade Creek at Watt Avenue	2010	Permethrin	Wet	Water	Receiving	1	3	2	67%	ng/L		4.867		5.2	6.9	
			Arcade Creek at Watt Avenue	2010	Prallethrin	Wet	Water	Receiving	1	1	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Arcade Creek at Watt Avenue	2010	Resmethrin	Wet	Water	Receiving	1	1	0	0%	ng/L		2.5		2.5	2.5	ND substituted as 1/2 the reporting limit (5 ng/L).
			Arcade Creek at Watt Avenue	2010	Tau-Fluvalinate	Wet	Water	Receiving	1	2	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Arcade Creek at Watt Avenue	2010	Tetramethrin	Wet	Water	Receiving	1	2	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Laguna Creek at Hwy 99	2010	Allethrin	Wet	Water	Receiving	1	3	0	0%	ng/L		0.117		0.05	0.25	ND substituted as half the RL
			Laguna Creek at Hwy 99	2010	Bifenthrin	Wet	Water	Receiving	1	3	3	100%	ng/L		14.033		16.7	22	
			Laguna Creek at Hwy 99	2010	Cyfluthrin	Wet	Water	Receiving	1	3	1	33%	ng/L		1.15		0.25	3.1	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Laguna Creek at Hwy 99	2010	Cypermethrin	Wet	Water	Receiving	1	3	1	33%	ng/L		0.517		0.1	1.2	ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Laguna Creek at Hwy 99	2010	Danitol	Wet	Water	Receiving	1	1	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Laguna Creek at Hwy 99	2010	Deltamethrin	Wet	Water	Receiving	1	1	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Laguna Creek at Hwy 99	2010	Deltamethrin/Tralomethrin	Wet	Water	Receiving	1	2	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Laguna Creek at Hwy 99	2010	Esfenvalerate	Wet	Water	Receiving	1	1	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Laguna Creek at Hwy 99	2010	Esfenvalerate/Fenvalerate	Wet	Water	Receiving	1	2	1	50%	ng/L		0.3		0.1	0.5	ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Laguna Creek at Hwy 99	2010	Fenpropathrin	Wet	Water	Receiving	1	2	1	50%	ng/L		0.35		0.1	0.6	ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Laguna Creek at Hwy 99	2010	Fenvalerate	Wet	Water	Receiving	1	1	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Laguna Creek at Hwy 99	2010	Fluvalinate	Wet	Water	Receiving	1	1	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Laguna Creek at Hwy 99	2010	L-Cyhalothrin	Wet	Water	Receiving	1	3	1	33%	ng/L		0.45		0.25	1	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Laguna Creek at Hwy 99	2010	Permethrin	Wet	Water	Receiving	1	3	0	0%	ng/L		1.5		1	2.5	ND substituted as half the RL
			Laguna Creek at Hwy 99	2010	Prallethrin	Wet	Water	Receiving	1	1	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Laguna Creek at Hwy 99	2010	Resmethrin	Wet	Water	Receiving	1	1	0	0%	ng/L		2.5		2.5	2.5	ND substituted as 1/2 the reporting limit (5 ng/L).
			Laguna Creek at Hwy 99	2010	Tau-Fluvalinate	Wet	Water	Receiving	1	2	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Laguna Creek at Hwy 99	2010	Tetramethrin	Wet	Water	Receiving	1	2	1	50%	ng/L		1.45		0.1	2.8	ND substituted as 1/2 the reporting limit (0.2 ng/L).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Willow Creek at Blue Ravine Road	2010	Allethrin	Wet	Water	Receiving	1	3	0	0%	ng/L		0.117		0.05	0.25	ND substituted as half the RL
			Willow Creek at Blue Ravine Road	2010	Bifenthrin	Wet	Water	Receiving	1	3	2	67%	ng/L		1.05		1	1.9	
			Willow Creek at Blue Ravine Road	2010	Cyfluthrin	Wet	Water	Receiving	1	3	1	33%	ng/L		8.5		0.1	25.3	ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Willow Creek at Blue Ravine Road	2010	Cypermethrin	Wet	Water	Receiving	1	3	0	0%	ng/L		0.15		0.1	0.25	ND substituted as half the RL
			Willow Creek at Blue Ravine Road	2010	Danitol	Wet	Water	Receiving	1	1	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Willow Creek at Blue Ravine Road	2010	Deltamethrin	Wet	Water	Receiving	1	1	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Willow Creek at Blue Ravine Road	2010	Deltamethrin/Tralomethrin	Wet	Water	Receiving	1	2	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Willow Creek at Blue Ravine Road	2010	Esfenvalerate	Wet	Water	Receiving	1	1	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Willow Creek at Blue Ravine Road	2010	Esfenvalerate/Fenvalerate	Wet	Water	Receiving	1	2	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Willow Creek at Blue Ravine Road	2010	Fenpropathrin	Wet	Water	Receiving	1	2	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Willow Creek at Blue Ravine Road	2010	Fenvalerate	Wet	Water	Receiving	1	1	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Willow Creek at Blue Ravine Road	2010	Fluvalinate	Wet	Water	Receiving	1	1	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Willow Creek at Blue Ravine Road	2010	L-Cyhalothrin	Wet	Water	Receiving	1	3	0	0%	ng/L		0.15		0.1	0.25	ND substituted as half the RL
			Willow Creek at Blue Ravine Road	2010	Permethrin	Wet	Water	Receiving	1	3	0	0%	ng/L		1.5		1	2.5	ND substituted as half the RL
			Willow Creek at Blue Ravine Road	2010	Prallethrin	Wet	Water	Receiving	1	1	0	0%	ng/L		0.25		0.25	0.25	ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Willow Creek at Blue Ravine Road	2010	Resmethrin	Wet	Water	Receiving	1	1	0	0%	ng/L		2.5		2.5	2.5	ND substituted as 1/2 the reporting limit (5 ng/L).
			Willow Creek at Blue Ravine Road	2010	Tau-Fluvalinate	Wet	Water	Receiving	1	2	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Road	2010	Tetramethrin	Wet	Water	Receiving	1	2	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Arcade Creek at Watt Avenue	2011	Allethrin	Dry	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.025		0.025	0.025	ND substituted as 1/2 the reporting limit (0.5 µg/kg).
			Arcade Creek at Watt Avenue	2011	Bifenthrin	Dry	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	7.1		7.1	7.1	Only one sample, no median calculated
			Arcade Creek at Watt Avenue	2011	Cyfluthrin	Dry	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	0.79		0.79	0.79	Only one sample, no median calculated
			Arcade Creek at Watt Avenue	2011	Cypermethrin	Dry	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	0.97		0.97	0.97	Only one sample, no median calculated

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather	Water/ Sediment	Discharge/ Receiving Water	# Sites	# Samples	# Detected	% Detected	Units	Sed. Unit Weight	Mean	Median	Min	Max	Notes
			Arcade Creek at Watt Avenue	2011	Deltamethrin/Tralomethrin	Dry	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.06		0.06	0.06	ND substituted as 1/2 the reporting limit (0.12 µg/kg).
			Arcade Creek at Watt Avenue	2011	Esfenvalerate/Fenvalerate	Dry	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	0.17		0.17	0.17	Only one sample, no median calculated
			Arcade Creek at Watt Avenue	2011	Fenpropathrin	Dry	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.035		0.035	0.035	ND substituted as 1/2 the reporting limit (0.07 µg/kg).
			Arcade Creek at Watt Avenue	2011	L-Cyhalothrin	Dry	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	0.11		0.11	0.11	Only one sample, no median calculated
			Arcade Creek at Watt Avenue	2011	Permethrin	Dry	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	4.7		4.7	4.7	Only one sample, no median calculated
			Arcade Creek at Watt Avenue	2011	Tau-Fluvalinate	Dry	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.02		0.02	0.02	ND substituted as 1/2 the reporting limit (0.04 µg/kg).
			Avenue	2011	Tetramethrin	Dry	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.03		0.03	0.03	ND substituted as 1/2 the reporting limit (0.06 µg/kg).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Laguna Creek at Hwy 99	2011	Allethrin	Dry	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.026		0.026	0.026	ND substituted as 1/2 the reporting limit (0.052 µg/kg).
			Laguna Creek at Hwy 99	2011	Bifenthrin	Dry	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	3.9		3.9	3.9	Only one sample, no median calculated
			Laguna Creek at Hwy 99	2011	Cyfluthrin	Dry	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	0.75		0.75	0.75	Only one sample, no median calculated
			Laguna Creek at Hwy 99	2011	Cypermethrin	Dry	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	0.21		0.21	0.21	Only one sample, no median calculated
			Laguna Creek at Hwy 99	2011	Deltamethrin/Tralomethrin	Dry	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.06		0.06	0.06	ND substituted as 1/2 the reporting limit (0.12 µg/kg).
			Laguna Creek at Hwy 99	2011	Esfenvalerate/Fenvalerate	Dry	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.065		0.065	0.065	ND substituted as 1/2 the reporting limit (0.06 µg/kg).
			Laguna Creek at Hwy 99	2011	Fenpropathrin	Dry	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.036		0.036	0.036	ND substituted as 1/2 the reporting limit (0.072 µg/kg).
			Laguna Creek at Hwy 99	2011	L-Cyhalothrin	Dry	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	0.15		0.15	0.15	Only one sample, no median calculated
			Laguna Creek at Hwy 99	2011	Permethrin	Dry	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	0.42		0.42	0.42	Only one sample, no median calculated
			Laguna Creek at Hwy 99	2011	Tau-Fluvalinate	Dry	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.021		0.021	0.021	ND substituted as 1/2 the reporting limit (0.042 µg/kg).
			Laguna Creek at Hwy 99	2011	Tetramethrin	Dry	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.031		0.031	0.031	ND substituted as 1/2 the reporting limit (0.062 µg/kg).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Willow Creek at Blue Ravine Road	2011	Allethrin	Dry	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.026		0.026	0.026	ND substituted as 1/2 the reporting limit (0.052 µg/kg).
			Willow Creek at Blue Ravine Road	2011	Bifenthrin	Dry	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	2.9		2.9	2.9	Only one sample, no median calculated
			Willow Creek at Blue Ravine Road	2011	Cyfluthrin	Dry	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	0.31		0.31	0.31	Only one sample, no median calculated
			Willow Creek at Blue Ravine Road	2011	Cypermethrin	Dry	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.05		0.05	0.05	ND substituted as 1/2 the reporting limit (0.1 µg/kg).
			Willow Creek at Blue Ravine Road	2011	Deltamethrin/Tralomethrin	Dry	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.06		0.06	0.06	ND substituted as 1/2 the reporting limit (0.12 µg/kg).
			Willow Creek at Blue Ravine Road	2011	Esfenvalerate/Fenvalerate	Dry	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.065		0.065	0.065	ND substituted as 1/2 the reporting limit (0.06 µg/kg).
			Willow Creek at Blue Ravine Road	2011	Fenpropathrin	Dry	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.036		0.036	0.036	ND substituted as 1/2 the reporting limit (0.072 µg/kg).
			Willow Creek at Blue Ravine Road	2011	L-Cyhalothrin	Dry	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.031		0.031	0.031	ND substituted as 1/2 the reporting limit (0.062 µg/kg).
			Willow Creek at Blue Ravine Road	2011	Permethrin	Dry	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	0.12		0.12	0.12	Only one sample, no median calculated
			Willow Creek at Blue Ravine Road	2011	Tau-Fluvalinate	Dry	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.021		0.021	0.021	ND substituted as 1/2 the reporting limit (0.042 µg/kg).
			Road	2011	Tetramethrin	Dry	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.031		0.031	0.031	ND substituted as 1/2 the reporting limit (0.062 µg/kg).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Arcade Creek at Watt Avenue	2011	Allethrin	Dry	Water	Receiving	1	1	0	0%	ng/L		0.05		0.05	0.05	ND substituted as 1/2 the reporting limit (0.1 ng/L).
			Arcade Creek at Watt Avenue	2011	Bifenthrin	Dry	Water	Receiving	1	1	1	100%	ng/L		1.0		1.0	1.0	Only one sample, no median calculated
			Arcade Creek at Watt Avenue	2011	Cyfluthrin	Dry	Water	Receiving	1	1	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Arcade Creek at Watt Avenue	2011	Cypermethrin	Dry	Water	Receiving	1	1	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Arcade Creek at Watt Avenue	2011	Deltamethrin/Tralomethrin	Dry	Water	Receiving	1	1	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Arcade Creek at Watt Avenue	2011	Esfenvalerate/Fenvalerate	Dry	Water	Receiving	1	1	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Arcade Creek at Watt Avenue	2011	Fenpropathrin	Dry	Water	Receiving	1	1	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Arcade Creek at Watt Avenue	2011	L-Cyhalothrin	Dry	Water	Receiving	1	1	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Arcade Creek at Watt Avenue	2011	Permethrin	Dry	Water	Receiving	1	1	0	0%	ng/L		1.0		1.0	1.0	ND substituted as 1/2 the reporting limit (2 ng/L).
			Arcade Creek at Watt Avenue	2011	Tau-Fluvalinate	Dry	Water	Receiving	1	1	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Avenue	2011	Tetramethrin	Dry	Water	Receiving	1	1	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Laguna Creek at Hwy 99	2011	Allethrin	Dry	Water	Receiving	1	1	0	0%	ng/L		0.05		0.05	0.05	ND substituted as 1/2 the reporting limit (0.1 ng/L).
			Laguna Creek at Hwy 99	2011	Bifenthrin	Dry	Water	Receiving	1	1	1	100%	ng/L		1.1		1.1	1.1	Only one sample, no median calculated
			Laguna Creek at Hwy 99	2011	Cyfluthrin	Dry	Water	Receiving	1	1	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Laguna Creek at Hwy 99	2011	Cypermethrin	Dry	Water	Receiving	1	1	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Laguna Creek at Hwy 99	2011	Deltamethrin/Tralomethrin	Dry	Water	Receiving	1	1	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Laguna Creek at Hwy 99	2011	Esfenvalerate/Fenvalerate	Dry	Water	Receiving	1	1	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Laguna Creek at Hwy 99	2011	Fenpropathrin	Dry	Water	Receiving	1	1	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Laguna Creek at Hwy 99	2011	L-Cyhalothrin	Dry	Water	Receiving	1	1	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Laguna Creek at Hwy 99	2011	Permethrin	Dry	Water	Receiving	1	1	0	0%	ng/L		1		1	1	ND substituted as 1/2 the reporting limit (2 ng/L).
			Laguna Creek at Hwy 99	2011	Tau-Fluvalinate	Dry	Water	Receiving	1	1	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Laguna Creek at Hwy 99	2011	Tetramethrin	Dry	Water	Receiving	1	1	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Willow Creek at Blue Ravine Road	2011	Allethrin	Dry	Water	Receiving	1	1	0	0%	ng/L		0.05		0.05	0.05	ND substituted as 1/2 the reporting limit (0.1 ng/L).
			Willow Creek at Blue Ravine Road	2011	Bifenthrin	Dry	Water	Receiving	1	1	0	0%	ng/L		0.05		0.05	0.05	ND substituted as 1/2 the reporting limit (0.1 ng/L).

