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October 18, 2006



Mr. Craig J. Wilson
Chief, Water Quality Assessment Unit
State Water Resources Control Board
1001 I Street, 24th Floor
Sacramento, CA 95814

**Subject: Comments on the Proposed 2006 Federal Clean Water Act Section 303(d)
List of Water Quality Limited Segments for California - Harding Drain**

Dear Mr. Wilson,

As representatives of the Turlock Irrigation District (TID), we are presenting comments on the *Staff Report – Draft Final Revision of the Clean Water Act Section 303(d) List of Water Quality Limited Segments*, dated September 2006 (Staff Report). Our comments are specific to the Harding Drain. We very much appreciate your consideration of our previous comment letter and data (January 2006), and we are pleased with your decision to delist the Harding Drain for ammonia and diazinon. However, we are concerned by your decision to not delist chlorpyrifos and are presenting additional comments and toxicity testing data as another line of evidence to further demonstrate that the Harding Drain should be delisted for chlorpyrifos. We also have a few minor comments on other issues related to the Harding Drain listings.

Chlorpyrifos Listing

As noted in our January 2006 comment letter, current data show significant improvements in Harding Drain water quality compared to the data collected in the early 1990s used to support the original listing of the Harding Drain for chlorpyrifos. Historic data collected from 1991 through 1994 showed 30 exceedances of the 0.014 ug/L chronic limit out of 72 samples, while current TID data (collected between 2001 and 2004 under documented QA/QC procedures) show only 9 exceedances out of 219 samples (see Table A-1 in Attachment A for data summary).

The SWRCBs *Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List* (Policy) would allow for up to 19 exceedances to occur (out of the 219 samples) and still provide for delisting using the binomial distribution. As noted in the SWRCBs *Evaluation of Data and Information Related to the Clean Water Act Section 303(d) List of Water Quality Limited Segments: Water Body Fact Sheets Supporting "Do Not Delist" Recommendations* (Fact Sheet), the current TID data meet the Policy's data quality and quantity requirements.

It should also be noted that the SWRCB Fact Sheet is inaccurate in its characterization of chlorpyrifos data submitted in the January 2006 comment letter. The Fact Sheet mistakenly states that 39 samples exceeded the evaluation guideline of 0.014 ug/L for the time period of TID current data (9/12/2001-8/25/2004), when in fact only 9 samples exceeded the guideline. In addition, a total of 245 current data were submitted, with 219 collected by TID

under documented QA/QC procedures, versus the 405 data that are referenced in the fact sheet.

Current data, collected by the USGS between 2000-2001 and by the City of Turlock between 2001-2005, showed no exceedances during that time frame. USGS and City of Turlock data were not used in the analysis supporting delisting, due to lack of readily available QA/QC documentation and/or detection limits that exceeded the water quality guideline.

As described in the January 2006 comment letter, the TID is in the midst of implementing a Proposition 50 project aimed at improving water quality in the Harding Drain. The project includes detailed monitoring of water quality in the Harding Drain and tributary sources, a watershed assessment, a watershed management plan, and education and outreach. Although you have asked that TID not submit any new water quality data, we wanted to note that chlorpyrifos was detected at levels that exceed the 0.014 ug/L limit during two of the sampling events this summer. Although chlorpyrifos concentrations exceeded the limit, toxicity testing performed on samples collected at the same time showed virtually no toxicity for either Fathead Minnow or *Ceriodaphnia dubia* (i.e., 95% to 100% survival for Fathead Minnow and 100% survival for *Ceriodaphnia dubia*). The TID is working with data from upstream locations to determine potential sources for the chlorpyrifos and possible management actions to reduce any identified sources.

Current Data Reflect Improved Water Quality

In our recent discussion with you, the critical point of disagreement between TID and the SWRCB analysis appears to be whether it is appropriate to include historic data in the assessment for delisting. The SWRCB argues that historic data must be included and that the TID must collect sufficient samples to "outweigh" historic chlorpyrifos exceedances. This would require collection of at least another 167 samples, at significant cost and time. Furthermore, given the proposed TMDL completion date of 2008, there is not sufficient time to collect additional samples and reconsider the listing. Instead, Regional Board staff, TID and others would be required to initiate a TMDL for chlorpyrifos even in the presence of hundreds of data points indicating that chlorpyrifos levels have been greatly reduced in the Harding Drain. This would be a poor application of limited resources to improve water quality. The TID argues that the current water quality data are what is relevant as they reflect a change in conditions over the last decade (see Figure 1). The 219 samples that the TID have collected recently in the Harding Drain are more than sufficient to support delisting, especially given that the Policy requires a minimum of only 28 samples.

