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CITY OF STOCKTON

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April 15, 1996

Rudy Schnagl, Chief
Agricultural Unit
California Regional Water Quality Control Board
Central Valley Region
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PROPOSED BASIN PLAN AMENDMENT ADDRESSING AGRICULTURAL SUBSURFACE DRAINAGE IN THE GRASSLAND WATERSHED OF THE SAN JOAQUIN RIVER BASIN

This agency has reviewed the proposed Basin Plan amendment addressing agricultural subsurface drainage in the Grassland watershed of the San Joaquin River Basin and have several comments. Our comments are arranged in accordance with the text of the proposed amendment.

Table 4. Proposed changes to the Policies

b. Activities that increase the discharge of poor quality agricultural subsurface drainage ~~are prohibited~~ will be discouraged through the adoption of prohibitions of discharge and other control measures.

Comment: This agency is opposed to striking the words "are prohibited" and the addition of the proposed language change. This is seen as backsliding, in violation of Clean Water Act policies. It is our position that no increase in the quantity of poor quality water should be tolerated.

e. Export out of the basin of accumulated salts due to agricultural irrigation and wetlands management ~~has less potential for environmental impacts and, therefore,~~ is the favored disposal option.

Comment: Should be revised to read: *Export out of the basin of accumulated salts due to agricultural irrigation and wetlands management is not the favored disposal option.*

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PROPOSED BASIN PLAN AMENDMENT ADDRESSING AGRICULTURAL SUBSURFACE DRAINAGE IN THE GRASSLAND WATERSHED OF THE SAN JOAQUIN RIVER BASIN

The San Joaquin River may continue to be used to remove [redacted] salts from the basin.

Comment: Should be revised to read: *The San Joaquin River may not continue to be used to remove these salts from the basin.* The City of Stockton is opposed to a revision wherein the San Joaquin River is cited as the only disposal option. Every effort should be made to remove the selenium on site before discharge. Selenium should not be exported in order to create water quality problems in the Delta.

f. [redacted] valley-wide drain to carry salts ~~generated by agricultural irrigation~~ out of the valley remains the best technical solution to the water quality problems of the San Joaquin River and Tulare Lake Basins. The drain would carry wastewater high in salt and unfit for reuse that is generated by municipal, industrial, and wetland management activities.

Comment: This agency is opposed to a language change that eliminates the specific identity of the cause of this pollution and refocuses attention on construction of a valley drain. The best available technology for removal of salts and selenium is reverse osmosis or electrodialysis.

h. For regulation of selenium discharges, actions need to be focused on selenium load reductions.

Comment: This agency agrees with this additional language, and further; any action taken by the Board should include selenium load reductions sufficient to eliminate selenium and salts discharged into the San Joaquin River.

Table 5. Proposed Prohibitions.

~~Activities that increase the discharge of poor quality agricultural subsurface drainage are prohibited.~~

Comment: This agency is opposed to removal of this language and also to the weaker proposed language contained in a, b, c, and d. This agency sees this change as the promotion of backsliding by the Board, in violation of Clean Water Act policies.

Table 6. Proposed changes to the control actions governing the regulation of agricultural subsurface drainage discharges in the San Joaquin Valley.

PROPOSED BASIN PLAN AMENDMENT ADDRESSING AGRICULTURAL SUBSURFACE DRAINAGE IN THE GRASSLAND WATERSHED OF THE SAN JOAQUIN RIVER BASIN

State Water Board

5. The State Water Board should seek funding for research and demonstration of advanced technology that will be needed to achieve final selenium loads necessary to meet selenium water quality objectives.

Comment: Should be revised to read: *The irrigators in the Grasslands Watershed area should provide funding for research and demonstration of advanced technology that will be needed to achieve final selenium loads necessary to meet selenium water quality objectives.* This agency believes the financial burden for testing, monitoring, and demonstrating credibility for not using best available technology for removal of selenium from the discharge should be placed upon the dischargers.

Other Entities

5. The San Joaquin Valley Drainage Implementation Program should continue to investigate the alternative of a ~~local~~ San Joaquin River Basin drain to move the existing discharge point for poor quality agricultural subsurface drainage to a location where it's impact on water quality is less.

Comment: Should be revised to read: *The San Joaquin Valley Drainage Implementation Program should continue to investigate the alternative of a San Joaquin River Basin drain to move the existing discharge point for poor quality agricultural subsurface drainage to a location where its impact on water quality is nonexistent.* This agency is opposed to the expedient introduction of pollutants into the San Joaquin River and Delta.