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather	Water/ Sediment	Discharge/ Receiving Water	# Sites	# Samples	# Detected	% Detected	Units	Sed. Unit Weight	Mean	Median	Min	Max	Notes
			Willow Creek at Blue Ravine Road	2011	Cyfluthrin	Dry	Water	Receiving	1	1	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Willow Creek at Blue Ravine Road	2011	Cypermethrin	Dry	Water	Receiving	1	1	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Willow Creek at Blue Ravine Road	2011	Deltamethrin/Tralomethrin	Dry	Water	Receiving	1	1	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Willow Creek at Blue Ravine Road	2011	Esfenvalerate/Fenvalerate	Dry	Water	Receiving	1	1	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Willow Creek at Blue Ravine Road	2011	Fenpropathrin	Dry	Water	Receiving	1	1	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Willow Creek at Blue Ravine Road	2011	L-Cyhalothrin	Dry	Water	Receiving	1	1	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Willow Creek at Blue Ravine Road	2011	Permethrin	Dry	Water	Receiving	1	1	0	0%	ng/L		1		1	1	ND substituted as 1/2 the reporting limit (2 ng/L).
			Willow Creek at Blue Ravine Road	2011	Tau-Fluvalinate	Dry	Water	Receiving	1	1	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Road	2011	Tetramethrin	Dry	Water	Receiving	1	1	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Arcade Creek at Watt Avenue	2011	Allethrin	Wet	Water	Receiving	1	1	0	0%	ng/L		0.05		0.05	0.05	ND substituted as 1/2 the reporting limit (0.1 ng/L).
			Arcade Creek at Watt Avenue	2011	Bifenthrin	Wet	Water	Receiving	1	1	1	100%	ng/L		79		79	79	Only one sample, no median calculated
			Arcade Creek at Watt Avenue	2011	Cyfluthrin	Wet	Water	Receiving	1	1	1	100%	ng/L		6.7		6.7	6.7	Only one sample, no median calculated
			Arcade Creek at Watt Avenue	2011	Cypermethrin	Wet	Water	Receiving	1	1	1	100%	ng/L		6.1		6.1	6.1	Only one sample, no median calculated
			Arcade Creek at Watt Avenue	2011	Deltamethrin/Tralomethrin	Wet	Water	Receiving	1	1	1	100%	ng/L		0.7		0.7	0.7	Only one sample, no median calculated
			Arcade Creek at Watt Avenue	2011	Esfenvalerate/Fenvalerate	Wet	Water	Receiving	1	1	1	100%	ng/L		0.6		0.6	0.6	Only one sample, no median calculated
			Arcade Creek at Watt Avenue	2011	Fenpropathrin	Wet	Water	Receiving	1	1	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Arcade Creek at Watt Avenue	2011	L-Cyhalothrin	Wet	Water	Receiving	1	1	1	100%	ng/L		0.4		0.4	0.4	Only one sample, no median calculated
			Arcade Creek at Watt Avenue	2011	Permethrin	Wet	Water	Receiving	1	1	1	100%	ng/L		17		17	17	Only one sample, no median calculated
			Arcade Creek at Watt Avenue	2011	Tau-Fluvalinate	Wet	Water	Receiving	1	1	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Avenue	2011	Tetramethrin	Wet	Water	Receiving	1	1	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Laguna Creek at Hwy 99	2011	Allethrin	Wet	Water	Receiving	1	1	0	0%	ng/L		0.05		0.05	0.05	ND substituted as 1/2 the reporting limit (0.1 ng/L).
			Laguna Creek at Hwy 99	2011	Bifenthrin	Wet	Water	Receiving	1	1	1	100%	ng/L		8.5		8.5	8.5	Only one sample, no median calculated
			Laguna Creek at Hwy 99	2011	Cyfluthrin	Wet	Water	Receiving	1	1	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Laguna Creek at Hwy 99	2011	Cypermethrin	Wet	Water	Receiving	1	1	1	100%	ng/L		1.7		1.7	1.7	Only one sample, no median calculated
			Laguna Creek at Hwy 99	2011	Deltamethrin/Tralomethrin	Wet	Water	Receiving	1	1	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Laguna Creek at Hwy 99	2011	Esfenvalerate/Fenvalerate	Wet	Water	Receiving	1	1	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Laguna Creek at Hwy 99	2011	Fenpropathrin	Wet	Water	Receiving	1	1	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Laguna Creek at Hwy 99	2011	L-Cyhalothrin	Wet	Water	Receiving	1	1	1	100%	ng/L		0.3		0.3	0.3	Only one sample, no median calculated
			Laguna Creek at Hwy 99	2011	Permethrin	Wet	Water	Receiving	1	1	1	100%	ng/L		3.4		3.4	3.4	Only one sample, no median calculated
			Laguna Creek at Hwy 99	2011	Tau-Fluvalinate	Wet	Water	Receiving	1	1	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Laguna Creek at Hwy 99	2011	Tetramethrin	Wet	Water	Receiving	1	1	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Willow Creek at Blue Ravine Road	2011	Allethrin	Wet	Water	Receiving	1	1	0	0%	ng/L		0.05		0.05	0.05	ND substituted as 1/2 the reporting limit (0.1 ng/L).
			Willow Creek at Blue Ravine Road	2011	Bifenthrin	Wet	Water	Receiving	1	1	1	100%	ng/L		7.4		7.4	7.4	Only one sample, no median calculated
			Willow Creek at Blue Ravine Road	2011	Cyfluthrin	Wet	Water	Receiving	1	1	1	100%	ng/L		0.3		0.3	0.3	Only one sample, no median calculated
			Willow Creek at Blue Ravine Road	2011	Cypermethrin	Wet	Water	Receiving	1	1	1	100%	ng/L		0.3		0.3	0.3	Only one sample, no median calculated
			Willow Creek at Blue Ravine Road	2011	Deltamethrin/Tralomethrin	Wet	Water	Receiving	1	1	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Willow Creek at Blue Ravine Road	2011	Esfenvalerate/Fenvalerate	Wet	Water	Receiving	1	1	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Willow Creek at Blue Ravine Road	2011	Fenpropathrin	Wet	Water	Receiving	1	1	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Willow Creek at Blue Ravine Road	2011	L-Cyhalothrin	Wet	Water	Receiving	1	1	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Willow Creek at Blue Ravine Road	2011	Permethrin	Wet	Water	Receiving	1	1	0	0%	ng/L		1.0		1.0	1.0	ND substituted as 1/2 the reporting limit (2 ng/L).
			Willow Creek at Blue Ravine Road	2011	Tau-Fluvalinate	Wet	Water	Receiving	1	1	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Road	2011	Tetramethrin	Wet	Water	Receiving	1	1	0	0%	ng/L		0.1		0.1	0.1	ND substituted as 1/2 the reporting limit (0.2 ng/L).
Ventura County, 2011	Calleguas Creek Watershed TMDL Monitoring Program	Ventura	Urban Land Use Outfalls	2008	Allethrin		Water	Discharge	5	20	0	0%	µg/L		0.0003		0.0003	0.0003	ND substituted as half the RL (0.0005 µg/L)
			Urban Land Use Outfalls	2008	Bifenthrin		Water	Discharge	5	20	13	65%	µg/L		0.0414		0.0003	0.2732	ND substituted as half the RL (0.0005 µg/L)
			Urban Land Use Outfalls	2008	Cyfluthrin		Water	Discharge	5	20	4	20%	µg/L		0.0025		0.0003	0.0255	ND substituted as half the RL (0.0005 µg/L)
			Urban Land Use Outfalls	2008	Cyfluthrin, beta		Water	Discharge	5	20	2	10%	µg/L		0.0064		0.005	0.0223	ND substituted as half the RL (0.005 µg/L)
			Urban Land Use Outfalls	2008	Cypermethrin		Water	Discharge	5	20	5	25%	µg/L		0.0014		0.0003	0.0087	ND substituted as half the RL (0.0005 µg/L)
			Urban Land Use Outfalls	2008	Danitol		Water	Discharge	5	20	2	10%	µg/L		0.0008		0.0003	0.0087	ND substituted as half the RL (0.0005 µg/L)
			Urban Land Use Outfalls	2008	Deltamethrin		Water	Discharge	5	20	1	5%	µg/L		0.0004		0.0003	0.0029	ND substituted as half the RL (0.0005 µg/L)
			Urban Land Use Outfalls	2008	Esfenvalerate/Fenvalerate, total		Water	Discharge	5	20	1	5%	µg/L		0.0003		0.0003	0.0005	ND substituted as half the RL (0.0005 µg/L)
			Urban Land Use Outfalls	2008	Fenvalerate		Water	Discharge	5	20	1	5%	µg/L		0.0003		0.0003	0.0007	ND substituted as half the RL (0.0005 µg/L)
			Urban Land Use Outfalls	2008	Fluvalinate		Water	Discharge	5	20	0	0%	µg/L		0.0003		0.0003	0.0003	ND substituted as half the RL (0.0005 µg/L)
			Urban Land Use Outfalls	2008	L-Cyhalothrin		Water	Discharge	5	20	3	15%	µg/L		0.0004		0.0003	0.0026	ND substituted as half the RL (0.0005 µg/L)

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather	Water/ Sediment	Discharge/ Receiving Water	# Sites	# Samples	# Detected	% Detected	Units	Sed. Unit Weight	Mean	Median	Min	Max	Notes
			Urban Land Use Outfalls	2008	Permethrin		Water	Discharge	5	20	3	15%	µg/L		0.1135		0.0025	2.0615	ND substituted as half the RL (0.005 µg/L)
			Urban Land Use Outfalls	2008	Prallethrin		Water	Discharge	5	20	0	0%	µg/L		0.0003		0.0003	0.0003	ND substituted as half the RL (0.0005 µg/L)
Ventura County, 2011	Calleguas Creek Watershed TMDL Monitoring Program	Ventura	Creek Sites	2008	Resmethrin		Water	Discharge	5	20	0	0%	µg/L		0.0025		0.0025	0.0025	ND substituted as half the RL (0.005 µg/L)
			Creek Sites	2008	Allethrin		Sediment	Receiving	4	12	0	0%	ng/g	Dry	0.25		0.25	0.25	ND substituted as half the RL (0.5 ng/g)
			Creek Sites	2008	Allethrin		Water	Receiving	7	27	0	0%	µg/L		0.0003		0.0003	0.0003	ND substituted as half the RL (0.0005 µg/L)
			Creek Sites	2008	Bifenthrin		Sediment	Receiving	4	12	4	33%	ng/g	Dry	5.275		0.25	30	ND substituted as half the RL (0.5 ng/g)
			Creek Sites	2008	Bifenthrin		Water	Receiving	7	27	9	33%	µg/L		0.020		0.0003	0.2185	ND substituted as half the RL (0.0005 µg/L)
			Creek Sites	2008	Cyfluthrin		Sediment	Receiving	4	12	0	0%	ng/g	Dry	0.25		0.25	0.25	ND substituted as half the RL (0.5 ng/g)
			Creek Sites	2008	Cyfluthrin		Water	Receiving	7	27	2	7%	µg/L		0.001		0.0003	0.0226	ND substituted as half the RL (0.0005 µg/L)
			Creek Sites	2008	Cyfluthrin, beta		Sediment	Receiving	4	12	0	0%	ng/g	Dry	5		5	5	ND substituted as half the RL (10 ng/g)
			Creek Sites	2008	Cyfluthrin, beta		Water	Receiving	7	27	1	4%	µg/L		0.006		0.005	0.0226	ND substituted as half the RL (0.01 µg/L)
			Creek Sites	2008	Cypermethrin		Sediment	Receiving	4	12	3	25%	ng/g	Dry	0.621		0.25	3	ND substituted as half the RL (0.005 ng/g)
			Creek Sites	2008	Cypermethrin		Water	Receiving	7	27	1	4%	µg/L		0.0003296		0.0003	0.0024	ND substituted as half the RL (0.0005 µg/L)
			Creek Sites	2008	Danitol		Sediment	Receiving	4	12	3	25%	ng/g	Dry	1.929		0.25	8.8	ND substituted as half the RL (0.005 ng/g)
			Creek Sites	2008	Danitol		Water	Receiving	7	27	5	19%	µg/L		0.024		0.0003	0.4399	ND substituted as half the RL (0.0005 µg/L)
			Creek Sites	2008	Deltamethrin		Sediment	Receiving	4	12	0	0%	ng/g	Dry	0.25		0.25	0.25	ND substituted as half the RL (0.5 ng/g)
			Creek Sites	2008	Deltamethrin		Water	Receiving	7	27	0	0%	µg/L		0.0003		0.0003	0.0003	ND substituted as half the RL (0.0005 µg/L)
Ventura County, 2011	Calleguas Creek Watershed TMDL Monitoring Program	Ventura	Creek Sites	2008	Esfenvalerate/Fenvalerate, total		Sediment	Receiving	4	12	0	0%	ng/g	Dry	0.25		0.25	0.25	ND substituted as half the RL (0.5 ng/g)
			Creek Sites	2008	Esfenvalerate/Fenvalerate, total		Water	Receiving	7	27	0	0%	µg/L		0.0003		0.0003	0.0003	ND substituted as half the RL (0.0005 µg/L)
			Creek Sites	2008	Fenvalerate		Sediment	Receiving	4	12	0	0%	ng/g	Dry	0.25		0.25	0.25	ND substituted as half the RL (0.5 ng/g)
			Creek Sites	2008	Fenvalerate		Water	Receiving	7	27	0	0%	µg/L		0.0003		0.0003	0.0003	ND substituted as half the RL (0.0005 µg/L)
			Creek Sites	2008	Fluvalinate		Sediment	Receiving	4	12	0	0%	ng/g	Dry	0.25		0.25	0.25	ND substituted as half the RL (0.5 ng/g)
			Creek Sites	2008	Fluvalinate		Water	Receiving	7	27	0	0%	µg/L		0.0003		0.0003	0.0003	ND substituted as half the RL (0.0005 µg/L)
			Creek Sites	2008	L-Cyhalothrin		Sediment	Receiving	4	12	0	0%	ng/g	Dry	0.25		0.25	0.25	ND substituted as half the RL (0.5 ng/g)
			Creek Sites	2008	L-Cyhalothrin		Water	Receiving	7	27	1	4%	µg/L		0.0003		0.0003	0.001	ND substituted as half the RL (0.0005 µg/L)
			Creek Sites	2008	Permethrin		Sediment	Receiving	4	12	1	8%	ng/g	Dry	3.125		2.5	10	ND substituted as half the RL (0.5 ng/g)
			Creek Sites	2008	Permethrin		Water	Receiving	7	27	0	0%	µg/L		0.0025		0.0025	0.0025	ND substituted as half the RL (0.005 µg/L)
			Creek Sites	2008	Prallethrin		Sediment	Receiving	4	12	0	0%	ng/g	Dry	0.25		0.25	0.25	ND substituted as half the RL (0.5 ng/g)
			Creek Sites	2008	Prallethrin		Water	Receiving	7	27	0	0%	µg/L		0.0003		0.0003	0.0003	ND substituted as half the RL (0.0005 µg/L)
			Creek Sites	2008	Resmethrin		Sediment	Receiving	4	12	0	0%	ng/g	Dry	2.5		2.5	2.5	ND substituted as half the RL (5 ng/g)
			Creek Sites	2008	Resmethrin		Water	Receiving	7	27	0	0%	µg/L		0.002		0.002	0.003	ND substituted as half the RL
Ventura County, 2011	Calleguas Creek Watershed TMDL Monitoring Program	Ventura	Mugu Lagoon	2008	Allethrin		Sediment	Receiving	5	16	0	0%	ng/g	Dry	0.25		0.25	0.25	ND substituted as half the RL (0.5 ng/g)
			Mugu Lagoon	2008	Allethrin		Water	Receiving	1	4	0	0%	µg/L		0.0003		0.0003	0.0003	ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2008	Bifenthrin		Sediment	Receiving	5	16	12	75%	ng/g	Dry	3.5063		0.25	17.3	ND substituted as half the RL (0.5 ng/g)
