
Central Valley Regional Water Quality Control Board

3 August 2018

David Guy, President
Northern California Water Association
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APPROVAL OF MANAGEMENT PLAN COMPLETION FOR LEGACY ORGANOCHLORINE PESTICIDES IN LURLINE CREEK AT HIGHWAY 99

Thank you for your 25 July 2018 request to approve completion of the management plan for the legacy organochlorine (OCL) pesticide dichlorodiphenyldichloroethylene (DDE) in Lurline Creek at Highway 99 (Lurline Creek). The Sacramento Valley Water Quality Coalition's (Coalition) primary basis for this request is that the extensive implementation of management practices in the Lurline Creek drainage have been effective in preventing agricultural contributions to sediment-associated legacy pesticide discharges. Additionally, Lurline Creek meets the water quality objectives for DDE and other OCLs.

The management plan for DDE in Lurline Creek was originally triggered by two exceedances observed in February and August 2007. There have been no DDE exceedances in the 19 samples collected since the last exceedance in August 2007.

The Coalition has documented extensive outreach and education to members, and growers have implemented management practices to reduce sediment discharges to surface waters. The lack of DDE exceedances since 2007 demonstrates the effectiveness of the management practices in resolving the water quality problem. For these reasons, I have determined that the management plan for DDE in Lurline Creek is complete. Monitoring for DDE is no longer required in Lurline Creek, one of the Coalition's special project sites. However, the Coalition should continue to collect and analyze samples according to the annual monitoring plan at the drainage's representative site, Freshwater Creek at Gibson 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

Patrick Pulupa
Executive Officer

Enclosures: Staff Review Memo

cc: Bruce Houdesheldt, Northern California Water Association
Mike Trouchon, Larry Walker Associates

Central Valley Regional Water Quality Control Board

TO: Susan Fregien
Senior Environmental Scientist
IRRIGATED LANDS REGULATORY PROGRAM

FROM: Rebecca Tabor, P.E.
Water Resource Control Engineer
IRRIGATED LANDS REGULATORY PROGRAM

DATE: 31 July 2018

SUBJECT: REVIEW OF THE SACRAMENTO VALLEY WATER QUALITY COALITION'S
MANAGEMENT PLAN COMPLETION REQUEST FOR LEGACY
ORGANOCHLORINE PESTICIDES IN LURLINE CREEK AT HIGHWAY 99

On 25 July 2018, the Sacramento Valley Water Quality Coalition (Coalition) submitted a request to approve completion of the management plan for the legacy organochlorine (OCL) pesticide dichlorodiphenyldichloroethylene (DDE) in Lurline Creek at Highway 99 (Lurline Creek), one of the Coalition's special project monitoring sites in the Colusa-Glenn 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 1) Lurline Creek is meeting the water quality objectives (WQOs) for DDE; and 2) agricultural management practices in the Lurline Creek drainage have been effective in preventing agricultural contributions to sediment-associated legacy pesticide discharges.

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 DDE in Lurline Creek 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 DDE in Lurline was originally triggered by two DDE exceedances observed in February and August 2007. Exceedance concentrations are listed below:

- 0.0065 µg/L on 9 February 2007
- 0.0033 µg/L on 22 August 2007

The February 2007 exceedance was associated with a storm event. Approximately 0.80 inches of precipitation fell in the 48 hours prior to sample collection. No precipitation was measured prior to or during the August 2007 sample collection. The two exceedances do not appear to be linked to either low or high flow conditions measured at the monitoring location, and flows do not appear to be linked to recent antecedent precipitation (Table 1).

There have been no DDE exceedances in the 19 samples collected since the last exceedance in August 2007 (Figure 1). Monitoring was largely conducted during irrigation season, with two storm season events in January and February 2008.

Potential Sources

Source identification sediment sampling for legacy and current use OCL pesticides was conducted at the Lurline Creek monitoring site in 2009 which resulted in detections of DDD, DDE, and Dicofol. Overall, the source identification results did not indicate or exclude specific discreet agricultural sources of DDE, nor did it indicate the need for additional spatial sampling for the management of OCLs.

