

Pesticide Monitoring Proposal

TULARE COUNTY, CALIFORNIA
JANUARY 3, 2019

PREPARED FOR



TABLE OF CONTENTS

1. INTRODUCTION..... 1
2. METHODOLOGY..... 1
 2.1. Data Collection, Compilation, and Processing 1
 2.2. Preliminary Ranking..... 1
 2.3. Evaluation of Monitoring Data 2
 2.4. Evaluation of Environmental Fate..... 2
 2.5. Chemical Analysis Availability 2
 2.6. Monitoring Plan Proposal 3
3. SITE SPECIFIC OR REGULATOR EXCLUSIONS..... 5
4. PESTICIDE MONITORING AND IMPLEMENTATION..... 5
5. CONCLUSION..... 5

TABLES

 1. Monitoring Proposal..... 4

ATTACHMENTS

- A. Surface Water Monitoring Stations

APPENDIX

- A. TBWQC Pesticide Evaluation Spreadsheet

1. Introduction

As part of the surface water monitoring requirements under General Order R5-2013-0120, The California Regional Water Quality Control Board developed a Pesticide Evaluation Protocol to be used by Coalitions to develop the Pesticide Monitoring Proposal for the subsequent monitoring period. The Tule Basin Water Quality Coalition (TBWQC) has prepared the Pesticide Monitoring Proposal for the 2019 surface water monitoring period which details pesticides that will be monitored within the TBWQC surface waters. The pesticides identified in this report were evaluated per the methodology described in this report.

2. Methodology

In accordance with the steps and instructions described in the ILRP Pesticide Evaluation Protocol, the TBWQC enacted the following methodology culminating in the formation of a monitoring schedule for pesticides within the TBWQC boundary:

2.1 Data Collection, Compilation, and Processing:

- a. The most recent three years of pesticide data (2014-2016) for Tulare and Kern County was downloaded from the California Department of Pesticide Regulation, California Pesticide Information Portal (CALPIP).
- b. Pesticide Use Report (PUR) data was then Imported into SQL Server where the following filters were prescribed to screen out erroneous or unneeded data:
 - i. Spatial - PUR data was filtered by township, range, and section for data within the TBWQC boundary.
 - ii. Executive Office (EO) List Pesticides - PUR data was filtered for pesticides on the EO list of pesticides, as seen in Attachment A of the ILRP Pesticide Evaluation Protocol.
 - iii. Degradates Pesticides - PUR data was filtered for pesticides on the EO list of degradates, as seen in Attachment A1 of the ILRP Pesticide Evaluation Protocol.
- c. Grouping Pesticides - After the filters were applied to screen out unnecessary data, the remaining pesticides were grouped by those with the same toxicant in water. This was done according to the grouping list provided in Attachment B of the ILRP Pesticide Evaluation Protocol.
- d. Sum/Quantity Calculations - At this step, the Grouped Pesticide list was exported from SQL Server and imported into excel. Cumulative Use for each year and Annual Use averaged by month was calculated for each pesticide. Cumulative Use for each month was determined by the sum of the amount of pesticide applied per month divided by three (for each year of PUR data included). Annual Use Average by month was determined by the sum of total amount applied over the three most recent years of a pesticide divided by thirty-six (for each month of PUR data included).

2.2 Preliminary Ranking

- a. Based on the calculations performed in step 2.1-d, two tabs were created in excel. The first tab includes all pesticide quantities applied calculated by the

Cumulative Use for each month (Aquatic Life Tab). The second tab includes all pesticide quantities applied calculated by the Annual Use averaged by month (Human Health Tab).

- b. On the Aquatic Life Tab, the ratio of the quantity of chemical applied based on the cumulative monthly average over the aquatic life reference value was calculated and titled Relative Risk, then sorted based on the ratios.
- c. On the Human Health Tab, the ratio of the quantity of chemical applied based on the Annual Use Average over the human health reference value was calculated and titled Relative Risk, then sorted based on the ratios.

2.3 Evaluation of Monitoring Data

- a. Available monitoring data over the most recent four years for the TBWQC was downloaded from the California Environmental Data Exchange Network (CEDEN), California Department of Pesticide Regulation (DPR), and United States Geological Survey (USGS) and imported into SQL Server
- b. Monitoring Data was screened in SQL under the same filters described in Step 2.1-b.
- c. Monitoring Data was imported into the excel worksheet under the CEDEN Tab.
- d. Once the monitoring data was imported and compiled, the following considerations were applied in the Aquatic Life Tab for pesticides used in the TBWQC:
 - i. Is there sufficient quality data to characterize the potential impact of the pesticide in the watershed at vulnerable application and runoff time periods?
 - ii. Did sampling occur within the last 5 years?
 - iii. Are all measure values less than 10% of the reference value?
 - iv. If a pesticide had a "yes" response to all three of these variables, it was excluded from the monitoring proposal.