			Mugu Lagoon	2008	Bifenthrin		Water	Receiving	1	4	2	50%	µg/L		0.0282		0.0003	0.1079	ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2008	Cyfluthrin		Sediment	Receiving	5	16	0	0%	ng/g	Dry	0.25		0.25	0.25	ND substituted as half the RL (0.5 ng/g)
			Mugu Lagoon	2008	Cyfluthrin		Water	Receiving	1	4	0	0%	µg/L		0.0003		0.0003	0.0003	ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2008	Cyfluthrin, beta		Sediment	Receiving	5	16	0	0%	ng/g	Dry	5		5	5	ND substituted as half the RL (10 ng/g)
			Mugu Lagoon	2008	Cyfluthrin, beta		Water	Receiving	1	4	0	0%	µg/L		0.005		0.005	0.005	ND substituted as half the RL (0.01 µg/L)
			Mugu Lagoon	2008	Cypermethrin		Sediment	Receiving	5	16	0	0%	ng/g	Dry	0.25		0.25	0.25	ND substituted as half the RL (0.5 ng/g)
			Mugu Lagoon	2008	Cypermethrin		Water	Receiving	1	4	0	0%	µg/L		0.0003		0.0003	0.0003	ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2008	Danitol		Sediment	Receiving	5	16	11	69%	ng/g	Dry	1.8156		0.25	8.2	ND substituted as half the RL (0.5 ng/g)
			Mugu Lagoon	2008	Danitol		Water	Receiving	1	4	2	50%	µg/L		0.0411		0.0003	0.157	ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2008	Deltamethrin		Sediment	Receiving	5	16	0	0%	ng/g	Dry	0.25		0.25	0.25	ND substituted as half the RL (0.5 ng/g)
			Mugu Lagoon	2008	Deltamethrin		Water	Receiving	1	4	0	0%	µg/L		0.0003		0.0003	0.0003	ND substituted as half the RL (0.0005 µg/L)
Ventura County, 2011	Calleguas Creek Watershed TMDL Monitoring Program	Ventura	Mugu Lagoon	2008	Esfenvalerate/Fenvalerate, total		Sediment	Receiving	5	16	0	0%	ng/g	Dry	0.25		0.25	0.25	ND substituted as half the RL (0.5 ng/g)
			Mugu Lagoon	2008	Esfenvalerate/Fenvalerate, total		Water	Receiving	1	4	0	0%	µg/L		0.0003		0.0003	0.0003	ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2008	Fenvalerate		Sediment	Receiving	5	16	0	0%	ng/g	Dry	0.25		0.25	0.25	ND substituted as half the RL (0.5 ng/g)
			Mugu Lagoon	2008	Fenvalerate		Water	Receiving	1	4	0	0%	µg/L		0.0003		0.0003	0.0003	ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2008	Fluvalinate		Sediment	Receiving	5	16	0	0%	ng/g	Dry	0.25		0.25	0.25	ND substituted as half the RL (0.5 ng/g)
			Mugu Lagoon	2008	Fluvalinate		Water	Receiving	1	4	0	0%	µg/L		0.0003		0.0003	0.0003	ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2008	L-Cyhalothrin		Sediment	Receiving	5	16	1	6%	ng/g	Dry	0.2656		0.25	0.5	ND substituted as half the RL (0.5 ng/g)
			Mugu Lagoon	2008	L-Cyhalothrin		Water	Receiving	1	4	0	0%	µg/L		0.0003		0.0003	0.0003	ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2008	Permethrin		Sediment	Receiving	5	16	0	0%	ng/g	Dry	2.5		2.5	2.5	ND substituted as half the RL (0.5 ng/g)
			Mugu Lagoon	2008	Permethrin		Water	Receiving	1	4	0	0%	µg/L		0.0025		0.0025	0.0025	ND substituted as half the RL (0.005 µg/L)
			Mugu Lagoon	2008	Prallethrin		Sediment	Receiving	5	16	0	0%	ng/g	Dry	0.25		0.25	0.25	ND substituted as half the RL (0.5 ng/g)
			Mugu Lagoon	2008	Prallethrin		Water	Receiving	1	4	0	0%	µg/L		0.0003		0.0003	0.0003	ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2008	Resmethrin		Sediment	Receiving	5	16	0	0%	ng/g	Dry	2.5		2.5	2.5	ND substituted as half the RL (0.5 ng/g)
			Mugu Lagoon	2008	Resmethrin		Water	Receiving	1	4	0	0%	µg/L		0.0025		0.0025	0.0025	ND substituted as half the RL (0.005 µg/L)
Ventura County, 2011	Calleguas Creek Watershed TMDL Monitoring Program	Ventura	Urban Land Use Outfalls	2009	Allethrin		Water	Discharge	5	39	1	3%	µg/L		0.0005		0.0003	0.0095	ND substituted as half the RL (0.0005 µg/L)
			Urban Land Use Outfalls	2009	Bifenthrin		Water	Discharge	5	39	32	82%	µg/L		0.0267		0.0003	0.2764	ND substituted as half the RL (0.0005 µg/L)
			Urban Land Use Outfalls	2009	Cyfluthrin		Water	Discharge	5	39	26	67%	µg/L		0.0166		0.0003	0.1816	ND substituted as half the RL (0.0005 µg/L)
			Urban Land Use Outfalls	2009	Cyfluthrin, beta		Water	Discharge	5	14	0	0%	µg/L		0.005		0.005	0.005	ND substituted as half the RL (0.01 µg/L)
			Urban Land Use Outfalls	2009	Cypermethrin		Water	Discharge	5	39	16	41%	µg/L		0.0041		0.0003	0.0325	ND substituted as half the RL (0.0005 µg/L)
			Urban Land Use Outfalls	2009	Danitol		Water	Discharge	5	39	7	18%	µg/L		0.0004		0.0003	0.0013	ND substituted as half the RL (0.0005 µg/L)

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather	Water/ Sediment	Discharge/ Receiving Water	# Sites	# Samples	# Detected	% Detected	Units	Sed. Unit Weight	Mean	Median	Min	Max	Notes
			Urban Land Use Outfalls	2009	Deltamethrin		Water	Discharge	5	39	0	0%	µg/L		0.0003		0.0003	0.0003	ND substituted as half the RL (0.0005 µg/L)
			Urban Land Use Outfalls	2009	Esfenvalerate		Water	Discharge	5	5	0	0%	µg/L		0.0003		0.0003	0.0003	ND substituted as half the RL (0.0005 µg/L)
			Urban Land Use Outfalls	2009	Esfenvalerate/Fenvalerate, total		Water	Discharge	5	34	3	9%	µg/L		0.0003		0.0003	0.0012	ND substituted as half the RL (0.0005 µg/L)
			Urban Land Use Outfalls	2009	Fenvalerate		Water	Discharge	5	39	0	0%	µg/L		0.0003		0.0003	0.0003	ND substituted as half the RL (0.0005 µg/L)
			Urban Land Use Outfalls	2009	Fluvalinate		Water	Discharge	5	39	0	0%	µg/L		0.0003		0.0003	0.0003	ND substituted as half the RL (0.0005 µg/L)
			Urban Land Use Outfalls	2009	L-Cyhalothrin		Water	Discharge	5	39	15	38%	µg/L		0.0024		0.0003	0.02	ND substituted as half the RL (0.0005 µg/L)
			Urban Land Use Outfalls	2009	Permethrin		Water	Discharge	5	39	5	13%	µg/L		0.0108		0.0025	0.084	ND substituted as half the RL (0.005 µg/L)
			Urban Land Use Outfalls	2009	Prallethrin		Water	Discharge	5	39	0	0%	µg/L		0.0003		0.0003	0.0003	ND substituted as half the RL (0.0005 µg/L)
			Urban Land Use Outfalls	2009	Resmethrin		Water	Discharge	5	39	0	0%	µg/L		0.0025		0.0025	0.0025	ND substituted as half the RL (0.005 µg/L)
Ventura County, 2011	Calleguas Creek Watershed TMDL Monitoring Program	Ventura	Creek Sites	2009	Allethrin		Sediment	Receiving	4	13	0	0%	ng/g	Dry	0.25		0.25	0.25	ND substituted as half the RL (0.5 ng/g)
			Creek Sites	2009	Allethrin		Water	Receiving	7	47	0	0%	µg/L		0.0003		0.0003	0.0003	ND substituted as half the RL (0.0005 µg/L)
			Creek Sites	2009	Bifenthrin		Sediment	Receiving	4	13	9	69%	ng/g	Dry	10.585		0.25	34	ND substituted as half the RL (0.5 ng/g)
			Creek Sites	2009	Bifenthrin		Water	Receiving	7	47	23	49%	µg/L		0.0220		0.0003	0.2873	ND substituted as half the RL (0.0005 µg/L)
			Creek Sites	2009	Cyfluthrin		Sediment	Receiving	4	13	0	0%	ng/g	Dry	0.25		0.25	0.25	ND substituted as half the RL (0.5 ng/g)
			Creek Sites	2009	Cyfluthrin		Water	Receiving	7	47	18	38%	µg/L		0.0065		0.0003	0.0329	ND substituted as half the RL (0.0005 µg/L)
			Creek Sites	2009	Cyfluthrin, beta		Sediment	Receiving	4	13	0	0%	ng/g	Dry	5		5	5	ND substituted as half the RL (10 ng/g)
			Creek Sites	2009	Cyfluthrin, beta		Water	Receiving	7	13	0	0%	µg/L		0.005		0.005	0.005	ND substituted as half the RL (0.01 µg/L)
			Creek Sites	2009	Cypermethrin		Sediment	Receiving	4	13	6	46%	ng/g	Dry	1.9269		0.25	5.2	ND substituted as half the RL (0.5 ng/g)
			Creek Sites	2009	Cypermethrin		Water	Receiving	7	47	22	47%	µg/L		0.0053		0.0003	0.0354	ND substituted as half the RL (0.0005 µg/L)
			Creek Sites	2009	Danitol		Sediment	Receiving	4	13	6	46%	ng/g	Dry	1.25		0.25	3.3	ND substituted as half the RL (0.5 ng/g)
			Creek Sites	2009	Danitol		Water	Receiving	7	47	15	32%	µg/L		0.0061		0.0003	0.2014	ND substituted as half the RL (0.0005 µg/L)
			Creek Sites	2009	Deltamethrin		Sediment	Receiving	4	13	0	0%	ng/g	Dry	0.25		0.25	0.25	ND substituted as half the RL (0.5 ng/g)
			Creek Sites	2009	Deltamethrin		Water	Receiving	7	47	1	2%	µg/L		0.0005		0.0003	0.0098	ND substituted as half the RL (0.5 ng/g)
			Creek Sites	2009	Esfenvalerate		Sediment	Receiving	4	13	1	8%	ng/g	Dry	0.2923		0.25	0.8	ND substituted as half the RL (0.5 ng/g)
			Creek Sites	2009	Esfenvalerate		Water	Receiving	7	7	0	0%	µg/L		0.0003		0.0003	0.0003	ND substituted as half the RL (0.0005 µg/L)
			Creek Sites	2009	Esfenvalerate/Fenvalerate, total		Water	Receiving	7	40	12	30%	µg/L		0.0009		0.0003	0.0052	ND substituted as half the RL (0.0005 µg/L)
			Creek Sites	2009	Fenvalerate		Sediment	Receiving	4	13	1	8%	ng/g	Dry	0.3538		0.25	1.6	ND substituted as half the RL (0.5 ng/g)
			Creek Sites	2009	Fenvalerate		Water	Receiving	7	47	11	23%	µg/L		0.0004		0.0003	0.0027	ND substituted as half the RL (0.0005 µg/L)
			Creek Sites	2009	Fluvalinate		Sediment	Receiving	4	13	2	15%	ng/g	Dry	0.6654		0.25	3.6	ND substituted as half the RL (0.5 ng/g)
			Creek Sites	2009	Fluvalinate		Water	Receiving	7	47	4	9%	µg/L		0.0024		0.0003	0.0896	ND substituted as half the RL (0.0005 µg/L)
			Creek Sites	2009	L-Cyhalothrin		Sediment	Receiving	4	13	1	8%	ng/g	Dry	0.6		0.25	4.8	ND substituted as half the RL (0.5 ng/g)
			Creek Sites	2009	L-Cyhalothrin		Water	Receiving	7	47	17	36%	µg/L		0.0043		0.0003	0.0715	ND substituted as half the RL (0.0005 µg/L)
			Creek Sites	2009	Permethrin		Sediment	Receiving	4	13	0	0%	ng/g	Dry	2.5		2.5	2.5	ND substituted as half the RL (5 ng/g)
			Creek Sites	2009	Permethrin		Water	Receiving	7	47	6	13%	µg/L		0.0145		0.0025	0.4214	ND substituted as half the RL (0.005 µg/L)
			Creek Sites	2009	Prallethrin		Sediment	Receiving	4	13	0	0%	ng/g	Dry	0.25		0.25	0.25	ND substituted as half the RL (0.5 ng/g)
			Creek Sites	2009	Prallethrin		Water	Receiving	7	47	0	0%	µg/L		0.0003		0.0003	0.0003	ND substituted as half the RL (0.0005 µg/L)
			Creek Sites	2009	Resmethrin		Sediment	Receiving	4	13	0	0%	ng/g	Dry	2.5		2.5	2.5	ND substituted as half the RL (5 ng/g)
			Creek Sites	2009	Resmethrin		Water	Receiving	7	47	0	0%	µg/L		0.0025		0.0025	0.0025	ND substituted as half the RL (0.005 µg/L)
Ventura County, 2011	Calleguas Creek Watershed TMDL Monitoring Program	Ventura	Mugu Lagoon	2009	Allethrin		Water	Receiving	1	7	0	0%	µg/L		0.0003		0.0003	0.0003	ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2009	Bifenthrin		Water	Receiving	1	7	6	86%	µg/L		0.0369		0.0003	0.1546	ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2009	Cyfluthrin		Water	Receiving	1	7	1	14%	µg/L		0.0023		0.0003	0.0143	ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2009	Cyfluthrin, beta		Water	Receiving	1	2	0	0%	µg/L		0.005		0.005	0.005	ND substituted as half the RL (0.01 µg/L)
			Mugu Lagoon	2009	Cypermethrin		Water	Receiving	1	7	2	29%	µg/L		0.0054		0.0003	0.0266	ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2009	Danitol		Water	Receiving	1	7	4	57%	µg/L		0.0675		0.0003	0.4599	ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2009	Deltamethrin		Water	Receiving	1	7	0	0%	µg/L		0.0003		0.0003	0.0003	ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2009	Esfenvalerate		Water	Receiving	1	1	0	0%	µg/L		0.0003		0.0003	0.0003	ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2009	Esfenvalerate/Fenvalerate, total		Water	Receiving	1	6	1	17%	µg/L		0.0003		0.0003	0.0008	ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2009	Fenvalerate		Water	Receiving	1	7	0	0%	µg/L		0.0003		0.0003	0.0003	ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2009	Fluvalinate		Water	Receiving	1	7	0	0%	µg/L		0.0003		0.0003	0.0003	ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2009	L-Cyhalothrin		Water	Receiving	1	7	1	14%	µg/L		0.0004		0.0003	0.0011	ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2009	Permethrin		Water	Receiving	1	7	1	14%	µg/L		0.0196		0.0025	0.1225	ND substituted as half the RL (0.005 µg/L)
			Mugu Lagoon	2009	Prallethrin		Water	Receiving	1	7	0	0%	µg/L		0.0003		0.0003	0.0003	ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2009	Resmethrin		Water	Receiving	1	7	0	0%	µg/L		0.0025		0.0025	0.0025	ND substituted as half the RL (0.005 µg/L)
Ventura County, 2011	Calleguas Creek Watershed TMDL Monitoring Program	Ventura	Urban Land Use Outfalls	2010	Allethrin		Water	Discharge	5	15	0	0%	µg/L		0.0003		0.0003	0.0003	ND substituted as half the RL (0.0005 µg/L)
			Urban Land Use Outfalls	2010	Bifenthrin		Water	Discharge	5	15	11	73%	µg/L		0.0473		0.0003	0.1503	ND substituted as half the RL (0.0005 µg/L)
			Urban Land Use Outfalls	2010	Cyfluthrin		Water	Discharge	5	15	10	67%	µg/L		0.0607		0.0003	0.316	ND substituted as half the RL (0.0005 µg/L)
			Urban Land Use Outfalls	2010	Cypermethrin		Water	Discharge	5	15	2	13%	µg/L		0.0126		0.0003	0.1469	ND substituted as half the RL (0.0005 µg/L)
			Urban Land Use Outfalls	2010	Danitol		Water	Discharge	5	15	6	40%	µg/L		0.0013		0.0003	0.0054	ND substituted as half the RL (0.0005 µg/L)