Legacy pesticides are a regional issue with the detection of DDT and its degradation products, DDE and DDD, likely due to applications prior to 1972, when DDT was banned in California. These compounds bind to particles of soil and sediment and breakdown slowly, persisting for many years. Due to its widespread historic uses, DDT and its breakdown products are detected widely in the environment. While DDT is not currently used in agricultural operations, practices that result in movement of organochlorine-contaminated sediment into waterways may cause or contribute to water quality impairments.

Third-party Outreach and Education

At the time the management plan was triggered, growers in the subwatershed were made aware of the DDE management plan, the consequences of any DDE exceedances, transport and transfer pathways, and recommended management practices. In 2007 and 2008, the Colusa Glenn Subwatershed Program provided information on the water quality risks, recommended practices, and circumstances regarding legacy OCL pesticides in their outreach and education.

Recent related outreach and education efforts have focused on Sediment and Erosion Control Plan self-certification. This has provided growers with significant exposure to irrigation practices and sediment and erosion control practices that limit the discharge of soils into receiving waters.

Related Outreach and Education in the Colusa-Glenn Subwatershed between 2007 and 2018 include the following:

- 1 Colusa County Farm Bureau Workshop discussing the Irrigated Lands Regulatory Program, existing management plans (including DDE), water conservation practices, and practices to improve water quality.
- 5 Sediment and Erosion Control Self-Certification Workshops.
- Several newsletters highlighting DDE exceedances, grower survey participation, and best management practices to control runoff.

Management Practice Implementation

The 2017 Farm Evaluation Survey shows a high rate of implementation of practices in the Lurline Creek drainage. Approximately all (100%) of the member parcels in the Lurline Creek drainage implement at least one management practice in each of the following practice categories:

- Irrigation Practices
- Irrigation Practices for Managing Sediment and Erosion
- Cultural Practices to Manage Sediment and Erosion

Specific irrigation practices for managing sediment and erosion implemented Lurline Creek drainage, quantified by percent of total acres reported, include the following:

- Use drip or micro-irrigation to eliminate irrigation drainage (86.9%).
- Tailwater return system (42.2%).
- Shorter irrigation runs are used with checks to manage and capture flows (39.1%).

Specific cultural practices to manage sediment and erosion implemented throughout the Lurline Creek 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 (89.2%).
- Creek bank and stream banks have been stabilized (65.4%)
- Minimum tillage incorporated to minimize erosion (63.5%).

Conclusion

The agricultural practices implemented by growers in the Lurline Creek drainage have been effective in preventing agricultural contributions to DDE exceedances, as demonstrated by the monitoring results shown in Table 1 and Figure 1.

Table 1. DDE Monitoring Results, Flows, and Precipitation Data for Lurline Creek at Highway 99.

Date	DDE ($\mu\text{g/L}$)	Flow (cfs)	Rain (inches)
2/9/2007	0.0065	24.5	0.8
4/18/2007	<0.001	45.1	-
5/15/2007	<0.001	59.4	-
6/20/2007	<0.001	106	-
7/17/2007	<0.001	84.3	-
8/22/2007	0.0033	112	-
9/19/2007	<0.001	22.6	-
12/20/2007	<0.001	9.2	-
1/28/2008	<0.001	373	0.32
2/21/2008	<0.001	45.9	0.56
4/22/2008	<0.001	10.1	-
5/21/2008	<0.001	125	-
6/18/2008	<0.001	118	-
7/15/2008	<0.001	133	-
8/19/2008	<0.001	152	-
9/17/2008	<0.001	39.2	-
4/18/2012	<0.004	19.6	-
8/21/2012	<0.004	142	-
4/16/2013	<0.004	6.1	-
8/21/2013	<0.004	24.6	-
4/17/2014	<0.001	6.3	-
8/20/2014	<0.001	40.4	-
4/23/2015	<0.004	0	-
8/18/2015	<0.004	67.3	-
4/18/2018	<0.004	17	-

Figure 1. DDE Monitoring Results in Lurline Creek at Highway 99.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2018												
2017												
2016												
2015												
2014												
2013												
2012												
2011												
2010												
2009												
2008												
2007		0.007						0.003				

Legend:

	Not Sampled			Sampled, No Exceedance			Exceedance, (ug/L)
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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.