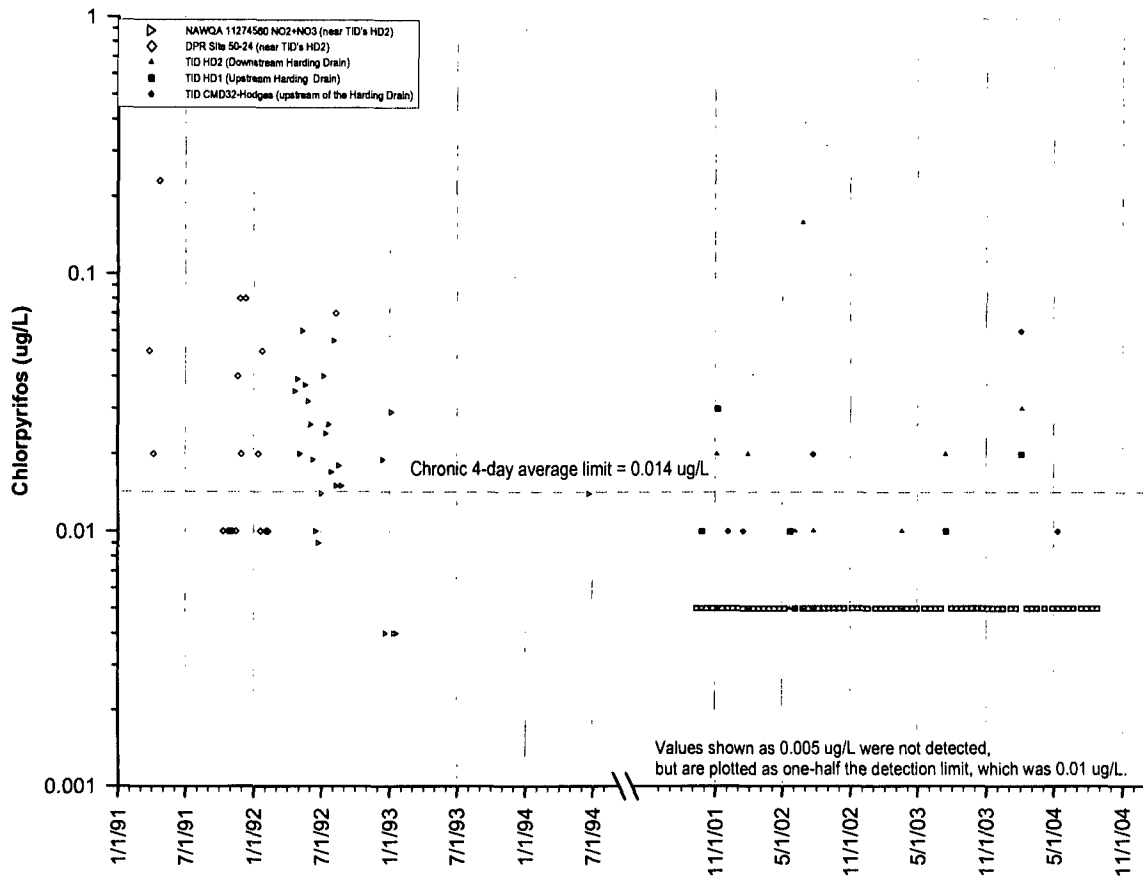


Figure 1. Chlorpyrifos in Ceres Main Canal and the Harding Drain¹ with Numerical Limit of 0.014 ug/L

The Policy provides for delisting water bodies that demonstrate improved water quality, stating that “water segments or pollutants shall be removed from the section 303(d) list if any of the following conditions are met”, including application of the binomial distribution and weight of evidence (Attachment B). Additionally, the whole impetus of Section 303(d) of the Clean Water Act is to identify impaired waterbodies so that steps can be taken to improve water quality and ultimately lead to delisting. In this case, steps have been taken without the benefit of a TMDL, but nonetheless the water quality improvements are real and warrant delisting.