			Urban Land Use Outfalls	2010	Deltamethrin		Water	Discharge	5	15	0	0%	µg/L		0.0003		0.0003	0.0003	ND substituted as half the RL (0.0005 µg/L)
			Urban Land Use Outfalls	2010	Esfenvalerate/Fenvalerate, total		Water	Discharge	5	15	7	47%	µg/L		0.0034		0.0003	0.0278	ND substituted as half the RL (0.0005 µg/L)
			Urban Land Use Outfalls	2010	Fenvalerate		Water	Discharge	5	15	7	47%	µg/L		0.0042		0.0003	0.0368	ND substituted as half the RL (0.0005 µg/L)
			Urban Land Use Outfalls	2010	Fluvalinate		Water	Discharge	5	15	0	0%	µg/L		0.0003		0.0003	0.0003	ND substituted as half the RL (0.0005 µg/L)
			Urban Land Use Outfalls	2010	L-Cyhalothrin		Water	Discharge	5	15	6	40%	µg/L		0.0234		0.0003	0.243	ND substituted as half the RL (0.0005 µg/L)
			Urban Land Use Outfalls	2010	Permethrin		Water	Discharge	5	15	1	7%	µg/L		0.0073		0.0025	0.0742	ND substituted as half the RL (0.005 µg/L)
			Urban Land Use Outfalls	2010	Prallethrin		Water	Discharge	5	15	0	0%	µg/L		0.0003		0.0003	0.0003	ND substituted as half the RL (0.0005 µg/L)
Ventura County, 2011	Calleguas Creek Watershed TMDL Monitoring Program	Ventura	Creek Sites	2010	Allethrin		Water	Receiving	7	19	0	0%	µg/L		0.0003		0.0003	0.0003	ND substituted as half the RL (0.0005 µg/L)
			Creek Sites	2010	Bifenthrin		Water	Receiving	7	19	8	42%	µg/L		0.0334		0.0003	0.1433	ND substituted as half the RL (0.0005 µg/L)

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather	Water/ Sediment	Discharge/ Receiving Water	# Sites	# Samples	# Detected	% Detected	Units	Sed. Unit Weight	Mean	Median	Min	Max	Notes
			Creek Sites	2010	Cyfluthrin		Water	Receiving	7	19	7	37%	µg/L		0.0477		0.0003	0.4226	ND substituted as half the RL (0.0005 µg/L)
			Creek Sites	2010	Cypermethrin		Water	Receiving	7	19	6	32%	µg/L		0.0213		0.0003	0.1709	ND substituted as half the RL (0.0005 µg/L)
			Creek Sites	2010	Danitol		Water	Receiving	7	19	6	32%	µg/L		0.0046		0.0003	0.0233	ND substituted as half the RL (0.0005 µg/L)
			Creek Sites	2010	Deltamethrin		Water	Receiving	7	19	0	0%	µg/L		0.0003		0.0003	0.0003	ND substituted as half the RL (0.0005 µg/L)
			Creek Sites	2010	Esfenvalerate/Fenvalerate, total		Water	Receiving	7	19	8	42%	µg/L		0.0055		0.0003	0.0263	ND substituted as half the RL (0.0005 µg/L)
			Creek Sites	2010	Fenvalerate		Water	Receiving	7	19	8	42%	µg/L		0.0041		0.0003	0.0234	ND substituted as half the RL (0.0005 µg/L)
			Creek Sites	2010	Fluvalinate		Water	Receiving	7	19	1	5%	µg/L		0.0084		0.0003	0.1548	ND substituted as half the RL (0.0005 µg/L)
			Creek Sites	2010	L-Cyhalothrin		Water	Receiving	7	19	7	37%	µg/L		0.0088		0.0003	0.0334	ND substituted as half the RL (0.0005 µg/L)
			Creek Sites	2010	Permethrin		Water	Receiving	7	19	1	5%	µg/L		0.0647		0.0025	1.1852	ND substituted as half the RL (0.005 µg/L)
Ventura County, 2011	Calleguas Creek Watershed TMDL Monitoring Program	Ventura	Mugu Lagoon	2010	Prallethrin		Water	Receiving	7	19	0	0%	µg/L		0.0003		0.0003	0.0003	ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2010	Allethrin		Water	Receiving	1	3	0	0%	µg/L		0.0003		0.0003	0.0003	ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2010	Bifenthrin		Water	Receiving	1	3	2	67%	µg/L		0.0479		0.0003	0.1018	ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2010	Cyfluthrin		Water	Receiving	1	3	1	33%	µg/L		0.0005		0.0003	0.0011	ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2010	Cypermethrin		Water	Receiving	1	3	1	33%	µg/L		0.0381		0.0003	0.1137	ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2010	Danitol		Water	Receiving	1	3	1	33%	µg/L		0.0130		0.0003	0.0386	ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2010	Deltamethrin		Water	Receiving	1	3	0	0%	µg/L		0.0003		0.0003	0.0003	ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2010	Esfenvalerate/Fenvalerate, total		Water	Receiving	1	3	1	33%	µg/L		0.0028		0.0003	0.0078	ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2010	Fenvalerate		Water	Receiving	1	3	1	33%	µg/L		0.0025		0.0003	0.007	ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2010	Fluvalinate		Water	Receiving	1	3	1	33%	µg/L		0.0008		0.0003	0.0019	ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2010	L-Cyhalothrin		Water	Receiving	1	3	1	33%	µg/L		0.0045		0.0003	0.013	ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2010	Permethrin		Water	Receiving	1	3	1	33%	µg/L		0.1701		0.0025	0.5052	ND substituted as half the RL (0.005 µg/L)
			Mugu Lagoon	2010	Prallethrin		Water	Receiving	1	3	0	0%	µg/L		0.0003		0.0003	0.0003	ND substituted as half the RL (0.0005 µg/L)
Werner et al., 2010a	Pelagic Organism Decline: Acute and Invertebrate and Fish Toxicity testing in the Sacramento San Joaquin Delta	Northern California	Sacramento-San Joaquin Delta	2008-2010	Bifenthrin		Water	Receiving	16	113	24	21%	ng/L					117.0	Additional site-specific data available through link and supplemental data
			Sacramento-San Joaquin Delta	2008-2010	Cyfluthrin		Water	Receiving	16	113	24	21%	ng/L					20.0	Additional site-specific data available through link and supplemental data
			Sacramento-San Joaquin Delta	2008-2010	Lambda-cyhalothrin		Water	Receiving	16	113	24	21%	ng/L					1.5	Additional site-specific data available through link and supplemental data
			Sacramento-San Joaquin Delta	2008-2010	Cypermethrin		Water	Receiving	16	113	24	21%	ng/L					16.0	Additional site-specific data available through link and supplemental data
			Sacramento-San Joaquin Delta	2008-2010	Esfenvalerate		Water	Receiving	16	113	24	21%	ng/L					9.0	Additional site-specific data available through link and supplemental data
			Sacramento-San Joaquin Delta	2008-2010	Permethrin		Water	Receiving	16	113	24	21%	ng/L					35.0	Additional site-specific data available through link and supplemental data
Weston et al., 2005	Aquatic Toxicity Due to Residential Use of Pyrethroid Pesticides	Roseville, CA	Pleasant Grove Creek	2004	Bifenthrin	Dry	Sediment	Receiving	8	9	9	100%	ng/kg	Dry	18.3	9	1.2	77	
			Pleasant Grove Creek	2004	Cyfluthrin	Dry	Sediment	Receiving	8	9	4	44%	ng/kg	Dry	9.9444444	0.5	0.5	70	ND substituted as half the RL (1 ng/g)
			Pleasant Grove Creek	2004	Cypermethrin	Dry	Sediment	Receiving	8	9	4	44%	ng/kg	Dry	4.3888889	0.5	0.5	18	ND substituted as half the RL (1 ng/g)
			Pleasant Grove Creek	2004	Deltamethrin	Dry	Sediment	Receiving	8	9	4	44%	ng/kg	Dry	1.9444444	0.5	0.5	5.1	ND substituted as half the RL (1 ng/g)
			Pleasant Grove Creek	2004	Esfenvalerate	Dry	Sediment	Receiving	8	9	0	0%	ng/kg	Dry					
			Pleasant Grove Creek	2004	L-Cyhalothrin	Dry	Sediment	Receiving	8	9	3	33%	ng/kg	Dry	1.0111111	0.5	0.5	2.5	ND substituted as half the RL (1 ng/g)
			Pleasant Grove Creek	2004	Permethrin	Dry	Sediment	Receiving	8	9	9	100%	ng/kg	Dry	13.377778	14	2.1	24	
Weston et al., 2005	Aquatic Toxicity Due to Residential Use of Pyrethroid Pesticides	Roseville, CA	South Branch of Pleasant Grove Creek	2004	Bifenthrin	Dry	Sediment	Receiving	5	6	6	100%	ng/kg	Dry	58.466667	55	5.8	146	
			Grove Creek	2004	Cyfluthrin	Dry	Sediment	Receiving	5	6	4	67%	ng/kg	Dry	16.5	11.5	0.5	48	ND substituted as half the RL (1 ng/g)
			Grove Creek	2004	Cypermethrin	Dry	Sediment	Receiving	5	6	5	83%	ng/kg	Dry	13.2	6	0.5	40	ND substituted as half the RL (1 ng/g)
			Grove Creek	2004	Deltamethrin	Dry	Sediment	Receiving	5	6	3	50%	ng/kg	Dry	3.0333333	1.8	0.5	8.7	ND substituted as half the RL (1 ng/g)
			Grove Creek	2004	Esfenvalerate	Dry	Sediment	Receiving	5	6	2	33%	ng/kg	Dry	1.0166667	0.5	0.5	2.5	ND substituted as half the RL (1 ng/g)
			Grove Creek	2004	L-Cyhalothrin	Dry	Sediment	Receiving	5	6	4	67%	ng/kg	Dry	1.8333333	1.6	0.5	3.4	ND substituted as half the RL (1 ng/g)
			Grove Creek	2004	Permethrin	Dry	Sediment	Receiving	5	6	5	83%	ng/kg	Dry	50.316667	41.5	0.5	154	ND substituted as half the RL (1 ng/g)
Weston et al., 2005	Aquatic Toxicity Due to Residential Use of Pyrethroid Pesticides	Roseville, CA	Kaseberg Creek	2004	Bifenthrin	Dry	Sediment	Receiving	8	9	9	100%	ng/kg	Dry	184.94444	201	6.1	437	
			Kaseberg Creek	2004	Cyfluthrin	Dry	Sediment	Receiving	8	9	7	78%	ng/kg	Dry	76.4	90	0.5	169	ND substituted as half the RL (1 ng/g)
			Kaseberg Creek	2004	Cypermethrin	Dry	Sediment	Receiving	8	9	6	67%	ng/kg	Dry	100.75556	33	0.5	736	ND substituted as half the RL (1 ng/g)
			Kaseberg Creek	2004	Deltamethrin	Dry	Sediment	Receiving	8	9	7	78%	ng/kg	Dry	10.53125	3.75	0.5	46	ND substituted as half the RL (1 ng/g)
			Kaseberg Creek	2004	Esfenvalerate	Dry	Sediment	Receiving	8	9	3	33%	ng/kg	Dry	2.2111111	0.5	0.5	5.8	ND substituted as half the RL (1 ng/g)
			Kaseberg Creek	2004	L-Cyhalothrin	Dry	Sediment	Receiving	8	9	9	100%	ng/kg	Dry	5.7555556	3.5	1.2	13	
			Kaseberg Creek	2004	Permethrin	Dry	Sediment	Receiving	8	9	7	78%	ng/kg	Dry	110.27778	100	0.5	335	ND substituted as half the RL (1 ng/g)
Weston and Jackson, 2009	Use of Engineered Enzymes to Identify Organophosphate and Pyrethroid Related Toxicity in Toxicity Identification Evaluations	Northern California	Alamo Creek	2008-2009	Bifenthrin	Dry	Water	Receiving	1	1	1	100%	ng/L		12.4		12.4	12.4	Only one sample, no median calculated
			Alamo Creek	2008-2009	Cyfluthrin	Dry	Water	Receiving	1	1	1	100%	ng/L		9.6		9.6	9.6	Only one sample, no median calculated
			Alamo Creek	2008-2009	Lambda-cyhalothrin	Dry	Water	Receiving	1	1	1	100%	ng/L		1.0		1.0	1.0	Only one sample, no median calculated
			Alamo Creek	2008-2009	Permethrin	Dry	Water	Receiving	1	1	1	100%	ng/L		10.9		10.9	10.9	Only one sample, no median calculated
			Sump 28, Sacramento (Storm Drain Site SA-28)	2008-2009	Bifenthrin	Dry	Water	Discharge	1	1	1	100%	ng/L		2.3		2.3	2.3	Only one sample, no median calculated
			Sump 28, Sacramento (Storm Drain Site SA-28)	2008-2009	Lambda-cyhalothrin	Dry	Water	Discharge	1	1	1	100%	ng/L		6.2		6.2	6.2	Only one sample, no median calculated
			Weston Ranch Pump Station, Stockton (Storm Drain Site "WR")	2008-2009	Cyfluthrin	Dry	Water	Discharge	1	1	1	100%	ng/L		3.5		3.5	3.5	Only one sample, no median calculated
			Weston Ranch Pump Station, Stockton (Storm Drain Site "WR")	2008-2009	Lambda-cyhalothrin	Dry	Water	Discharge	1	1	1	100%	ng/L		2.0		2.0	2.0	Only one sample, no median calculated
			Weston Ranch Pump Station, Stockton (Storm Drain Site "WR")	2008-2009	Permethrin	Dry	Water	Discharge	1	1	1	100%	ng/L		5.6		5.6	5.6	Only one sample, no median calculated

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather	Water/ Sediment	Discharge/ Receiving Water	# Sites	# Samples	# Detected	% Detected	Units	Sed. Unit Weight	Mean	Median	Min	Max	Notes
Weston and Lydy, 2010b	Urban and Agricultural Sources of Pyrethroid Insecticides to the Sacramento-San Joaquin Delta of California	Northern California	Sump 28, Sacramento; Sump 104, Sacramento; Legion Park pump station, Stockton; Weston Ranch pump station, Stockton; Moraga Lane pump station, Stockton; Concrete drain pipe, North West Rd., Vacaville	2009	Bifenthrin	Wet & Dry	Water	Discharge	6	33	26	79%	ng/L		8.6	3.8	0.5	29.8	3 wet weather & 3 dry weather events for each of 5 sites; 3 wet events only at Vacaville site. Non-detects substituted as 1/2 the detection limit (1 ng/L)
			[as above]	2009	Cyfluthrin	Wet & Dry	Water	Discharge	6	33	18	55%	ng/L		4.8	3.1	0.5	17.8	3 wet weather & 3 dry weather events for each of 5 sites; 3 wet events only at Vacaville site. Non-detects substituted as 1/2 the detection limit (1 ng/L)
			[as above]	2009	Cypermethrin	Wet & Dry	Water	Discharge	6	33	12	36%	ng/L		2.4	0.5	0.05	12.3	3 wet weather & 3 dry weather events for each of 5 sites; 3 wet events only at Vacaville site. Non-detects substituted as 1/2 the detection limit (1 ng/L)
			[as above]	2009	Deltamethrin	Wet & Dry	Water	Discharge	6	33	4	12%	ng/L		0.7	0.5	0.5	3.5	3 wet weather & 3 dry weather events for each of 5 sites; 3 wet events only at Vacaville site. Non-detects substituted as 1/2 the detection limit (1 ng/L)
			[as above]	2009	Esfenvalerate	Wet & Dry	Water	Discharge	6	33	2	6%	ng/L		0.7	0.5	0.5	4.3	3 wet weather & 3 dry weather events for each of 5 sites; 3 wet events only at Vacaville site. Non-detects substituted as 1/2 the detection limit (1 ng/L)
			[as above]	2009	Fenpropathrin	Wet & Dry	Water	Discharge	6	33	1	3%	ng/L		0.7	0.5	0.5	6.1	3 wet weather & 3 dry weather events for each of 5 sites; 3 wet events only at Vacaville site. Non-detects substituted as 1/2 the detection limit (1 ng/L)
