



California Regional Water Quality Control Board Central Valley Region

Karl E. Longley, ScD, P.E., Chair

11020 Sun Center Drive #200, Rancho Cordova, California 95670-6114
Phone (916) 464-3291 • FAX (916) 464-4645
<http://www.waterboards.ca.gov/centralvalley>



Arnold
Schwarzenegger
Governor

Linda S. Adams
Secretary for
Environmental Protection

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To: Interested Parties

SUPPLEMENTAL INFORMATION TO THE NOTICE OF PUBLIC WORKSHOP/CEQA SCOPING MEETING FOR A PROPOSED BASIN PLAN AMENDMENT TO ADDRESS OC PESTICIDES IN SEVERAL CENTRAL VALLEY WATERBODIES

The following provides supplementation information to the Central Valley Regional Water Quality Control Board (Central Valley Water Board) Public Notice regarding an upcoming CEQA Scoping Meeting and Public Workshop for a proposed amendment to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins (Basin Plan, 2007). The proposed amendment will develop Total Maximum Daily Loads (TMDLs) for Organochlorine (OC) pesticides in several waterbodies located in the Sacramento River basin, San Joaquin River basin and Sacramento-San Joaquin Delta.

The included material provides background on OC pesticides, the relevant waterbodies, existing regulations and possible alternatives for numeric targets and implementation options. This document is provided to encourage public discussion about potential alternatives and approaches and no policy or regulation is either expressed or intended. Staff encourages comments on additional options, alternatives or any other relevant information that should be considered in the CEQA process. Information on how to submit comments is included in the Public Notice.

This proposed amendment will include:

- Development of TMDLs to implement numeric targets/water quality objectives in several Central Valley waterbodies.
- Program of implementation for the TMDLs
- Surveillance and monitoring program
- Compliance schedule

1.0 Purpose of Scoping

The purpose of the scoping meeting is to provide a forum for public consultation on the development of a proposed amendment to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins to establish TMDLs to address Organochlorine Pesticides in several Central Valley waterbodies, and the corresponding environmental documents.

Scoping is helpful to the Central Valley Water Board in identifying the range of actions, alternatives, mitigation measures, means of compliance and their impacts, and significant environmental effects to be analyzed prior to the decision making process. Scoping has been found to be an effective way to bring together and resolve the concerns of affected federal, State, and local agencies, the proponent of the actions, and other interested persons including

California Environmental Protection Agency

those who might not be in accord with the proposed actions on environmental grounds. The meeting will be conducted by Central Valley Water Board staff.

2.0 Background

OC pesticides have been detected in the water column, sediment and biota collected from several waterbodies in the San Joaquin River, Sacramento River and the Bay Delta watersheds at concentrations high enough to warrant the listing of the affected reaches on the 2006 Clean Water Act (CWA) section 303(d) list of impaired waterbodies. This proposed Basin Plan Amendment includes 21 waterbodies within the Central Valley 303(d) listed for OC pesticides impairment.

Historically, OC pesticides were primarily used as insecticides, fungicides and antimicrobial chemicals for agricultural applications and pest control and were banned in the mid-1970s (US EPA, 1972). Despite this ban, sampling events conducted three decades later have still detected these pesticides in fish (OEHHA 2001; de Vlaming, 2008) as well as in the water column and sediment (Larson et al., 1997). Concentrations of OC pesticides in the watersheds of the Sacramento River, the San Joaquin River and the Sacramento-San Joaquin Delta were high enough to warrant listing the affected reaches on the 2006 CWA section 303(d) list of impaired water bodies (Table 1).

3.0 Watershed Description

The project area of the proposed Basin Plan Amendment (BPA) includes watersheds of the 21 waterbodies listed in Table 1. These waterbodies are located in the Sacramento River Basin, the San Joaquin River Basin and the Sacramento-San Joaquin Delta. The following provides a brief overview of these waterbodies.

3.1 Sacramento River Watershed

Two of the waterbodies are located within the Sacramento River watershed. The Colusa Basin Drain and the lower Feather River (Lake Oroville Dam to confluence with the Sacramento River) are included in the proposed amendment.

The Colusa Basin Drain conveys runoff and agricultural return flows from about 1 million acres of watershed and discharges to the Sacramento River at Knights Landing. It is an important component of Sacramento River flow in the summer and is the single largest source of agricultural return flows to the Sacramento River.