Other Lines of Evidence Also Support Delisting

Other evidence helps to substantiate the observed reductions in pesticide concentrations in the Harding Drain. Pesticide use data show major reductions in agricultural applications of chlorpyrifos and diazinon within Stanislaus County and the rest of the Central Valley since 1995 (DPR 2003a, DPR 2003b, CVRWQCB 2005b). Specifically, California Pesticide Information Portal (CalPIP) data show that chlorpyrifos usage within the Harding Drain Watershed was reduced by approximately 55% from the early 1990s when water quality data indicate an impairment (1991-1994) as compared to current conditions (2001-2004).

¹ Figure 1 includes historic data collected by USGS and DPR and current data collected by TID under documented QA/QC procedures.

Additionally, as noted by the Regional Board “The ban on residential urban use of chlorpyrifos, and the phase-out of urban use of diazinon should eventually reduce the potential for water quality impacts from these pesticides in urban areas” (CVRWQCB 2005b).

During our recent conversations with you and other SWRCB staff, it was suggested that we submit current toxicity data as another line of evidence to demonstrate that chlorpyrifos is no longer a problem in the Harding Drain. Current toxicity data from the State’s Surface Water Ambient Monitoring Program (SWAMP) database are presented below (Table 1).

Table 1. SWAMP Acute Toxicity Data for the Harding Drain (Site HD2)

Date	Fathead Minnow 96hr % survival		<i>Ceriodaphnia Dubia</i> 48hr % survival	
	Sample	Control	Sample	Control
10/26/2000	100	100	NA	NA
6/19/2001	100	100	100	90
10/24/2001	100	100	100	100
11/28/2001	NA	NA	100	100
12/26/2001	95	100	90	100
1/30/2002	100	100	100	90
2/27/2002	95	100	100	100
4/30/2002	100	100	100	100
5/29/2002	100	100	100	100
6/19/2002	100	100	100	100
8/28/2002	100	100	NA	NA
9/25/2002	85	100	100	100
10/30/2002	95	100	100	100
11/20/2002	95	100	100	100
11/23/2004	100	100	90	100
12/29/2005	100	97.5	100	100
1/27/2005	92.5	100	92.5	100
2/24/2005	97.5	100	100	100
3/29/2005	97.5	100	100	100
4/28/2005	N/A	N/A	100	100
5/26/2005	97.5	97.5	100	100
6/30/2005	100	100	100	100
7/28/2005	100	97.5	100	100
8/25/2005	100	100	100	100
9/29/2005	100	100	100	100
10/27/2005	100	100	95	100
11/29/2005	100	97.5	100	100

The SWAMP toxicity data indicate that only 4 samples showed minor acute toxicity to *Ceriodaphnia dubia* and 9 samples showed minor toxicity to Fathead Minnows, out of 25

samples tested. Not one of the samples showed significant toxicity, or a 30% or more difference in toxicity between the control and the sample. The City of Turlock has also performed toxicity testing for various dilutions of their effluent with water from just upstream of the Harding Drain at CMD32-Hodges. These data have not been included in this assessment, as they are not yet available in a form that could be analyzed fully.

The fact that the SWAMP data did not show any significant toxicity for *Ceriodaphnia dubia* is particularly compelling evidence that chlorpyrifos is not a problem in the Harding Drain, while *Ceriodaphnia dubia* has been noted to be the second most sensitive species to chlorpyrifos by the Central Valley Regional Water Quality Control Board (CVRWQCB) in the *Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins for the Control of Diazinon and Chlorpyrifos Runoff into the Lower San Joaquin River, Public Review Draft Staff Report (Basin Plan Amendment)*. It should be noted that the first most sensitive species – *Gammarus fasciatus* – has not been widely tested for toxicity.

Finally, toxicity to *Ceriodaphnia dubia* was cited as evidence of impairment in the original listing of the Harding Drain for chlorpyrifos. The *Internal Draft CVRWQCB Staff Assessment* states that “biotoxicity tests conducted using water from TID5 resulted in significant *Ceriodaphnia* mortality (up to 100% in 24 hours) in several cases where diazinon was present and in every case where chlorpyrifos concentrations exceeded 0.05 ppb” and that “the study concluded that chlorpyrifos was likely the primary cause of toxicity” (Grober 2001). Toxicity to *Ceriodaphnia dubia* is no longer evident and there is no longer any impairment that warrants listing of the Harding Drain for chlorpyrifos.