			[as above]	2009	Lambda-cyhalothrin	Wet & Dry	Water	Discharge	6	33	15	45%	ng/L		1.4	0.5	0.5	6.2	3 wet weather & 3 dry weather events for each of 5 sites; 3 wet events only at Vacaville site. Non-detects substituted as 1/2 the detection limit (1 ng/L)
			[as above]	2009	Permethrin	Wet & Dry	Water	Discharge	6	33	20	61%	ng/L		8.7	5.6	0.5	45.8	3 wet weather & 3 dry weather events for each of 5 sites; 3 wet events only at Vacaville site. Non-detects substituted as 1/2 the detection limit (1 ng/L)
Weston and Lydy, 2010b	Urban and Agricultural Sources of Pyrethroid Insecticides to the Sacramento-San Joaquin Delta of California	Northern California	Ulatis Creek, Alamo Creek, San Joaquin River, American River, Sacramento River	2009	Bifenthrin	Wet	Water	Receiving	12	22	10	45%	ng/L						
			Ulatis Creek, Alamo Creek, San Joaquin River, American River, Sacramento River	2009	Cyfluthrin	Wet	Water	Receiving	12	22	2	9%	ng/L						
			Ulatis Creek, Alamo Creek, San Joaquin River, American River, Sacramento River	2009	Cypermethrin	Wet	Water	Receiving	12	22	0	0%	ng/L						
			Ulatis Creek, Alamo Creek, San Joaquin River, American River, Sacramento River	2009	Deltamethrin	Wet	Water	Receiving	12	22	0	0%	ng/L						
			Ulatis Creek, Alamo Creek, San Joaquin River, American River, Sacramento River	2009	Esfenvalerate	Wet	Water	Receiving	12	22	0	0%	ng/L						
			Ulatis Creek, Alamo Creek, San Joaquin River, American River, Sacramento River	2009	Fenpropathrin	Wet	Water	Receiving	12	22	0	0%	ng/L						
			Ulatis Creek, Alamo Creek, San Joaquin River, American River, Sacramento River	2009	Lambda-cyhalothrin	Wet	Water	Receiving	12	22	2	9%	ng/L						
			Ulatis Creek, Alamo Creek, San Joaquin River, American River, Sacramento River	2009	Permethrin	Wet	Water	Receiving	12	22	4	18%	ng/L						
Weston and Lydy, 2012	Stormwater input of pyrethroid insecticides to an urban river	Sacramento	Hinkle Creek	2009-2010	Bifenthrin	Wet	Water	Receiving	1	4	4	100%	ng/L		24.575	26.8	1.0	43.7	
			Hinkle Creek	2009-2010	Cyfluthrin	Wet	Water	Receiving	1	4	2	50%	ng/L		6.7	6.65	0.5	13	Non-detects substituted with 1/2 the detection limit (<1 ng/L)
			Hinkle Creek	2009-2010	Cypermethrin	Wet	Water	Receiving	1	4	0	0%	ng/L						
			Hinkle Creek	2009-2010	Permethrin	Wet	Water	Receiving	1	4	1	25%	ng/L		5.9	5.9	0.5	11.3	Non-detects substituted with 1/2 the detection limit (<1 ng/L)
Weston and Lydy, 2012	Stormwater input of pyrethroid insecticides to an urban river	Sacramento	Willow Creek	2009-2010	Bifenthrin	Wet	Water	Receiving	1	2	1	50%	ng/L		4.9	4.9	0.5	9.3	Non-detects substituted with 1/2 the detection limit (<1 ng/L)
			Willow Creek	2009-2010	Cyfluthrin	Wet	Water	Receiving	1	2	0	0%	ng/L						
			Willow Creek	2009-2010	Cypermethrin	Wet	Water	Receiving	1	2	0	0%	ng/L						
			Willow Creek	2009-2010	Permethrin	Wet	Water	Receiving	1	2	0	0%	ng/L						
Weston and Lydy, 2012	Stormwater input of pyrethroid insecticides to an urban river	Sacramento	Alder Creek	2009-2010	Bifenthrin	Wet	Water	Receiving	1	2	0	0%	ng/L						
			Alder Creek	2009-2010	Cyfluthrin	Wet	Water	Receiving	1	2	0	0%	ng/L						
			Alder Creek	2009-2010	Cypermethrin	Wet	Water	Receiving	1	2	0	0%	ng/L						
			Alder Creek	2009-2010	Permethrin	Wet	Water	Receiving	1	2	0	0%	ng/L						
Weston and Lydy, 2012	Stormwater input of pyrethroid insecticides to an urban river	Sacramento	Buffalo Creek	2009-2010	Bifenthrin	Wet	Water	Receiving	1	6	5	83%	ng/L		12.2	9.0	0.5	28.9	Non-detects substituted with 1/2 the detection limit (<1 ng/L)
			Buffalo Creek	2009-2010	Cyfluthrin	Wet	Water	Receiving	1	6	0	0%	ng/L						
			Buffalo Creek	2009-2010	Cypermethrin	Wet	Water	Receiving	1	6	0	0%	ng/L						
			Buffalo Creek	2009-2010	Permethrin	Wet	Water	Receiving	1	6	0	0%	ng/L						
Weston and Lydy, 2012	Stormwater input of pyrethroid insecticides to an urban river	Sacramento	Minnesota Creek	2009-2010	Bifenthrin	Wet	Water	Receiving	1	5	5	100%	ng/L		13.82	20.7	1.3	#########	
			Minnesota Creek	2009-2010	Cyfluthrin	Wet	Water	Receiving	1	5	0	0%	ng/L						
			Minnesota Creek	2009-2010	Cypermethrin	Wet	Water	Receiving	1	5	0	0%	ng/L						

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather	Water/ Sediment	Discharge/ Receiving Water	# Sites	# Samples	# Detected	% Detected	Units	Sed. Unit Weight	Mean	Median	Min	Max	Notes
			Minnesota Creek	2009-2010	Permethrin	Wet	Water	Receiving	1	5	0	0%	ng/L						
Weston and Lydy, 2012	Stormwater input of pyrethroid insecticides to an urban river	Sacramento	Carmichael Creek	2009-2010	Bifenthrin	Wet	Water	Receiving	1	5	5	100%	ng/L		40.88	37.3	6.2	106.4	
			Carmichael Creek	2009-2010	Cyfluthrin	Wet	Water	Receiving	1	5	5	100%	ng/L		8.46	8.7	2.0	20.5	
			Carmichael Creek	2009-2010	Cypermethrin	Wet	Water	Receiving	1	5	1	20%	ng/L		2.28	0.5	0.5	9.4	Non-detects substituted with 1/2 the detection limit (<1 ng/L)
			Carmichael Creek	2009-2010	Permethrin	Wet	Water	Receiving	1	5	2	40%	ng/L		8.72	8.1	0.5	21.1	Non-detects substituted with 1/2 the detection limit (<1 ng/L)
Weston and Lydy, 2012	Stormwater input of pyrethroid insecticides to an urban river	Sacramento	Mather Drain	2009-2010	Bifenthrin	Wet	Water	Discharge	1	6	4	67%	ng/L		14.55	13.25	0.5	31.7	Non-detects substituted with 1/2 the detection limit (<1 ng/L)
			Mather Drain	2009-2010	Cyfluthrin	Wet	Water	Discharge	1	6	1	17%	ng/L		4.85	0.5	0.5	26.6	Non-detects substituted with 1/2 the detection limit (<1 ng/L)
			Mather Drain	2009-2010	Cypermethrin	Wet	Water	Discharge	1	6	0	0%	ng/L						
			Mather Drain	2009-2010	Permethrin	Wet	Water	Discharge	1	6	0	0%	ng/L						
Weston and Lydy, 2012	Stormwater input of pyrethroid insecticides to an urban river	Sacramento	Mayhew Drain	2009-2010	Bifenthrin	Wet	Water	Discharge	1	4	4	100%	ng/L		20.675	19.0	10.1	34.6	
			Mayhew Drain	2009-2010	Cyfluthrin	Wet	Water	Discharge	1	4	0	0%	ng/L						
			Mayhew Drain	2009-2010	Cypermethrin	Wet	Water	Discharge	1	4	0	0%	ng/L						
			Mayhew Drain	2009-2010	Permethrin	Wet	Water	Discharge	1	4	0	0%	ng/L						
Weston and Lydy, 2012	Stormwater input of pyrethroid insecticides to an urban river	Sacramento	Sump 92	2009-2010	Bifenthrin	Wet	Water	Discharge	1	4	4	100%	ng/L		22.125	21.05	12.4	34.0	
			Sump 92	2009-2010	Cyfluthrin	Wet	Water	Discharge	1	4	2	50%	ng/L		1.525	0.9	0.5	11.4	Non-detects substituted with 1/2 the detection limit (<1 ng/L)
			Sump 92	2009-2010	Cypermethrin	Wet	Water	Discharge	1	4	2	50%	ng/L		5.575	5.2	0.5	3.9	Non-detects substituted with 1/2 the detection limit (<1 ng/L)
			Sump 92	2009-2010	Permethrin	Wet	Water	Discharge	1	4	4	100%	ng/L		16.2	13.3	8.4	29.8	
Weston and Lydy, 2012	Stormwater input of pyrethroid insecticides to an urban river	Sacramento	Chicken/Strong Ranch Slough	2009-2010	Bifenthrin	Wet	Water	Discharge	1	6	6	100%	ng/L		38.3	35.8	17.4	83.4	
			Chicken/Strong Ranch Slough	2009-2010	Cyfluthrin	Wet	Water	Discharge	1	6	2	33%	ng/L		1.2	0.5	0.5	3.2	Non-detects substituted with 1/2 the detection limit (<1 ng/L)
			Chicken/Strong Ranch Slough	2009-2010	Cypermethrin	Wet	Water	Discharge	1	6	2	33%	ng/L		1.55	0.5	0.5	4.3	Non-detects substituted with 1/2 the detection limit (<1 ng/L)
			Chicken/Strong Ranch Slough	2009-2010	Permethrin	Wet	Water	Discharge	1	6	4	67%	ng/L		27.533333	13.6	0.5	110.5	Non-detects substituted with 1/2 the detection limit (<1 ng/L)
Weston and Lydy, 2012	Stormwater input of pyrethroid insecticides to an urban river	Sacramento	Sump 152	2009-2010	Bifenthrin	Wet	Water	Discharge	1	4	4	100%	ng/L		12.3	11.9	4.5	21	
			Sump 152	2009-2010	Cyfluthrin	Wet	Water	Discharge	1	4	1	25%	ng/L		4.025	0.5	0.5	14.6	Non-detects substituted with 1/2 the detection limit (<1 ng/L)
			Sump 152	2009-2010	Cypermethrin	Wet	Water	Discharge	1	4	0	0%	ng/L						
			Sump 152	2009-2010	Permethrin	Wet	Water	Discharge	1	4	2	50%	ng/L		5.8	3.5	0.5	15.2	Non-detects substituted with 1/2 the detection limit (<1 ng/L)
Weston et al., 2009a	Residential Runoff as a Source of Pyrethroid Pesticides to Urban Creeks	Northern California	Roseville Drain	2006-2007	Bifenthrin	Dry	Water	Discharge	1	4	4	100%	ng/L			4.6		14.2	(only max and median data provided)
			Roseville Drain	2006-2007	Cyfluthrin	Dry	Water	Discharge	1	4	2	50%	ng/L			1.25		3.0	ND substituted as 1/2 the detection limit (2.5 ng/L); only max and median provided
			Roseville Drain	2006-2007	Cypermethrin	Dry	Water	Discharge	1	4	1	25%	ng/L			1.25		10.20	ND substituted as 1/2 the detection limit (2.5 ng/L); only max and median provided
			Roseville Drain	2006-2007	Deltamethrin	Dry	Water	Discharge	1	4	0	0%	ng/L						
			Roseville Drain	2006-2007	Esfenvalerate	Dry	Water	Discharge	1	4	0	0%	ng/L						
			Roseville Drain	2006-2007	Lambda-cyhalothrin	Dry	Water	Discharge	1	4	0	0%	ng/L						
			Roseville Drain	2006-2007	Permethrin	Dry	Water	Discharge	1	4	1	25%	ng/L			1.25		3.6	ND substituted as 1/2 the detection limit (2.5 ng/L); only max and median provided
Weston et al., 2009a	Residential Runoff as a Source of Pyrethroid Pesticides to Urban Creeks	Northern California	Roseville Drain	2006-2007	Bifenthrin	Wet	Water	Discharge	1	8	8	100%	ng/L			17.3		29.7	
			Roseville Drain	2006-2007	Cyfluthrin	Wet	Water	Discharge	1	8	8	100%	ng/L			8.7		22.6	
			Roseville Drain	2006-2007	Cypermethrin	Wet	Water	Discharge	1	8	7	88%	ng/L			8.50		25.90	ND substituted as 1/2 the detection limit (2.5 ng/L); only max and median provided
			Roseville Drain	2006-2007	Deltamethrin	Wet	Water	Discharge	1	8	2	25%	ng/L			1.25		3.5	ND substituted as 1/2 the detection limit (2.5 ng/L); only max and median provided
			Roseville Drain	2006-2007	Esfenvalerate	Wet	Water	Discharge	1	8	0	0%	ng/L						
			Roseville Drain	2006-2007	Lambda-cyhalothrin	Wet	Water	Discharge	1	8	2	25%	ng/L			1.25		7.0	ND substituted as 1/2 the detection limit (2.5 ng/L); only max and median provided
			Roseville Drain	2006-2007	Permethrin	Wet	Water	Discharge	1	8	7	88%	ng/L			16.8		66.1	ND substituted as 1/2 the detection limit (2.5 ng/L); only max and median provided
Weston et al., 2009a	Residential Runoff as a Source of Pyrethroid Pesticides to Urban Creeks	Northern California	Elk Grove drain discharge	2006-2007	Bifenthrin	Dry	Water	Discharge	1	4	3	75%	ng/L			8.7		72.7	ND substituted as 1/2 the detection limit (2.5 ng/L); only max and median provided
			Elk Grove drain discharge	2006-2007	Cyfluthrin	Dry	Water	Discharge	1	4	2	50%	ng/L			3.8		13.8	ND substituted as 1/2 the detection limit (2.5 ng/L); only max and median provided
			Elk Grove drain discharge	2006-2007	Cypermethrin	Dry	Water	Discharge	1	4	0	0%	ng/L						
			Elk Grove drain discharge	2006-2007	Deltamethrin	Dry	Water	Discharge	1	4	0	0%	ng/L						
			Elk Grove drain discharge	2006-2007	Esfenvalerate	Dry	Water	Discharge	1	4	0	0%	ng/L						
			Elk Grove drain discharge	2006-2007	Lambda-cyhalothrin	Dry	Water	Discharge	1	4	0	0%	ng/L						
			Elk Grove drain discharge	2006-2007	Permethrin	Dry	Water	Discharge	1	4	3	75%	ng/L			5.7		11.0	ND substituted as 1/2 the detection limit (2.5 ng/L); only max and median provided
Weston et al., 2009a	Residential Runoff as a Source of Pyrethroid Pesticides to Urban Creeks	Northern California	Elk Grove drain discharge	2006-2007	Bifenthrin	Wet	Water	Discharge	1	8	8	100%	ng/L			7.1		34.0	
			Elk Grove drain discharge	2006-2007	Cyfluthrin	Wet	Water	Discharge	1	8	5	63%	ng/L			3.2		8.8	ND substituted as 1/2 the detection limit (2.5 ng/L); only max and median provided
			Elk Grove drain discharge	2006-2007	Cypermethrin	Wet	Water	Discharge	1	8	1	13%	ng/L			1.25		4.20	ND substituted as 1/2 the detection limit (2.5 ng/L); only max and median provided
			Elk Grove drain discharge	2006-2007	Deltamethrin	Wet	Water	Discharge	1	8	2	25%	ng/L			1.25		252.0	ND substituted as 1/2 the detection limit (2.5 ng/L); only max and median provided
			Elk Grove drain discharge	2006-2007	Esfenvalerate	Wet	Water	Discharge	1	8	0	0%	ng/L						
			Elk Grove drain discharge	2006-2007	Lambda-cyhalothrin	Wet	Water	Discharge	1	8	0	0%	ng/L						
			Elk Grove drain discharge	2006-2007	Permethrin	Wet	Water	Discharge	1	8	7	88%	ng/L			21.6		125.0	ND substituted as 1/2 the detection limit (2.5 ng/L); only max and median provided
Weston et al., 2009a	Residential Runoff as a Source of Pyrethroid Pesticides to Urban Creeks	Northern California	Pleasant Grove Creek	2006-2007	Bifenthrin	Dry	Sediment	Receiving	1	3	3	100%	ng/g	Dry	11.1	12.0	12.0	15.0	
			Pleasant Grove Creek	2006-2007	Cyfluthrin	Dry	Sediment	Receiving	1	3	2	67%	ng/g	Dry	2.3	2.7	0.5	3.8	ND substituted as 1/2 the detection limit (1 ng/g)