The Feather River is one of the principal rivers of the Sacramento River watershed, and flows approximately 60 miles through the Sacramento Valley from Oroville Dam to the confluence with the Sacramento River at Verona.

3.2 San Joaquin River Watershed

In the San Joaquin River watershed, the proposed amendment includes six reaches (shown in Table 1) of the San Joaquin River, which together consists of 130 miles of the lower SJR, from the Mendota Dam to the Airport Way Bridge near Vernalis. The project area for these reaches includes the entire area draining to the SJR downstream of the Mendota Dam and upstream of the Airport Way Bridge near Vernalis.

Table 1. 303(d) Listings for OC Pesticides in Several Central Valley Waterbodies

Name	Watershed	Pollutant	Size	
San Joaquin River (Mendota pool to Bear Creek)	San Joaquin Basin	DDT Group A Pesticides ¹	88 miles	
San Joaquin River (Bear Creek to Mud Slough)		DDT Group A Pesticides	14 miles	
San Joaquin River (Mud Slough to Merced River)		DDT Group A Pesticides	3 miles	
San Joaquin River (Merced River to Tuolumne River)		DDT Group A Pesticides	29 miles	
San Joaquin River (Tuolumne River to Stanislaus River)		DDT Group A Pesticides	8.4 miles	
San Joaquin River (Stanislaus River to Delta Boundary)		DDT Group A Pesticides Toxaphene	3 miles	
Tuolumne River, Lower (Don Pedro Reservoir to San Joaquin River)		Group A Pesticides	60 miles	
Stanislaus River, Lower		Group A Pesticides	59 miles	
Orestimba Creek (Below Kilburn Road)		DDE	2.7 miles	
Orestimba Creek (Above Kilburn Road)		DDE	9.1 miles	
Merced River, Lower (McSwain Reservoir to San Joaquin River)		Group A Pesticides	50 miles	
Feather River, Lower (Oroville Dam to confluence with Sacramento River)		Sacramento Basin	Group A Pesticides	42 miles
Colusa Basin Drain			Group A Pesticides	42 miles
Delta Waterways (Stockton Ship Channel)	Sacramento-San Joaquin Delta	DDT Group A Pesticides	1,603 Acres	
Delta Waterways (Eastern portion)		DDT Group A Pesticides	2,792 Acres	
Delta Waterways (Western portion)		DDT Group A Pesticides	14,524 Acres	
Delta Waterways (Southern portion)		DDT Group A Pesticides	3,125 Acres	
Delta Waterways (Northern portion)		DDT Group A Pesticides	6,795 Acres	
Delta Waterways (Central portion)		DDT Group A Pesticides	11,425 Acres	
Delta Waterways (Export area)		DDT Group A Pesticides	583 Acres	
Delta Waterways (Northwestern portion)		DDT Group A Pesticides	2,587 Acres	

¹ Group A Pesticides include one or more of the following compounds: dieldrin, endrin, alpha-chlordane, gamma-chlordane, cis-nonachlor, trans-nonachlor, oxychlordane, heptachlor, and heptachlor epoxide.

The SJR Basin includes the lower reaches of the major eastside tributaries, downstream of the major dams and reservoirs: New Don Pedro, New Melones, Lake McClure, and similar eastside reservoirs in the SJR Basin. The SJR Basin, as defined here, drains approximately 2.9 million acres (Lower SJR Diazinon and Chlorpyrifos BPA, 2005). Also included in the proposed amendment are smaller watersheds within the SJR Basin including the watersheds of the lower Tuolumne River (Don Pedro Reservoir to San Joaquin River), Orestimba Creek (Below Kilburn Road), Orestimba Creek (Above Kilburn Road), Merced River, Lower, (McSwain Reservoir to San Joaquin River).

3.3 Sacramento-San Joaquin Delta

The legal boundary of the Sacramento-San Joaquin Delta comprises over 700 miles of interconnected waterways and encompasses 1,153 square miles of diked islands and tracts. On the 2006 303(d) List, the Delta is divided into 8 portions designated as Delta waterways including the Stockton Ship Channel (State Water Board, 2007). Many of the Delta waterways follow natural courses while others have been constructed to provide deepwater navigation channels, to improve water circulation, or to obtain material for levee construction. Four rivers, the Sacramento, the San Joaquin, the Mokelumne, and the Cosumnes feed the Sacramento-San Joaquin Delta.