Conclusion

The TID strongly urges the SWRCB to reconsider their decision to not delist the Harding Drain for chlorpyrifos. The 219 TID data that reflect current, improved water quality conditions in the Harding Drain fully warrant delisting. Pesticide use data further reinforce the basis for observed improvements in water quality. And finally, current acute toxicity data for the Harding Drain do not indicate any significant toxicity and serve as another line of evidence that chlorpyrifos is not a problem.

Other Miscellaneous Comments

The TID would also like to comments on a few other issues.

Proposed TMDL Schedule

The proposed TMDL schedule, as summarized in Table 11, Volume I of the Staff Report still includes TMDLs for ammonia and diazinon in the Harding Drain. Given the proposed delisting for these two constituents, these two TMDLs should be dropped from Table 11.

If you were to decide not to delist the Harding Drain for chlorpyrifos, at the very least, the TMDL completion should be delayed from 2008 to 2010 or later. As noted in the January 2006 comment letter, many local efforts have been underway to address water quality issues in the Harding Drain over the last several years. The chlorpyrifos TMDL schedule should recognize these efforts and provide time for them to work before a regulatory process is imposed. In this manner, limited resources can be focused on the water quality impairments that are the most significant or are not already being addressed by other means. A major aim

of State grant-funded projects is to support local initiatives to improve water quality. Developing the TMDLs before local initiatives can be completed would undermine these efforts, rather than enabling and encouraging local watershed stakeholders to “do the right thing”, to take positive actions to restore water quality and address historic impairments.

Inaccurate Depiction of the Harding Drain

The 303(d) listing still inaccurately refers to an 8.3-mile distance of impaired water in the Harding Drain. This appears to be an error in the measured distance or inappropriate inclusion of the Ceres Main and Lateral 5 canals. As noted in the January 2006 comment letter, the Harding Drain is approximately 5.2 miles in length and is located at the downstream end of TID’s Ceres Main Canal (Figure 2). As shown, Lateral 5 spills to the Ceres Main Canal where the canal turns to the west. The Ceres Main Canal spills to the Harding Drain at CMD32 – Hodges (or the Ceres Main, Drop 32 also known as Hodges Drop).