			Pleasant Grove Creek	2006-2007	Cypermethrin	Dry	Sediment	Receiving	1	3	2	67%	ng/g	Dry	2.5	2.20	0.5	4.70	ND substituted as 1/2 the detection limit (1 ng/g)
			Pleasant Grove Creek	2006-2007	Deltamethrin	Dry	Sediment	Receiving	1	3	0	0%	ng/g	Dry					
			Pleasant Grove Creek	2006-2007	Esfenvalerate	Dry	Sediment	Receiving	1	3	0	0%	ng/g	Dry					
			Pleasant Grove Creek	2006-2007	Lambda-cyhalothrin	Dry	Sediment	Receiving	1	3	0	0%	ng/g	Dry					
			Pleasant Grove Creek	2006-2007	Permethrin	Dry	Sediment	Receiving	1	3	1	33%	ng/g	Dry	2.8	0.5	0.5	7.4	ND substituted as 1/2 the detection limit (1 ng/g)
Weston et al., 2009a	Residential Runoff as a Source of Pyrethroid Pesticides to Urban Creeks	Northern California	Roseville Drain	2006-2007	Bifenthrin	Dry	Sediment	Discharge	1	1	1	100%	ng/g	Dry	238		238	238	Only one sample, no median calculated
			Roseville Drain	2006-2007	Cyfluthrin	Dry	Sediment	Discharge	1	1	1	100%	ng/g	Dry	55.0		55.0	55.0	Only one sample, no median calculated
			Roseville Drain	2006-2007	Cypermethrin	Dry	Sediment	Discharge	1	1	1	100%	ng/g	Dry	17.00		17.00	17.00	Only one sample, no median calculated
			Roseville Drain	2006-2007	Deltamethrin	Dry	Sediment	Discharge	1	1	1	100%	ng/g	Dry	19.0		19.0	19.0	Only one sample, no median calculated
			Roseville Drain	2006-2007	Esfenvalerate	Dry	Sediment	Discharge	1	1	0	0%	ng/g	Dry					
			Roseville Drain	2006-2007	Lambda-cyhalothrin	Dry	Sediment	Discharge	1	1	1	100%	ng/g	Dry	6.1		6.1	6.1	Only one sample, no median calculated
			Roseville Drain	2006-2007	Permethrin	Dry	Sediment	Discharge	1	1	1	100%	ng/g	Dry	56.0		56.0	56.0	Only one sample, no median calculated
Weston et al., 2009a	Residential Runoff as a Source of Pyrethroid Pesticides to Urban Creeks	Northern California	Elk Grove drain discharge	2006-2007	Bifenthrin	Dry	Sediment	Discharge	1	1	1	100%	ng/g	Dry	744.0		744.0	744.0	Only one sample, no median calculated
			Elk Grove drain discharge	2006-2007	Cyfluthrin	Dry	Sediment	Discharge	1	1	1	100%	ng/g	Dry	187.0		187.0	187.0	Only one sample, no median calculated

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather	Water/ Sediment	Discharge/ Receiving Water	# Sites	# Samples	# Detected	% Detected	Units	Sed. Unit Weight	Mean	Median	Min	Max	Notes
			Elk Grove drain discharge	2006-2007	Cypermethrin	Dry	Sediment	Discharge	1	1	1	100%	ng/g	Dry	66.00		66.00	66.00	Only one sample, no median calculated
			Elk Grove drain discharge	2006-2007	Deltamethrin	Dry	Sediment	Discharge	1	1	1	100%	ng/g	Dry	78.0		78.0	78.0	Only one sample, no median calculated
			Elk Grove drain discharge	2006-2007	Esfenvalerate	Dry	Sediment	Discharge	1	1	1	100%	ng/g	Dry	4.6		4.6	4.6	Only one sample, no median calculated
			Elk Grove drain discharge	2006-2007	Lambda-cyhalothrin	Dry	Sediment	Discharge	1	1	1	100%	ng/g	Dry	31.0		31.0	31.0	Only one sample, no median calculated
			Elk Grove drain discharge	2006-2007	Permethrin	Dry	Sediment	Discharge	1	1	1	100%	ng/g	Dry	539.0		539.0	539.0	Only one sample, no median calculated
Weston Solutions Inc., 2008c	Response to Monitoring in Chollas Creek, Investigation Order No. R9-2004-0277	Southern California	Chollas Creek		Allethrin	Wet	Water	Receiving	2	6	0	0%	ng/L						
			Chollas Creek		Bifenthrin	Wet	Water	Receiving	2	6	6	100%	ng/L		156.4	73.5	7.2	398	
			Chollas Creek		Cyfluthrin	Wet	Water	Receiving	2	6	6	100%	ng/L		137.2	126	5.48	354	
			Chollas Creek		Cypermethrin	Wet	Water	Receiving	2	6	6	100%	ng/L		139.0	104.75	10.6	451	
			Chollas Creek		Danitol	Wet	Water	Receiving	2	6	1	17%	ng/L		1.5	0.25	0.25	7.9	ND substituted as 1/2 the detection limit (0.5 ng/L)
			Chollas Creek		Deltamethrin	Wet	Water	Receiving	2	6	0	0%	ng/L						
			Chollas Creek		Esfenvalerate	Wet	Water	Receiving	2	6	0	0%	ng/L						
			Chollas Creek		Fenvalerate	Wet	Water	Receiving	2	6	2	33%	ng/L		1.3	0.25	0.25	3.9	ND substituted as 1/2 the detection limit (0.5 ng/L)
			Chollas Creek		Lambda-cyhalothrin	Wet	Water	Receiving	2	6	3	50%	ng/L		8.6	0.28	0.25	42.1	ND and trace detections substituted as 1/2 the detection limit (0.5 ng/L)
			Chollas Creek		Permethrin	Wet	Water	Receiving	2	6	0	0%	ng/L						
			Chollas Creek		Prallethrin	Wet	Water	Receiving	2	6	4	67%	ng/L		51.0	3.8	0.25	287	ND and trace detections substituted as 1/2 the detection limit (0.5 ng/L)
Woudneh and Oros, 2006a	Quantitative Determination of Pyrethroids, Pyrethrins, and Piperonyl Butoxide in Surface Water by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry	San Francisco Bay Tributaries	Coyote Creek	2005	Allethrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
			Coyote Creek	2005	Bifenthrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
			Coyote Creek	2005	Cyfluthrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
			Coyote Creek	2005	Cypermethrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
			Coyote Creek	2005	Deltamethrin/Tralomethrin	Dry	Water	Receiving	1	1	1	100%	ng/L		0.063		0.063	0.063	Only one sample, no median calculated
			Coyote Creek	2005	Fenpropathrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
			Coyote Creek	2005	Fenvalerate	Dry	Water	Receiving	1	1	0	0%	ng/L						
			Coyote Creek	2005	L-Cyhalothrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
			Coyote Creek	2005	Permethrin	Dry	Water	Receiving	1	1	1	100%	ng/L		0.258		0.258	0.258	Only one sample, no median calculated
			Coyote Creek	2005	Phenothrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
			Coyote Creek	2005	Prallethrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
			Coyote Creek	2005	Pyrethrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
			Coyote Creek	2005	Resmethrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
Woudneh and Oros, 2006a	Quantitative Determination of Pyrethroids, Pyrethrins, and Piperonyl Butoxide in Surface Water by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry	San Francisco Bay Tributaries	Petaluma River	2005	Allethrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
			Petaluma River	2005	Bifenthrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
			Petaluma River	2005	Cyfluthrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
			Petaluma River	2005	Cypermethrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
			Petaluma River	2005	Deltamethrin/Tralomethrin	Dry	Water	Receiving	1	1	1	100%	ng/L		0.008		0.008	0.008	Only one sample, no median calculated
			Petaluma River	2005	Fenpropathrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
			Petaluma River	2005	Fenvalerate	Dry	Water	Receiving	1	1	0	0%	ng/L						
			Petaluma River	2005	L-Cyhalothrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
			Petaluma River	2005	Permethrin	Dry	Water	Receiving	1	1	1	100%	ng/L		0.036		0.036	0.036	Only one sample, no median calculated
			Petaluma River	2005	Phenothrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
			Petaluma River	2005	Prallethrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
			Petaluma River	2005	Pyrethrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
			Petaluma River	2005	Resmethrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
Woudneh and Oros, 2006a	Quantitative Determination of Pyrethroids, Pyrethrins, and Piperonyl Butoxide in Surface Water by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry	San Francisco Bay Tributaries	San Mateo Creek	2005	Allethrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
			San Mateo Creek	2005	Bifenthrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
			San Mateo Creek	2005	Cyfluthrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
			San Mateo Creek	2005	Cypermethrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
			San Mateo Creek	2005	Deltamethrin/Tralomethrin	Dry	Water	Receiving	1	1	1	100%	ng/L		0.042		0.042	0.042	Only one sample, no median calculated
			San Mateo Creek	2005	Fenpropathrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
			San Mateo Creek	2005	Fenvalerate	Dry	Water	Receiving	1	1	0	0%	ng/L						
			San Mateo Creek	2005	L-Cyhalothrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
			San Mateo Creek	2005	Permethrin	Dry	Water	Receiving	1	1	1	100%	ng/L		0.077		0.077	0.077	Only one sample, no median calculated
			San Mateo Creek	2005	Phenothrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
			San Mateo Creek	2005	Prallethrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
			San Mateo Creek	2005	Pyrethrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
			San Mateo Creek	2005	Resmethrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
Woudneh and Oros, 2006a	Quantitative Determination of Pyrethroids, Pyrethrins, and Piperonyl Butoxide in Surface Water by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry	San Francisco Bay Tributaries	San Lorenzo Creek	2005	Allethrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
			San Lorenzo Creek	2005	Bifenthrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
			San Lorenzo Creek	2005	Cyfluthrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
			San Lorenzo Creek	2005	Cypermethrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
			San Lorenzo Creek	2005	Deltamethrin/Tralomethrin	Dry	Water	Receiving	1	1	1	100%	ng/L		0.001		0.001	0.001	Only one sample, no median calculated
			San Lorenzo Creek	2005	Fenpropathrin	Dry	Water	Receiving	1	1	0	0%	ng/L						

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather	Water/ Sediment	Discharge/ Receiving Water	# Sites	# Samples	# Detected	% Detected	Units	Sed. Unit Weight	Mean	Median	Min	Max	Notes
			San Lorenzo Creek	2005	Fenvalerate	Dry	Water	Receiving	1	1	0	0%	ng/L						
			San Lorenzo Creek	2005	L-Cyhalothrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
			San Lorenzo Creek	2005	Permethrin	Dry	Water	Receiving	1	1	1	100%	ng/L		0.018		0.018	0.018	Only one sample, no median calculated
			San Lorenzo Creek	2005	Phenothrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
			San Lorenzo Creek	2005	Prallethrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
			San Lorenzo Creek	2005	Pyrethrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
			San Lorenzo Creek	2005	Resmethrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
Woudneh and Oros, 2006a	Quantitative Determination of Pyrethroids, Pyrethrins, and Piperonyl Butoxide in Surface Water by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry	San Francisco Bay Tributaries	Suisun Creek	2005	Allethrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
			Suisun Creek	2005	Bifenthrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
			Suisun Creek	2005	Cyfluthrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
			Suisun Creek	2005	Cypermethrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
			Suisun Creek	2005	Deltamethrin/Tralomethrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
			Suisun Creek	2005	Fenpropathrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
			Suisun Creek	2005	Fenvalerate	Dry	Water	Receiving	1	1	0	0%	ng/L						
			Suisun Creek	2005	L-Cyhalothrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
			Suisun Creek	2005	Permethrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
			Suisun Creek	2005	Phenothrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
			Suisun Creek	2005	Prallethrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
			Suisun Creek	2005	Pyrethrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
			Suisun Creek	2005	Resmethrin	Dry	Water	Receiving	1	1	0	0%	ng/L						
Woudneh and Oros, 2006b	Pyrethroids, pyrethrins, and piperonyl butoxide in sediments by high-resolution gas chromatography/high-resolution mass spectrometry	San Francisco Bay Tributaries	Coyote Creek	2005	Allethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Coyote Creek	2005	Bifenthrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	1.48		1.48	1.48	Only one sample, no median calculated
			Coyote Creek	2005	Cyfluthrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Coyote Creek	2005	Cypermethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Coyote Creek	2005	Deltamethrin/Tralomethrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	0.370		0.370	0.370	Only one sample, no median calculated
			Coyote Creek	2005	Fenpropathrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Coyote Creek	2005	Fenvalerate	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Coyote Creek	2005	Flucythrinate	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	0.347		0.347	0.347	Only one sample, no median calculated