4.0 Beneficial Uses

The waterbodies to be included in the proposed amendment are provided by the Basin Plan which contains beneficial uses as listed in Table 2a (Basin Plan, 2007). The beneficial uses of the waterbodies most applicable to OC pesticides are based on the protection of human health (MUN), and Aquatic Life (includes SPWN, WARM, COLD, MIGR, WILD) in the water column, sediment and tissue.

Waterbody (Included Reach)	MUN	AGR	REC1	REC2	SPWN	WARM	COLD	MIGR	WILD	IND	NAV
San Joaquin River - (Mendota Pool to Bear Creek)	P	E	E	E	E	E		E	E	E	
San Joaquin River - Mouth of Merced to Vernalis (Merced River to Tuolumne River) (Tuolumne River to Stanislaus River) (Stanislaus River to Delta Boundary)	P	E	E	E	E	E		E	E	E	
San Joaquin River (Bear Creek to Mud Slough) (Mud Slough to Merced River)	P	E	E	E	E	E		E	E	E	
Tuolumne River, Lower (Don Pedro Reservoir to San Joaquin River)	P	E	E	E	E	E	E	E	E		
Stanislaus River, Lower	P	E	E	E	E	E	E	E	E	E	
Merced River, Lower, (McSwain Reservoir to San Joaquin River)	E	E	E	E	E	E	E	E	E	E	
Feather River, Lower (Lake Oroville Dam to confluence with Sacramento River)	E	E	E	E	E	E	E	E	E		
Colusa Basin Drain		E	E		E	E	P	E	E		

Table 2a. Beneficial Uses of the Impaired Reaches From Basin Plan Table II-1

Waterbody (Included Reach)	MUN	AGR	REC1	REC2	SPWN	WARM	COLD	MIGR	WILD	IND	NAV
Sacramento-San Joaquin Delta ² (Stockton Ship Channel) (Eastern portion) (Western portion) (Southern portion) (Northern portion) (Central portion) (export area) (Northwestern 5 E portion)	E	E	E		E	E	E	E	E	E	E

E = Existing beneficial use

MUN = Municipal and domestic supply

REC1 = Contact Recreation

SPWN = Spawning (Warm/Cold)

COLD = Freshwater habitat

WILD = Wildlife habitat

NAV = Navigation

P = Potential beneficial use

AGR = Agriculture (irrigation)

REC2 = Other non-contact recreation

WARM = Freshwater habitat

MIGR = Migration of aquatic organisms

IND = Industrial service supply

Table 2b. Beneficial Uses of the Impaired Reaches not included in Table II-1

Water body	MUN	AGR	REC1	REC2	SPWN	WARM	COLD	MIGR	WILD	IND	NAV
Orestimba Creek (Below Kilburn Road) (1)	P	E	E	E	E	E		E	E	E	
Orestimba Creek (Above Kilburn Road) (1)	P	E	E	E	E	E		E	E	E	

The beneficial uses for Orestimba Creek, a tributary of the lower San Joaquin River, were determined based on the State Water Board Resolution No. 88-63 (Sources of Drinking Water Policy) and Basin Plan Page II-2.0, which states, “The beneficial uses of any specifically identified waterbody generally apply to its tributary streams”.

5.0 Range of Potential Numeric Targets

TMDLs require a quantitative numeric target(s) to implement water quality standards (water quality objectives and the beneficial uses). TMDL targets can consist of numeric water quality objectives (existing or new) and/or the targets can be used to interpret narrative water quality objectives. Suitable numeric target(s) will be evaluated based on all available guidelines relevant to OC pesticides. The potential targets presented in this document are provided for discussion purposes only, and are not intended to be inclusive of all possible targets. As part of CEQA scoping, the public can comment on additional targets that should be considered.

5.1 Potential Water Column Targets

The California Toxics Rule has numeric regulatory water quality criteria for OC pesticides in the water column while the Sacramento-San Joaquin Basin Plan contains narrative water column objectives for OC pesticides. The three narrative WQOs for OC pesticides in the Basin Plan are presented in Table 3 (Basin Plan, 2007).

² Table II-1 footnote: (8) Beneficial uses vary throughout the Delta and will be evaluated on a case-by-case basis.

