3 August 2017

David Guy, President
Northern California Water Association
455 Capitol Mall, Suite 335
Sacramento, CA 95814

MANAGEMENT PLAN FOR HYALELLA AZTECA SEDIMENT TOXICITY IN Z-DRAIN

Thank you for your 26 June 2017 request to approve completion of the management plan for Hyalella azteca (H. azteca) sediment toxicity in Z-Drain. The Sacramento Valley Water Quality Coalition’s (Coalition) primary basis for the request is that Z-Drain has been determined to meet the water quality objectives (WQOs) for H. azteca sediment toxicity. Additionally, extensive outreach efforts and management practices have been effective in preventing exceedances of the Basin Plan’s narrative objective for toxicity.

The management plan for H. azteca in Z-Drain was originally triggered by two statistically significant toxicity exceedances observed in June 2005 and September 2006, followed by subsequent statistically significant toxicity exceedances observed in August 2009 and August 2012. There have been no H. azteca sediment toxicity exceedances in the 8 samples collected since the last exceedance in August 2012.

The Coalition has documented extensive outreach and education to members, and growers have implemented management practices to reduce the risk of toxicity to surface waters. The lack of H. azteca sediment toxicity exceedances since 2012 demonstrates the effectiveness of the management practices in resolving the water quality problem. For these reasons, I have determined that this management plan for H. azteca sediment toxicity in Z-Drain is complete.

Monitoring for H. azteca sediment toxicity is no longer required in Z-Drain, one of the Coalition’s special project sites, and will be conducted at the representative site at Ulatis Creek at Brown Road.

If you have any questions regarding this approval letter, please contact Rebecca Tabor at rebecca.tabor@waterboards.ca.gov or (530) 226-3458.

Original signed by

Pamela C. Creedon
Executive Officer

Enclosures: Staff review of the request to complete management plan for Hyalella azteca sediment toxicity

cc: Bruce Houdesheldt, Northern California Water Association
    Mike Trouchon, Larry Walker Associates
On 26 June 2017, the Sacramento Valley Water Quality Coalition (Coalition) submitted a request to approve completion of the management plan for *Hyalella azteca* (*H. azteca*) sediment toxicity in Z-Drain, one of the Coalition’s Special Project sites. The Z-Drain monitoring location is located in the Southwest Yolo Bypass drainage within the Dixon-Solano Subwatershed.

The request was submitted in accordance with Waste Discharge Requirements General Order for Growers within the Sacramento River Watershed that are Members of a Third-party Group Order R5-2014-0030-R1 (Order) and Appendix B, Attachment MRP-1 to the Order.

Management plans may be completed in one of two ways: irrigated agriculture is demonstrated not to be causing or contributing to the water quality problem, or the improved management practices have resolved the water quality problem and the water quality data show at least three years of compliance. This request is based on the Coalition’s finding that Z-Drain is meeting the water quality objectives (WQOs) for *H. azteca* sediment toxicity and agricultural management practices in the Z-Drain drainage and adjacent drainages are adequate to prevent exceedances of the Basin Plan narrative objective for toxicity.

The request was reviewed to determine if the key components required for completion have been met. These requirements are:

- a) Demonstration through evaluation of monitoring data that the water quality problem is no longer occurring (i.e., 3 or more years with no exceedances during the times of the year when previous exceedances occurred) or demonstrated compliance with the Order’s surface and groundwater receiving water limitations.
- b) Documentation of third-party education and outreach to applicable Members in the watershed where water quality impairment occurred.
- c) Documentation of Member implementation of management practices that address the water quality exceedances.
- d) Demonstration that the management practices implemented by Members are effective in addressing the water quality problem.
**Recommendation:** Staff recommends that the management plan for *H. azteca* sediment toxicity in Z-Drain be deemed complete. The above requirements have been met based on the information presented in the request. Information provided in support of management plan completion is summarized below.