			Coyote Creek	2005	L-Cyhalothrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	0.454		0.454	0.454	Only one sample, no median calculated
			Coyote Creek	2005	Permethrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	2.06		2.06	2.06	Only one sample, no median calculated
			Coyote Creek	2005	Phenothrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Coyote Creek	2005	Prallethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Coyote Creek	2005	Pyrethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Coyote Creek	2005	Resmethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Coyote Creek	2005	Tetramethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Coyote Creek	2005	Piperonyl butoxide	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	0.102		0.102	0.102	Only one sample, no median calculated
Woudneh and Oros, 2006b	Pyrethroids, pyrethrins, and piperonyl butoxide in sediments by high-resolution gas chromatography/high-resolution mass spectrometry	San Francisco Bay Tributaries	Petaluma River	2005	Allethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Petaluma River	2005	Bifenthrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Petaluma River	2005	Cyfluthrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Petaluma River	2005	Cypermethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Petaluma River	2005	Deltamethrin/Tralomethrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	0.146		0.146	0.146	Only one sample, no median calculated
			Petaluma River	2005	Fenpropathrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Petaluma River	2005	Fenvalerate	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Petaluma River	2005	Flucythrinate	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Petaluma River	2005	L-Cyhalothrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Petaluma River	2005	Permethrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	0.94		0.94	0.94	Only one sample, no median calculated
			Petaluma River	2005	Phenothrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Petaluma River	2005	Prallethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Petaluma River	2005	Pyrethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Petaluma River	2005	Resmethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Petaluma River	2005	Tetramethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Petaluma River	2005	Piperonyl butoxide	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	0.035		0.035	0.035	Only one sample, no median calculated
Woudneh and Oros, 2006b	Pyrethroids, pyrethrins, and piperonyl butoxide in sediments by high-resolution gas chromatography/high-resolution mass spectrometry	San Francisco Bay Tributaries	San Mateo Creek	2005	Allethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			San Mateo Creek	2005	Bifenthrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	9.24		9.24	9.24	Only one sample, no median calculated
			San Mateo Creek	2005	Cyfluthrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	17.6		17.6	17.6	Only one sample, no median calculated
			San Mateo Creek	2005	Cypermethrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	4.57		4.57	4.57	Only one sample, no median calculated
			San Mateo Creek	2005	Deltamethrin/Tralomethrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	2.73		2.73	2.73	Only one sample, no median calculated
			San Mateo Creek	2005	Fenpropathrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			San Mateo Creek	2005	Fenvalerate	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			San Mateo Creek	2005	Flucythrinate	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			San Mateo Creek	2005	L-Cyhalothrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	1.71		1.71	1.71	Only one sample, no median calculated

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather	Water/ Sediment	Discharge/ Receiving Water	# Sites	# Samples	# Detected	% Detected	Units	Sed. Unit Weight	Mean	Median	Min	Max	Notes
			San Mateo Creek	2005	Permethrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	9.12		9.12	9.12	Only one sample, no median calculated
			San Mateo Creek	2005	Phenothrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			San Mateo Creek	2005	Prallethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			San Mateo Creek	2005	Pyrethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			San Mateo Creek	2005	Resmethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			San Mateo Creek	2005	Tetramethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			San Mateo Creek	2005	Piperonyl butoxide	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	0.215		0.215	0.215	Only one sample, no median calculated
Woudneh and Oros, 2006b	Pyrethroids, pyrethrins, and piperonyl butoxide in sediments by high-resolution gas chromatography/high-resolution mass spectrometry	San Francisco Bay Tributaries	San Lorenzo Creek	2005	Allethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			San Lorenzo Creek	2005	Bifenthrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	3.99		3.99	3.99	Only one sample, no median calculated
			San Lorenzo Creek	2005	Cyfluthrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			San Lorenzo Creek	2005	Cypermethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			San Lorenzo Creek	2005	Deltamethrin/Tralomethrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	0.725		0.725	0.725	Only one sample, no median calculated
			San Lorenzo Creek	2005	Fenpropathrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			San Lorenzo Creek	2005	Fenvalerate	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			San Lorenzo Creek	2005	Flucythrinate	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			San Lorenzo Creek	2005	L-Cyhalothrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	0.221		0.221	0.221	Only one sample, no median calculated
			San Lorenzo Creek	2005	Permethrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	2.9		2.9	2.9	Only one sample, no median calculated
			San Lorenzo Creek	2005	Phenothrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	0.395		0.395	0.395	Only one sample, no median calculated
			San Lorenzo Creek	2005	Prallethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			San Lorenzo Creek	2005	Pyrethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			San Lorenzo Creek	2005	Resmethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			San Lorenzo Creek	2005	Tetramethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			San Lorenzo Creek	2005	Piperonyl butoxide	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	0.056		0.056	0.056	Only one sample, no median calculated
Woudneh and Oros, 2006b	Pyrethroids, pyrethrins, and piperonyl butoxide in sediments by high-resolution gas chromatography/high-resolution mass spectrometry	San Francisco Bay Tributaries	Suisun Creek	2005	Allethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Suisun Creek	2005	Bifenthrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Suisun Creek	2005	Cyfluthrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Suisun Creek	2005	Cypermethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Suisun Creek	2005	Deltamethrin/Tralomethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Suisun Creek	2005	Fenpropathrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Suisun Creek	2005	Fenvalerate	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Suisun Creek	2005	Flucythrinate	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Suisun Creek	2005	L-Cyhalothrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Suisun Creek	2005	Permethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Suisun Creek	2005	Phenothrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Suisun Creek	2005	Prallethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Suisun Creek	2005	Pyrethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Suisun Creek	2005	Resmethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Suisun Creek	2005	Tetramethrin	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry					
			Suisun Creek	2005	Piperonyl butoxide	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	0.010		0.010	0.010	Only one sample, no median calculated
You et al., 2008	Chemical Availability and Sediment Toxicity of Pyrethroid Insecticides to Hyalella Azteca: Application to Field Sediment With Unexpectedly Low Toxicity	Northern California	Gilsier Slough, Elk Bayou, Owens Creek, Del Puerto Creek, Spring Creek, Chicken Ranch Slough, Lauterwasser Creek, Morrison Creek, Kirker Creek, Strong Ranch Slough, Arcade Creek, Reclamation Ditch, Glen Echo Creek	2004-2008	Bifenthrin		Sediment	Receiving	17	17	16	94%	µg/kg	Dry	8.20	3.92	0.13	52.5	ND substituted as 1/2 the detection limit (0.26 µg/kg)
			[as above]	2004-2008	Lambda-cyhalothrin		Sediment	Receiving	17	17	9	53%	µg/kg	Dry	1.20	1.02	0.15	6.55	ND substituted as 1/2 the detection limit (0.30 µg/kg)
			[as above]	2004-2008	Esfenvalerate		Sediment	Receiving	17	17	7	41%	µg/kg	Dry	1.08	0.22	0.22	5.56	ND substituted as 1/2 the detection limit (0.43 µg/kg)
			[as above]	2004-2008	Deltamethrin		Sediment	Receiving	17	17	6	35%	µg/kg	Dry	1.55	0.25	0.25	7.86	ND substituted as 1/2 the detection limit (0.50 µg/kg)
			[as above]	2004-2008	Permethrin		Sediment	Receiving	17	17	13	76%	µg/kg	Dry	14.14	4.26	0.31	107.0	ND substituted as 1/2 the detection limit (0.62 µg/kg)
			[as above]	2004-2008	Cyfluthrin		Sediment	Receiving	17	17	8	47%	µg/kg	Dry	4.88	0.12	0.12	38.5	ND substituted as 1/2 the detection limit (0.23 µg/kg)
			[as above]	2004-2008	Cypermethrin		Sediment	Receiving	17	17	8	47%	µg/kg	Dry	4.59	0.12	0.12	33.0	ND substituted as 1/2 the detection limit (0.62 µg/kg)

Appendix D: “Toxicity Results Summary” Table

Citation - Abbrev.	Report/study Title	Region	Site(s)	Study Timeframe	Wet/Dry Weather	Water/Sediment	Discharge/Receiving Water	Organism tested	Number of Sites	Number of Samples Tested	Number of Toxic Samples	Number of Non-toxic Samples	% Toxic Samples	% Non-toxic Samples	Average % Survival	Acute or Chronic test	Notes
Amweg et al., 2005	Use and Toxicity of Pyrethroid Pesticides in the Central Valley, California, USA.	Central Valley	South Fork American River, Pacheco Creek, Del Puerto Creek	2003	Dry	Sediment	Receiving	Hyalella Azteca	3	80	23	**57**	29%	71%		Acute	
Amweg et al., 2006	Pyrethroid Insecticides and Sediment Toxicity in Urban Creeks from California and Tennessee	Sacramento	Arcade Creek site 1 and 2, Chicken Ranch Slough, Curry Creek, Elder Creek, Laguna site 1, 2, and 3, Morrison Creek, Willow Creek	2004-2005	Dry	Sediment	Receiving	Hyalella Azteca	11	33	22	11	67%	33%		Acute	
		East SF Bay	Glen Echo Creek, Kirker Creek, Lauterwasser Creek, Lion Creek, Pine Creek, San Leandro Creek, San Pablo Creek	2004-2005	Dry	Sediment	Receiving	Hyalella Azteca	7	15	8	7	53%	47%		Acute	
Anderson et al., 2010	Evaluation of methods to determine causes of sediment toxicity in San Diego Bay, California USA	San Diego Harbor	Switzer Creek, San Diego Harbor	2004	Dry	Sediment	Receiving	Eohaustorius estuarius	1	1	1	0	100%	0%	7%	Acute	
Anderson et al., 2011	Toxicity in California Waters	All 9 CA Water Board regions	North Coast to Mexico border	2001-2010	Wet & Dry	Water	Receiving	C. dubia, S. capricornutum, and P. promelas	617	76805	40706	36098	53%	47%		Acute	Of the 617 sites monitored statewide for water toxicity, 327 (53%) had at least one sample in which toxicity to at least one test species was observed. Of these, 65 (10.5% of the total) were classified as high toxicity sites. Compilation of state-sponsored toxicity testing performed from 2001-2010; results are reported separately in other studies
				2001-2010	Wet & Dry	Sediment	Receiving	Hyalella azteca	521	29620	13329	16291	45%	55%		Acute	Of 521 freshwater sites monitored statewide for sediment toxicity, 235 (45.1%) demonstrated some toxicity, and 88 (16.9%) were classified as high toxicity sites. Compilation of state-sponsored toxicity testing performed from 2001-2010; results are reported separately in other studies. Authors indicate that 10 day H. azteca tests may underestimate toxic effects (28 day tests are preferred), and tests conducted at 23 °C also underestimate pyrethroid pesticide toxicity because pyrethroids are more toxic at colder temperatures (15 °C preferred).