2.4 Evaluation of Environmental Fate

- a. To determine the environmental fate of each pesticide in the TBWQC, the following criteria was established:
 - i. Pesticides which are likely to partition into sediments (unless toxic at very low concentrations) were excluded.
 - ii. Pesticides with a soil absorption coefficient (Koc) greater than 100,000 and provide aquatic reference value above 50 ug/L were removed per the direction of Regional Board
 - iii. Pesticides which are not persistent in an aqueous environment by eliminating those chemicals with a hydrolysis half-life of less than one day were excluded.
 - iv. Pesticides with both a vapor pressure greater than 1×10^{-4} mPa and a Henry's law Constant greater than 100 Pa m³/mol were excluded.
- b. Pesticides included in Attachment C: Environmental Fate Data were excluded from the monitoring proposal.

2.5 Chemical Analysis Availability

- a. Any pesticides that were found to have no commercially available analytical method were excluded from the monitoring proposal.

2.6 Monitoring Plan Proposal

- a. The final Pesticide Monitoring Proposal was evaluated using the following criteria:
 - i. Highest Ranked Pesticides
 - ii. Pesticides with ratios similar to or greater than the ratios for previous pesticides that have been identified with having water quality problems in the watershed.
 - iii. Pesticides with detection ratios greater than 10%, unless sampling frequency during vulnerable time periods has been sufficient to capture peak concentrations or there is evidence to demonstrate that values above 10% are an error.
 - iv. Pesticides without monitoring data in the entire watershed, particularly pesticides conditionally registered with the DPR due to the potential for surface water pollution.
 - v. Pesticides on the preliminary ranked list for human health that have an adopted numeric water quality objective such as Maximum Contaminant Level (MCL) or California Toxics Rule (CTR), were considered for further monitoring.
- b. Once monitoring decisions were decided for pesticides within the Tule Subbasin, a pivot table was created for pesticides to be monitored and which months monitoring will be conducted. **See Table 1: Monitoring Proposal.**

TULE BASIN WATER QUALITY COALITION
Pesticide Monitoring Proposal 2019

Table 1: Monitoring Proposal

Chemical Name	January	February	March	April	May	June	July	August	September	October	November	December
2,4-D acids & salts		X								X	X	
ACETAMIPRID							X	X	X	X		
BIFENTHRIN				X		X	X	X	X			
BROMACIL	X	X									X	X
CAPTAN			X									
CARBARYL				X	X	X	X	X	X	X		
CHLOROPICRIN												X
CHLOROTHALONIL			X	X	X							X
CHLORPYRIFOS			X		X	X	X	X				
CLOTHIANIDIN				X	X	X	X	X	X	X		
COPPER								X		X	X	
CYFLUTHRIN				X	X							
CYPERMETHRIN	X	X	X		X							
CYPRODINIL				X	X	X	X					
DIAZINON					X							
DICAMBA					X	X	X					
Dichlorvos (DDVP)					X			X				
DIMETHOATE		X	X				X	X				
DIURON	X	X									X	X
ESFENVALERATE	X	X										
FENPROPATHRIN				X	X	X	X	X				
IMIDACLOPRID				X	X	X	X					
LAMBDA-CYHALOTHRIN			X	X	X	X	X					
LINURON				X								
MALATHION				X	X	X		X				
MANCOZEB			X	X								
METHOMYL				X	X							
NORFLURAZON			X								X	
ORYZALIN	X	X									X	X
OXYFLUORFEN	X	X								X	X	X
PARAQUAT DICHLORIDE							X	X				
PENDIMETHALIN		X	X								X	X
PERMETHRIN				X	X	X						
PHORATE			X	X								
PYRACLOSTROBIN					X	X	X					
PYRETHRINS					X	X						

PYRIDABEN		X	X	X	X							
SIMAZINE	X	X									X	X
TEBUCONAZOLE				X	X	X	X					
THIAMETHOXAM								X	X	X		
TRIFLURALIN			X	X								
ZIRAM			X									

3. Site Specific or Regulatory Exclusions

Once the initial pesticides and monitoring schedule were determined, each pesticide was reviewed prior to inclusion in the final monitoring proposal. During this step, the pesticide no pesticides were excluded from the monitoring list.

4. Pesticide Monitoring and Implementation

Over the course of pesticide monitoring, if exceedances occur in the sample site locations identified in **Attachment A: Surface Water Monitoring Stations**, where more than one exceedance occurs within a three year period, the TBWQC will prepare a Management Plan. The Management Plan contains goals and actions designed to address the source of the exceedance specific to the site cultural practices, location, and implementation. Based on the plan, management practices are recommended to growers within the area of the exceedance occurrence. If the management practices are applicable to a large area, the management practices identified during the Management Plan implementation and outreach will be recommended to growers of the TBWQC during annual outreach meetings. The TBWQC will attempt to document the management practices of growers and identify which practices are more effective for the protection of surface water. New management practices are constantly being updated by growers within the TBWQC for more farm efficiency and to optimize yields. As the TBWQC continues the implementation of the General Order, the management practices of the growers will be better documented through the Farm Evaluation Plan, the Management Practice Evaluation Plan, and the Sediment and Erosion Assessment Report. Outreach under these separate programs will also help identify those practices protective of surface waters of the State.

5. Conclusion

Monitoring of the pesticides identified in **Table 1: Monitoring Proposal** shall be conducted in accordance with sites and schedules identified in the Waiver Program until such point as the TBWQC Surface Water Monitoring Plan submitted to the Regional Board on August 4, 2014 is approved.