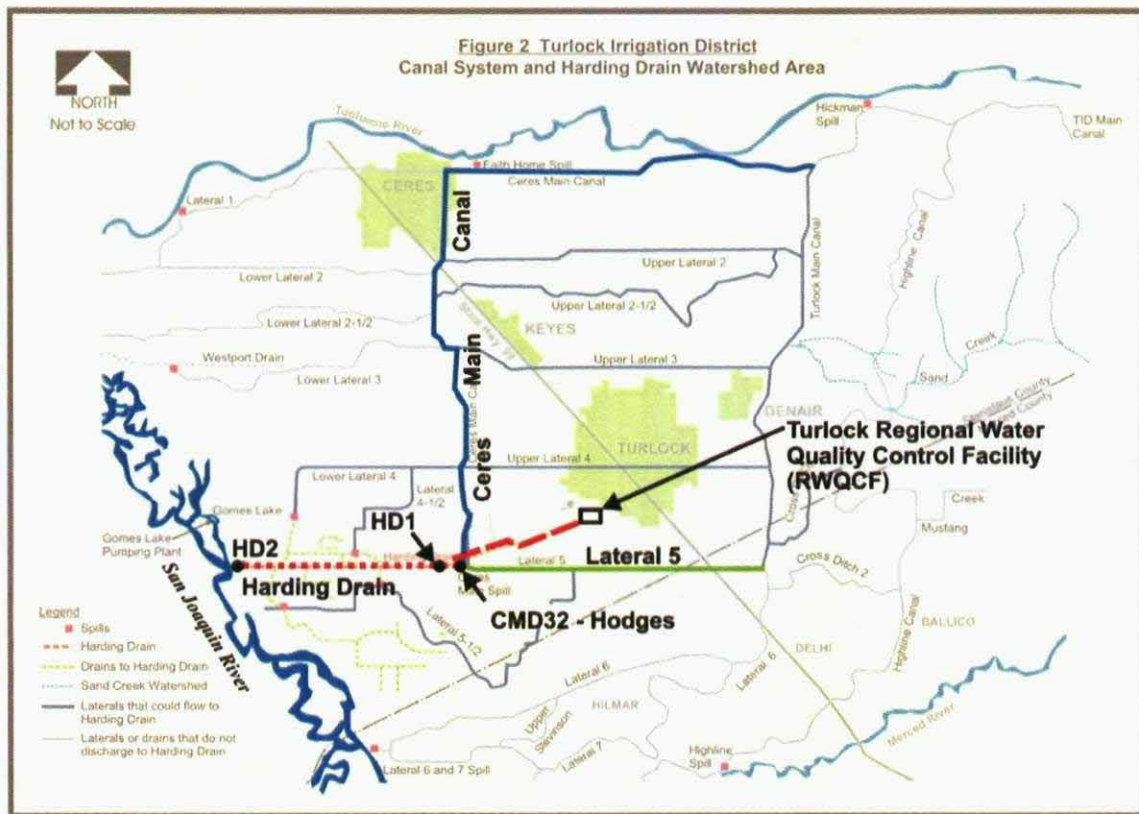


Figure 2. Map of the Harding Drain Watershed

Inaccurate Depiction of Diazinon Data

It should also be noted that the SWRCB Fact Sheet for diazinon delisting is inaccurate in its characterization of data submitted in the January 2006 comment letter. The Fact Sheet mistakenly states that 16 samples exceeded the evaluation guideline of 0.10 ug/L for the current time period (9/12/2001-8/24/2004), when in fact only 8 samples exceeded the guideline (see Table A-2 in Attachment A for data summary). In addition, a total of 246 data were submitted, with 219 collected by TID under documented QA/QC procedures, versus the 405 data that are referenced in the fact sheet. Based the binomial distribution, this

discrepancy would not change your view on delisting diazinon; however, the SWRCB should reflect accurate information within the Fact Sheet.

Summary and Recommendations

The TID remains committed to improving water quality within the Harding Drain. Currently the TID is leading implementation of two projects to monitor water quality and engage watershed stakeholders in a Harding Drain Watershed Management Plan and actions to protect and maintain water quality over the long term. In particular, the TID and watershed stakeholders are working to identify potential sources of "unknown toxicity" in the drain and to address those sources.

The TID asks the SWRCB, however, to recognize where improvements have been made in Harding Drain water quality since the original 303(d) listings. We appreciate delisting the Harding Drain for diazinon and ammonia, but believe that similar improvements in chlorpyrifos should also be recognized by delisting. As noted above, 219 data collected over 5 years demonstrate that current water quality conditions in the Harding Drain fully warrant delisting. Current acute toxicity data for the Harding Drain provide another line of evidence that chlorpyrifos is not a problem. And finally, pesticide use data further reinforce the basis for observed improvements in water quality.

In summary, TID strongly encourages the SWRCB to fully recognize water quality improvements and make several changes to the proposed 303(d) list, as follows.

- Revise Table 11 in Volume I of the Staff Report to remove ammonia and diazinon, given that they are to be delisted for the Harding Drain.
- Modify the Harding Drain documentation to accurately reflect the 5.2-mile length.
- Delist Harding Drain for chlorpyrifos.
- If chlorpyrifos is not delisted, delay the proposed TMDL date beyond 2008 to allow sufficient time for local efforts that are underway to address water quality issues to work before a regulatory process is imposed. Also, correct the characterization of chlorpyrifos data in the Fact Sheet.

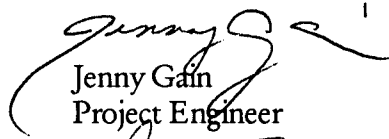
Thank you for your consideration. We very much appreciate the opportunity to provide comments and would be happy to answer any questions or discuss the data and analysis presented here at any time (925-210-2477).

Very truly yours,


BROWN AND CALDWELL



Cynthia Paulson, Ph.,D.
Senior Vice President



Jenny Gam
Project Engineer



Aren Hansen
Project Engineer

References

- California Pesticide Information Portal (CalPIP) 2006. Pesticide use data from the Department of Pesticide Regulation (DPR). <http://calpip.cdpr.ca.gov/cfdocs/calpip/prod/main.cfm>. Data were obtained for the Harding Drain Watershed, including: Township 04S, Ranges 09E, 10E, and 11E (all sections); Township 05S, Ranges 09E, 10E, and 11E (all sections); Township 06S, Range 09E (Sections 1-12) and Range 10E (Sections 1-9).
- CVRWQCB 2005. *Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins for the Control of Diazinon and Chlorpyrifos Runoff into the Lower San Joaquin River, Public Review Draft Staff Report*. August 2005. Central Valley Regional Water Quality Control Board.
- Grober, L. 2001. *Internal Draft CVRWQCB Staff Assessment*. October 2001. Central Valley Regional Water Quality Control Board.
- SWRCB 2004. *Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List*. State Water Resources Control Board. September 2004.
- SWRCB 2006a. *Draft Final Revision of the Clean Water Act Section 303(d) List of Water Quality Limited Segments, Staff Report Volume I*. State Water Resources Control Board. September 2006.
- SWRCB 2006b. *Staff Report - Evaluation of Data and Information Related to the Clean Water Act Section 303(d) List of Water Quality Limited Segments: Water Body Fact Sheets Supporting "Do Not Delist"*. State Water Resources Control Board. September 2006.
- Turlock Irrigation District 2006. *Comments on the 2006 303(d) List*. January 2006.