Bay et al., 2011	Southern California Bight 2008 Regional Monitoring Program: Sediment Toxicity	SC Bight	Ballona Creek, Marina del Rey, Mugu Lagoon	2008	Dry	Sediment	Receiving (Marinas)	Eohaustorius estuarius	3	44	12	32	27%	73%			
				2008	Dry	Sediment	Receiving (Estuaries)	Eohaustorius estuarius	3	64	29	35	45%	55%			
				2008	Dry	Sediment	Receiving (Shelf)	Eohaustorius estuarius	3	30	7	23	23%	77%			
				2008	Dry	Sediment	Receiving (Ports)	Eohaustorius estuarius	3	46	12	34	26%	74%			
				2008	Dry	Sediment	Receiving (Bays)	Eohaustorius estuarius	3	38	20	18	53%	47%			
Brown et al., 2010	Sediment Contaminant and Toxicity of Freshwater Urban Wetlands in Southern California	Southern California	Arroyo Seco Channel, Ballona Freshwater Marsh, Big Canyon Marsh, Brayley Wetlands, Camino Real, Crown Valley, Dairy Mart Ponds, IRWD Carlson Marsh, IRWD Pond A, IRWD Pond 6, Lewis Center Marsh, Madrona Marsh, Mojave River Marsh, Old Mission Creek, San Elijo Marsh, Sespe Creek, Sims Pond, UCI Pond 11, UCI Pond 3, Waleta Street Marsh, Wet CAT East, Wet CAT North	2007	Dry	Sediment	Receiving	Hyalella Azteca	23	21	10	13	38%	62%		Acute	
Delgado-Moreno et al., 2011	Occurrence and Toxicity of Three Classes of Insecticides in Water and Sediment in Two Southern California Coastal Watersheds	Southern California	Santa Clara River Watershed and Calleguas Creek Watershed	2009	Wet	Water	Receiving	Ceriodaphnia dubia	4	8	0	8	0%	100%		Acute	
				2009	Dry	Water	Receiving	Ceriodaphnia dubia	4	8	3	5	37.5%	62.5%		Acute	
Domagalski et al., 2010	Pyrethroid Insecticide Concentration and Toxicity in Streambed Sediments and Loads in Surface Waters of the San Joaquin Valley California USA	Northern California	Hospital Creek	2007	Dry	Sediment	Receiving	Hyalella Azteca	2	6	3	3	50%	50%	11%	Acute	
			Ingram Creek	2007	Dry	Sediment	Receiving	Hyalella Azteca	2	6	4	2	67%	33%	15.5%	Acute	
			Stanislaus River	2007	Dry	Sediment	Receiving	Hyalella Azteca	2	5	5	0	100%	0%	93%	Acute	
			Tuolumne River	2007	Dry	Sediment	Receiving	Hyalella Azteca	3	9	9	0	100%	0%	96%	Acute	
			Merced River	2007	Dry	Sediment	Receiving	Hyalella Azteca	3	9	9	0	100%	0%	93%	Acute	
			San Joaquin River	2007	Dry	Sediment	Receiving	Hyalella Azteca	2	6	6	0	100%	0%	93%	Acute	
Hladik and Kuivila, 2012	Pyrethroid insecticides in bed sediments from urban and agricultural streams across the United States	Central Valley, CA	Arcade Creek near Del Paso Heights	2009		Sediment	Receiving	Hyalella Azteca	1	1	1	0	100%	0%		Acute	
Holmes et al., 2008	Statewide Investigation of the Role of Pyrethroid Pesticides in Sediment Toxicity in California's Urban Waterways	90 Sites on 63 urban Waterways in California (only 30 sites with sediment analytical chemistry)	Statewide (North Coast, Bay Area and Central Coast, Southern California, and San Diego)	2006-2007	Dry	Sediment	Receiving	Hyalella Azteca	30	30	25	5	83%	17%	31%	Acute	
Lao et al., 2010	Analysis Occurrence and Toxic Potential of Pyrethroids, and Fipronil in Sediments from an Urban Estuary	Ballona Creek, Southern California	Six stations along a 4-km tidally influenced stretch of this waterway were selected for the present study	2007-2008	Dry	Sediment	Receiving	E. estuarius	6	18	13	7	61%	39%		Acute	

Citation - Abbrev.	Report/study Title	Region	Site(s)	Study Timeframe	Wet/Dry Weather	Water/Sediment	Discharge/Receiving Water	Organism tested	Number of Sites	Number of Samples Tested	Number of Toxic Samples	Number of Non-toxic Samples	% Toxic Samples	% Non-toxic Samples	Average % Survival	Acute or Chronic test	Notes
Lowe et al., 2007	Final Project Report: Investigations of Sources and Effects of Pyrethroid Pesticides in Watersheds of the San Francisco Estuary	SF Bay Area Estuaries	Two stations in each of the six tributaries	2004-2005	Dry	Sediment	Receiving	Hyalella Azteca and E. estuarius	6	24	6	18	25%	75%	77%	Acute	Urban sites are downstream of agricultural areas and mixed urban use areas
Ng et al., 2008	Patterns of Pyrethroid Contamination and Toxicity in Agricultural and Urban Stream Segments	Central California	Salinas	2005	Dry	Water	Receiving (Background area)	Hyalella Azteca	2	2	0	2	0%	100%		Acute	Urban sites are downstream of agricultural areas and mixed urban use areas Urban sites are downstream of agricultural areas and mixed urban use areas
			Salinas	2005		Water	Receiving (Mixed Urban)	Hyalella Azteca	2	2	2	0	100%	0%		Acute	
			Salinas	2005		Water	Receiving (Residential)	Hyalella Azteca	3	3	3	0	100%	0%		Acute	
Phillips et al., 2010	The contribution of pyrethroid pesticides to sediment toxicity in four urban creeks in California, USA.	Central and Southern California	Bouquet Canyon Creek, Cottonwood creek, Marsh Creek, and Peters Canyon Wash	2008-2010	Dry	Sediment	Receiving (Urban creeks)	Hyalella Azteca	4	4	4	0	100%	0%	11%	Acute	
Werner et al., 2006	Toxicity Testing and Toxicity Identification Evaluation Final Report April 10, 2006	Southern California	Region 4	2005	Dry	Water	Receiving	Ceriodaphnia dubia	43	21	7	14	33%	67%		Acute	
		Southern California	Region 7	2004-2005	Dry	Water	Receiving	Ceriodaphnia dubia	15	10	1	9	10%	90%		Acute	
		Southern California	Region 7	2004-2005	Dry	Water	Receiving	Hyalella Azteca	15	9	4	5	44%	56%		Acute	
		Southern California	Region 9	2004-2005	Dry	Water	Receiving	Ceriodaphnia dubia	22	24	5	19	21%	79%		Acute	
		Southern California	Region 9	2004-2005	Dry	Water	Receiving	Hyalella Azteca	22	8	1	7	13%	88%		Acute	
Werner et al., 2010a	Pelagic Organism Decline: Acute and Invertebrate and Fish Toxicity testing in the Sacramento San Joaquin Delta	Northern California	Sacramento-San Joaquin Delta	2008-2009	Dry	Water	Receiving	Hyalella Azteca	16	752	4	748	0.5%	99.5%		Acute	
				2008-2009	Dry	Water	Receiving	Hyalella Azteca	16	752	7	745	0.9%	99.1%		Chronic	
Werner et al., 2010b	Monitoring Acute and Chronic Water Column Toxicity in the Northern Sacramento-San Joaquin Estuary, California, USA, Using the Euryhaline Amphipod, H. Azteca: 2006 to 2007	Northern California	15-16 sites located in large channels and main-stem rivers.	2006-2007	Dry	Water	Receiving	Hyalella Azteca	16	623	35	588	5.62%	94.38%	21.34%	Acute	
Weston et al., 2005	Aquatic Toxicity Due to Residential Use of Pyrethroid Insecticides	Sacramento/Roseville	22 creek and drainage sites throughout the greater Sacramento area	2004	Dry	Sediment	Receiving	Hyalella Azteca	22	24	13	11	54%	45.83%		Acute	Average survival from 3 tests
Weston et al., 2009a	Residential Runoff as a Source of Pyrethroid Pesticides to Urban Creeks	Northern California	Pleasant Grove Creek	2006-2007	Dry	Sediment	Discharge (storm drain)	Hyalella Azteca	1	3	3	0	100.00%	0.00%	45%	Acute	
Weston and Lydy, 2010b	Urban and Agricultural Sources of Pyrethroid Insecticides to the Sacrament-San Joaquin Delta of California	Northern California	Sump 28, Sacramento; Sump 104, Sacramento; Legion Park pump station, Stockton; Weston Ranch pump station, Stockton; Moraga Lane pump station, Stockton; Concrete drain pipe, North West Rd., Vacaville	2009	Wet and Dry (3 events each)	Water	Discharge (Urban Runoff)	Hyalella Azteca	6	33	29	4	88%	12%		Acute	
			Ulatis Creek, Alamo Creek, San Joaquin River, American River, Sacramento River	2009	Wet	Water	Receiving	Hyalella Azteca	19	35	19	16	54%	46%		Acute	
Weston and Lydy, 2012	Stormwater Input of Pyrethroid Insecticides to an Urban River	Sacramento County	Alder Creek	2009	Wet	Water	Receiving	Hyalella Azteca	1	1	0	1	0%	100.00%	100%	Acute	
			Buffalo Creek	2009	Wet	Water	Receiving	Hyalella Azteca	1	2	2	0	100%	0.00%		Acute	
			Carmichael Creek	2009	Wet	Water	Receiving	Hyalella Azteca	1	1	1	0	100%	0.00%		Acute	
			Chicken/Strong Ranch Slough	2009	Wet	Water	Discharge	Hyalella Azteca	1	2	2	0	100%	0.00%		Acute	
			Hinkle Creek	2009	Wet	Water	Receiving	Hyalella Azteca	1	1	1	0	100%	0.00%		Acute	
			Minnesota Creek	2009	Wet	Water	Receiving	Hyalella Azteca	1	1	1	0	100%	0.00%		Acute	Includes motility (swimming) endpoint
			Willow Creek	2009	Wet	Water	Receiving	Hyalella Azteca	1	1	0	1	0%	100.00%		Acute	
			American R. Stations 3 and 4	Mar-09	Wet	Water	Receiving	Hyalella Azteca	2	23	12	11	52%	47.83%	65%	Acute	
			American River Station 1	2009-2010	Wet	Water	Receiving	Hyalella Azteca	1	7	0	7	0%	100.00%		Acute	Includes motility (swimming) endpoint
			American River Station 2	2009-2010	Wet	Water	Receiving	Hyalella Azteca	1	11	1	10	9%	90.91%		Acute	Includes motility (swimming) endpoint
			American River Station 3	Jan-10	Wet	Water	Receiving	Hyalella Azteca	1	1	1	0	100%	0.00%	34%	Acute	Includes motility (swimming) endpoint
			American River Station 3	Jan-10	Wet	Water	Receiving	Hyalella Azteca	1	1	1	0	100%	0.00%	86%	Acute	Includes motility (swimming) endpoint
			American River Station 4	Jan-10	Wet	Water	Receiving	Hyalella Azteca	1	1	1	0	100%	0.00%	74%	Acute	
			American River Station 4	Jan-10	Wet	Water	Receiving	Hyalella Azteca	1	1	1	0	100%	0.00%	88%	Acute	
Weston Solutions Inc., 2006a	San Diego County Municipal Copermittees 2004-2005 Urban Runoff Monitoring Report	Southern California		2004-2005	Dry	Water	Receiving	Hyalella Azteca	1	3	1	2	33%	66.67%		Acute	
			Agua Hedionda Creek														
			San Dieguito	2004-2005	Dry	Water	Receiving	Ceriodaphnia dubia	1	3	1	2	33%	66.67%		Acute	
			Chollas Creek	2004-2005	Dry	Water	Receiving	Hyalella Azteca	1	3	1	2	33%	66.67%		Acute	
			Chollas Creek	2004-2005	Dry	Water	Receiving	Ceriodaphnia dubia	1	3	1	2	33%	66.67%		Acute	
			Tijuana River	2004-2005	Dry	Water	Receiving	Ceriodaphnia dubia	1	3	3	0	100%	0.00%		Acute	
Weston Solutions Inc., 2007a	San Diego County Municipal Copermittees 2005-2006 Urban Runoff Monitoring Report	Southern California		2005-2006	Dry	Water	Receiving	Hyalella Azteca	1	3	2	1	67%	33.33%		Acute	
			Agua Hedionda Creek														
			San Dieguito River	2005-2006	Dry	Water	Receiving	Ceriodaphnia dubia	1	3	2	1	67%	33.33%		Chronic	
			San Dieguito River	2005-2006	Dry	Water	Receiving	Selenastrum	1	3	2	1	67%	33.33%		Chronic	
			Tecolote Creek	2005-2006	Dry	Water	Receiving	Hyalella Azteca	1	3	1	2	33%	66.67%		Acute	
			Tecolote Creek	2005-2006	Dry	Water	Receiving	Ceriodaphnia dubia	1	3	1	2	33%	66.67%		Chronic	
			San Diego River	2005-2006	Dry	Water	Receiving	Ceriodaphnia dubia	1	3	1	2	33%	66.67%		Chronic	
			Chollas Creek	2005-2006	Dry	Water	Receiving	Hyalella Azteca	1	3	3	0	100%	0.00%		Acute	
			Chollas Creek	2005-2006	Dry	Water	Receiving	Ceriodaphnia dubia	1	3	1	2	33%	66.67%		Acute	
			Sweetwater River	2005-2006	Dry	Water	Receiving	Selenastrum	1	3	1	2	33%	66.67%		Chronic	
			Tijuana River	2005-2006	Dry	Water	Receiving	Hyalella Azteca	1	3	2	1	67%	33.33%		Acute	
			Tijuana River	2005-2006	Dry	Water	Receiving	Ceriodaphnia dubia	1	3	1	2	33%	66.67%		Chronic/acute	

Citation - Abbrev.	Report/study Title	Region	Site(s)	Study Timeframe	Wet/Dry Weather	Water/Sediment	Discharge/Receiving Water	Organism tested	Number of Sites	Number of Samples Tested	Number of Toxic Samples	Number of Non-toxic Samples	% Toxic Samples	% Non-toxic Samples	Average % Survival	Acute or Chronic test	Notes
Weston Solutions Inc., 2008c	Response to Monitoring in Chollas Creek, Investigation Order No. R9-2004-0277	San Diego County	Chollas Creek - South Fork	2006-2007	Wet	Water	Receiving	Ceriodaphnia dubia	1	3	0	3	0%	100.00%	100%	Acute	
			Chollas Creek - North Fork	2006-2007	Wet	Water	Receiving	Ceriodaphnia dubia	1	3	0	3	0%	100.00%	100%	Acute	
			Chollas Creek - South Fork	2006-2007	Wet	Water	Receiving	Ceriodaphnia dubia	1	3	1	2	33%	66.67%	92%	Chronic	
			Chollas Creek - North Fork	2006-2007	Wet	Water	Receiving	Ceriodaphnia dubia	1	3	1	2	33%	66.67%	94%	Chronic	
			Chollas Creek - South Fork	2006-2007	Wet	Water	Receiving	Hyalella Azteca	1	3	1	2	33%	66.67%	90%	Chronic	
			Chollas Creek - North Fork	2006-2007	Wet	Water	Receiving	Hyalella Azteca	1	3	3	0	100%	0.00%	46%	Acute	
			Agua Hedionda Creek	2006-2007	Wet	Water	Receiving	Hyalella Azteca	1	3	3	0	100%	0.00%		Acute	
			Agua Hedionda Creek	2006-2007	Wet	Water	Receiving	Ceriodaphnia dubia	1	3	1	2	33%	66.67%		Chronic	
			San Diequito River	2006-2007	Wet	Water	Receiving	Hyalella Azteca	1	3	2	1	67%	33.33%		Acute	
			San Diequito River	2006-2007	Wet	Water	Receiving	Ceriodaphnia dubia	1	3	1	2	33%	66.67%		Chronic	
			Los Peñasquitos Creek	2006-2007	Wet	Water	Receiving	Ceriodaphnia dubia	1	3	1	2	33%	66.67%		Chronic	
			San Diego River	2006-2007	Wet	Water	Receiving	Hyalella Azteca	1	3	1	2	33%	66.67%		Chronic	
			Tijuana River	2006-2007	Wet	Water	Receiving	Hyalella Azteca	1	3	3	0	100%	0.00%		Acute	
			Tijuana River	2006-2007	Wet	Water	Receiving	Ceriodaphnia dubia	1	3	3	0	100%	0.00%		Acute	
			Santa Margarita River	2006-2007	Wet	Water	Receiving	Hyalella Azteca	1	1	1	0	100%	0.00%		Acute	
			San Luis Rey River	2006-2007	Wet	Water	Receiving	Hyalella Azteca	1	3	1	2	33%	66.67%		Chronic	Note: Only those sites determined to be "urban" were reported in this table.
You et al., 2008	Chemical Availability and Sediment Toxicity of Pyrethroid Insecticides to Hyalella Azteca: Application to Field Sediment With Unexpectedly Low Toxicity	Northern California	American River, Weber Creek near Folsom Lake, CA	2004-2008	Dry	Sediment	Receiving	Hyalella Azteca	3	3	3	0	100%	0.00%		Chronic	