Table 3. Basin Plan Water Quality Objectives Relevant to OC Pesticides

Constituent	Objectives
Pesticides (Basin Plan III-6.0)	<ul style="list-style-type: none"> ➤ No individual pesticide or combination of pesticides shall be present in concentrations that adversely affect beneficial uses. ➤ Discharges shall not result in pesticide concentrations in bottom sediments or aquatic life that adversely affect beneficial uses. ➤ Total identifiable persistent chlorinated hydrocarbon³ pesticides shall not be present in the water column at concentrations detectable within the accuracy of analytical methods approved by the Environmental Protection Agency or the Executive Officer.
Sediment (Basin Plan III-7.0)	<ul style="list-style-type: none"> ➤ The suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses.
Toxicity (Basin Plan III-8.01)	<ul style="list-style-type: none"> ➤ All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.

In 2000, US EPA established numeric criteria for priority toxic pollutants for the State of California (40 CFR 131; CTR) (US EPA, 2000a). The CTR, promulgated by US EPA in 2000, contains the only numeric regulatory water quality criteria for OC pesticides (see Table 4) (US EPA, 2000). The CTR criteria are intended to protect aquatic organisms, predator species and humans. OC pesticides are hydrophobic and have low solubility in water. Recent water column data indicates detectable concentrations of OC pesticides in the water column despite their low solubility.

Table 4. CTR Criteria for OC Pesticides. Units: recoverable ppb or µg/L

Pollutant	Freshwater Aquatic Life		Saltwater Aquatic Life		Human Health (10 ⁻⁶ risk for carcinogens) For consumption of:	
	CMC ¹	CCC ²	CMC	CCC	Water & Organisms ³	Organisms only
p,p'-DDD	-	-	-	-	0.00083	0.00084
p,p'-DDE	-	-	-	-	0.00059	0.00059
p,p'-DDT	1.10	0.0010	0.13	0.0010	0.00059	0.00059
Chlordane	2.40	0.0043	0.09	0.0040	0.00057	0.00059
Dieldrin	0.24	0.0560	0.71	0.0019	0.00014	0.00014
Endrin	0.086	0.036	0.037	0.0023	0.76	0.81
alpha-BHC	-	-	-	-	0.00390	0.01300
Lindane	0.95	-	0.16	-	0.019	0.063
Hexachlorbenzene	-	-	-	-	0.00075	0.00077
Toxaphene	0.73	0.0002	0.21	0.0002	0.00073	0.00075

-- Indicates no data available

1: CMC= Criteria Maximum Concentration

2: CCC= Criteria Continuous Concentration

3: Water & Organisms and Organisms only: Human criteria for consuming water and/or organisms from same water body

³ Chlorinated Hydrocarbon refers to Organochlorine Pesticides

5.2 Potential Sediment Targets

Staff will evaluate if sediment targets are appropriate. For the eight portions of Delta waterways in the Sacramento-San Joaquin Delta, estuarine sediment targets were recently approved for enclosed bays and estuaries by the Office of Administrative Law (OAL) in November 2008 (State Water Board, 2008). Staff will track the State Water Board's efforts currently underway to address indirect effects related to bioaccumulation of pollutants, of which a specific timeline for completion has not been determined.

5.3 Potential Fish Tissue Targets

The Basin Plan does not have regulatory numeric objectives for fish tissue but has a narrative toxicity objective that could serve as the basis for possible TMDL targets. The following discusses some existing guidelines for discussion purposes only.

OEHHA has developed Advisory Tissue Levels (ATLs) as a guideline for setting fish consumption advisories (Table 5). ATLs are not issued for pollution mitigation or elimination and are not regulatory standards (OEHHA, 2008). ATLs are used by OEHHA as part of a process to develop traditional health advisories (that focus on fish whose consumption should be restricted or avoided altogether). These advisories inform consumers which fish with low contaminant levels are considered safe to eat frequently and provides associated benefits of fish consumption.

Table 5. Advisory Tissue Levels (ATLs) for Selected Fish Contaminants Based on Cancer or Non-Cancer Risk Using an 8-Ounce Serving Size (prior to cooking) (ppb, wet weight)

Pollutant	Three 8-ounce Servings* a Week)	Two 8-ounce Servings* a Week	One 8-ounce Servings* a Week	No Consumption
Chlordane ^c	≤190	>190-280	>280-560	>560
DDTs**	≤520	>520-1,000	>1,000-2,100	>2,100
Dieldrin ^c	≤15	>15-23	>23-46	>46
Toxaphene ^c	≤200	>200-300	>300-610	>610

^c ATLs are based on cancer risk.