ATTACHMENT A

Table A-1. Summary of Chlorpyrifos Results Submitted with Previous Comment Letter in January 2006

Data Classification	Data Collection Entity	Data Collection Period	Total Number of Samples	Total Number of Exceedances	Number of Allowable Exceedances ^b
Historic data	USGS	1992-1994	23	18	NA ^c
	DPR	1991-1993	49	12	4
	<i>Subtotal -- Historic Data</i>		72	30	6
Current data	TID	2001-2004	219	9	18
	USGS	2000-2001	11	0	NA
	City of Turlock	2001-2005	15	0	NA
	<i>Subtotal -- Current Data</i>		245	9	19
TOTAL			317	39	27

Table A-2. Summary of Diazinon Results Submitted with Previous Comment Letter in January 2006

Data Classification	Data Collection Entity	Data Collection Period	Total Number of Samples	Total Number of Exceedances	Number of Allowable Exceedances ^d
Historic data	USGS	1992-1994	23	1	NA ^e
	DPR	1991-1993	49	9	4
	<i>Subtotal -- Historic Data</i>		72	10	6
Current data	TID	2001-2004	219	8	18
	USGS	2000-2001	12	0	NA
	City of Turlock	2001-2005	15	0	NA
	<i>Subtotal -- Current Data</i>		246	8	19
TOTAL			318	18	27

^b Source: Table 4.1 of the Policy, which includes the number of allowable exceedances according to sample size for up to 129 samples. For sample sizes greater than 129, the maximum number of measured exceedances allowed is calculated using a binomial distribution function supplied beneath Table 4.1 in the Policy.

^c "NA" refers to datasets that contain less than 28 samples and, thus, cannot be evaluated under the Policy. The Policy states that "the binomial distribution cannot be used to support delisting with sample sizes less than 28."

^d Source: Table 4.1 of the Policy, which includes the number of allowable exceedances according to sample size for up to 129 samples. For sample sizes greater than 129, the maximum number of measured exceedances allowed is calculated using a binomial distribution function supplied beneath Table 4.1 in the Policy.

^e "NA" refers to datasets that contain less than 28 samples and, thus, cannot be evaluated under the Policy. The Policy states that "the binomial distribution cannot be used to support delisting with sample sizes less than 28."

ATTACHMENT B

Sections of the Policy Relevant to the Potential Harding Drain Chlorpyrifos Delisting:

Section 4 of the Policy states that “water segments or pollutants shall be removed from the section 303(d) list if any of the following conditions are met,” with conditions including (but not limited to) the following:

- “Using the binomial distribution, waters shall be removed from the section 303(d) list if the number of measured exceedances supports the rejection of the null hypothesis as presented in Table 4.1” (Section 4.1 of the Policy);
- “Water/Sediment Toxicity or associated water or sediment quality guidelines are not exceeded using the binomial distribution as described in section 4.1” (Section 4.6 of the Policy);
- “Biological populations and communities degradation in the water segment is no longer evident as compared to reference site(s) or associated water or sediment numeric pollutant-specific evaluation guidelines are not exceeded using the binomial distribution as described in section 4.1” (Section 4.9 of the Policy);
- “The factors for assessing trends in water quality (section 3.10) are not substantiated (steps 1 through 4) or impacts are no longer observed (step 5” (Section 4.10 of the Policy); and
- “When all other Delisting Factors do not result in the delisting of a water segment but information indicates attainment of standards, a water segment shall be evaluated to determine whether the weight of evidence demonstrates that a water quality standard is attained... When making a delisting decision based on the situation-specific weight of evidence, the RWQCB must justify it’s recommendation by:
 - Providing any data or information including current conditions supporting the decision...” (Section 4.11 of the Policy).