**Monitoring data.** The management plan for *H. azteca* in Z-Drain was originally triggered by two statistically significant toxicity exceedances observed in June 2005 and September 2006, followed by subsequent statistically significant toxicity exceedances observed in August 2009 and August 2012. *H. azteca* survival (as percent of control) for these exceedances are listed below:

- 63.3% on 7 June 2005
- 10% on 22 September 2006
- 2.6% on 18 August 2009
- 27.8% on 21 August 2012

There have been no *H. azteca* sediment toxicity exceedances in the 8 samples collected since the last exceedance in August 2012 (Figure 1). Monitoring was scheduled during the same times of year when the previous exceedances occurred. Peak use periods for pyrethroids and periods when toxicity was likely to be present were also considered during monitoring scheduling.

**Potential sources.** The 2010 *Source Evaluation Report: Sediment Toxicity: Hyalella Azteca in Z-Drain* and assessment of pesticide use data from 2002-2014 concluded that pyrethroid pesticides were the likely cause of August 2009 and August 2012 toxicity exceedances. Specific causes and sources of the initial June 2005 and September 2006 exceedances could not be identified.

The Coalition identified three pyrethroid pesticides (cypermethrin, esfenvalerate, and L-cyhalothrin) and five specific crops (alfalfa, tomato, sorghum, beans, and sunflowers) as having the highest potential to cause or contribute to the observed exceedances.

**Third-party outreach and management practice implementation.** In 2010, the Dixon-Solano Resource Conservation District prepared a Pyrethroid Action Plan. All Solano County pyrethroid users were informed of the potential consequences of continued detections of pyrethroids and/or sediment toxicity exceedances, transport and transfer pathways, and recommended management practices.

Outreach and education from 2008-2016 in the Dixon-Solano subwatershed that related to pyrethroid use and sediment toxicity exceedances included the following:

- 10 Pesticide Applicator Training Events
- 8 Spray Safe Events (held jointly with Solano and Yolo County growers)
- 3 Pesticide Use and Water Protection for Pesticide Control Advisors (PCA)/ Certified Crop Advisors (CCA) Training Workshops
- Numerous meetings and outreach with Z-Drain growers and pyrethroid users

The 2015 Farm Evaluation Survey shows a high rate of implementation of practices in the Southwest Yolo Bypass Drainage, which includes Z-Drain. Approximately all (100%) of the member parcels in the Southwest Yolo Bypass Drainage implement at least one management practice in each of the following practice categories:

- Pesticide Application Practices
Specific pesticide application management practices implemented throughout the Southwest Yolo Bypass Drainage, quantified by percent of total acres reported, include the following:

- Monitor Wind Conditions (86.4%).
- Avoid Surface Water When Spraying (85.2%).
- Follow Label Restrictions (84.4%)\(^*\).

Specific irrigation practices for managing sediment and erosion implemented throughout the Southwest Yolo Bypass Drainage, quantified by percent of total acres reported, include the following:

- Shorter irrigation runs are used with checks to manage and capture flows (64.2%).
- The time between pesticide applications and the next irrigation is lengthened as much as possible to mitigate runoff of pesticide residue (54.7%).
- In-furrow dams are used to increase infiltration and settling out of sediment prior to entering the tail ditch (44.5%).

Specific cultural practices to manage sediment and erosion implemented throughout the Southwest Yolo Bypass Drainage, quantified by percent of total acres reported, include the following:

- Soil water penetration has been increased through the use of amendments, deep ripping and/or aeration (72.6%).
- Crop rows are graded, directed, and at a length that will optimize the use of rain and irrigation water (59.1%).
- Storm water is captured using field borders (41.1%).

**Conclusion.** The outreach and education conducted by the Dixon-Solano subwatershed and the management practices implemented by growers have been effective in addressing the *H. azteca* sediment toxicity issues in Z-Drain as demonstrated by the monitoring results shown in Figure 1.

\(^*\) Staff was informed that not all members apply pesticides; therefore, following the label restrictions is not needed for 100% of the members.
Figures and Tables.

Figure 1. *H. azteca* Sediment Toxicity Monitoring Results in Z-Drain.

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Legend:  
- Not Sampled  
- Sampled, No Exceedances  
- Exceedance, (Survival as % of Control)

Note: Results of monitoring are shown by year (rows) and month (columns). Each cell represents one month, and the cell fill indicates if monitoring took place and if results were in compliance with the water quality objective.