* Serving sizes are based on an average 160 pound person. Individuals weighing less than 160 pounds should eat proportionately smaller amounts (for example, individuals weighing 80 pounds should eat one 4-ounce serving a week when the table recommends eating one 8-ounce serving a week).

** ATLs for DDT are based on non-cancer risk for two and three servings per week and cancer risk for one serving per week.

OEHHA has also developed non-regulatory sport fish tissue guidelines referred to as fish contaminant goals (FCGs) (Table 6). OEHHA derived FCGs are relevant to the protection of human health. OEHHA FCGs were calculated for a 10⁻⁶ cancer risk, and assume consumption of 32 grams per day of fish by a 70 kilogram adult who frequently consumes fish.

Another alternative is that fish tissue endpoints could be back-calculated from CTR human health criteria using bio-concentration factors (BCF) obtained from scientific literature.

Table 6. Fish Contaminant Goals⁴ (FCGs) for Selected Fish Contaminants Based on Cancer and Non-Cancer Risk Using an 8-Ounce/Week (prior to cooking) Consumption Rate (32 g/day)⁵

Pollutant	Contaminant Cancer Slope Factor (mgkg ⁻¹ day ⁻¹)	FCG Carcinogens (ppb, wet weight)	Contaminant Reference Dose (mgkg ⁻¹ day ⁻¹)	FCG Noncarcinogens (ppb, wet weight)
Chlordane	1.3	5.6	3.3x10 ⁻⁵	100
DDTs	0.34	21	5.0x10 ⁻⁴	1600
Dieldrin	16	0.46	5.0x10 ⁻⁵	160
Toxaphene	1.2	6.1	3.5x10 ⁻⁴	1100

6.0 Source Identification

Staff has not yet begun source identification efforts regarding the impaired waterbodies. Based on other Region’s efforts to address OCs, source identification is likely to include the following activities (Larry Walker Assoc., 2008):

- Identify and research current and historic uses
- Review and update information regarding current regulations
- Identify on-land spill sites and erosion susceptibility of various land uses
- Research the effect of environmental transport
- Evaluate other potential sources

7.0 Project Alternatives

Based on CEQA regulations, project alternatives to be analyzed will be limited to those that are feasible, would accomplish the objectives of the project, and would avoid or substantially lessen any of the significant effects of the project. Notably, the purpose of the alternatives analysis is to ascertain whether alternatives exist that offer substantial environmental advantages over the project proposal and may be ‘feasibly accomplished in a successful manner’ considering the economic, environmental, social and technological factors involved.

The purpose of scoping is to gather public input on potential alternatives. The following presents possible alternatives including the no project alternative and the proposed adoption of the amendment. These alternatives are provided below to stimulate discussion only, and are not intended to represent the complete list of alternatives that will be considered in the CEQA analysis.

(1) No Project - Under this alternative, the Basin Plan would not be amended to include TMDLs and programs of implementation addressing OC Pesticides.

(2) Adopt a Basin Plan amendment to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins to establish Total Maximum Daily Loads to address Organochlorine Pesticides in several Central Valley waterbodies.

(3) Other Alternative approaches (To Be Determined). The public is welcome to comment on additional alternative approaches that should be considered.

⁴ Fish Contaminant Goal for sensitive populations (i.e., women aged 18 to 45 years and children aged 1 to 17 years).

⁵ g/day represents the average amount of fish consumed daily, distributed over a 7-day period, using an 8-ounce serving size, prior to cooking.

As part of the CEQA scoping process, staff welcomes comments on potential alternatives. Information on how to comment and the comment deadline is provided in the public notice.

8.0 Summary

As stated previously, the purpose of this supplemental information is to provide more details on the proposed project that will be discussed at the CEQA scoping meeting. It is intended to give opportunity for public discussion about potential alternatives and approaches and no policy or regulation is either expressed or intended. Any comments or concerns should be raised either by oral or written comments. The comment deadline is provided in the Public Notice available at:

http://www.waterboards.ca.gov/centralvalley/water_issues/tmdl/central_valley_projects/central_valley_organochlorine_pesticide/index.shtml

Please bring the Public Notice for CEQA Scoping and this supplemental information to the attention of anyone you know who would be interested in this matter. If you have any questions, please contact me by email at FKizito@waterboards.ca.gov or at (916) 464-4633.



Fred Kizito
Environmental Scientist
San Joaquin TMDL & NPS Unit

Attached: References

9.0 References

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