Actions and Schedule to Achieve Water Quality Objectives

10. Meeting load reduction milestones is highly dependent upon the effectiveness of individual actions or technology not currently available, therefore, the Regional Board will review the waste discharge requirements and compliance schedule at least every 5 years.

Comment: This agency is opposed to the above language addition, since technology is

PROPOSED BASIN PLAN AMENDMENT ADDRESSING AGRICULTURAL SUBSURFACE DRAINAGE IN THE GRASSLAND WATERSHED OF THE SAN JOAQUIN RIVER BASIN

readily available to remove selenium from the discharge in the form of reverse osmosis and electrodialysis.

Table 8. Proposed changes to Surveillance and Monitoring

~~2. The Regional Water Board will continue to monitor the major discharges, tributaries and the San Joaquin River.~~

~~3. The Regional Board will continue its investigations into pollution transport mechanisms and sinks.~~

~~4. The Regional Board will inspect discharger monitoring and treatment facilities.~~

Comment: This agency supports keeping the language to numbers 2, 3, and 4 and striking the proposed changes to same. Surveillance and monitoring should stay with the regulating entity (Regional Board). Forfeiting same would be to condone Backsliding.

General Comments:

Source Water Protection - Numerous studies of the Grasslands Area drainage demonstrate that it is a contributor of pollution to the San Joaquin River and Delta, and that keeping this ancient sea bed irrigated not only contributes to the problem of export of water from the Delta, it also causes other environmental damage in the San Joaquin River and Delta. Best available technology is available (reverse osmosis and/or electrodialysis) to clean the tail and tile water from this irrigated area. Failure to use best available technology should result in an enforcement action to cease irrigation.

Water Conservation - 180,000 acre/ft of water per year has been committed to this project which results in the creation of an environmental hazard, and then the Board orders that the Grasslands partially mitigate this hazard through dilution. This effort to solve the pollution problem by dilution is a waste and unreasonable use of water as defined in the State Constitution. Even in critically dry years the Delta export irrigators have been promised 100% deliveries, while areas adjacent to areas or watersheds of origin have been denied any water delivery. This is not a lawful beneficial use of exported water.

PROPOSED BASIN PLAN AMENDMENT ADDRESSING AGRICULTURAL SUBSURFACE DRAINAGE IN THE GRASSLAND WATERSHED OF THE SAN JOAQUIN RIVER BASIN

Thank you for the opportunity to comment on this proposed Basin Plan Amendment.

Morris L. Allen

MORRIS L. ALLEN
DIRECTOR OF MUNICIPAL UTILITIES

MLA:DJ:dj

t:\admin\grasslnd.wpd

Westlands Water District
3130 North Fresno Street, P.O. Box 6056, Fresno, California 93703-6056, (209) 224-1523, FAX: (209) 224-1560

April 16, 1996

California Regional Water
Quality Control Board
Central Valley Region
3443 Routier Road, Ste. A
Sacramento, CA 95827-3098

Gentlemen:

Subject: Staff Report on Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin Basins for the Control of Agricultural Subsurface Drainage Discharges

Although Westlands does not discharge subsurface drainage water to the San Joaquin River, the District wishes to comment on the draft Staff Report on Amendments to the Water Quality Control Plan (Plan) for the Sacramento River and San Joaquin River Basins.

The proposed amendments to the Plan will tighten regulations on the discharge of subsurface drainage water to the San Joaquin River (River) which may eventually force significant expenditures on treatment or the retirement of lands to meet the River's water quality objectives. The economic and environmental impacts of retiring large acreages of productive agricultural lands will be tremendous and must be considered in evaluating the proposed amendments.

However, this draft Staff Report does conclude that a valley-wide drain to carry salts out of the Valley remains the best technical solution to the water quality problems of the San Joaquin River and Tulare Lake Basins. Westlands concurs and supports the Policies of the Regional Board in Table 4 which include favoring the construction of a valley-wide drain. The District encourages the Regional Board to continue to promote the construction of a valley-wide drain as the only feasible, long-range solution for achieving salt balance in the Central Valley and resolution of water quality problems in the River.

Finally, the Regional Board must be careful not to interfere with a district's ability to deal with its drainage problems locally. Regulations in the areas of water conservation and irrigation practices should be left up to the districts. The district landowners and water users have the experience of managing their water supplies to encourage conservation and reduction of deep percolation. If faced with reasonable and certain discharge requirements with adequate time to respond, we are confident that districts and their landowners will be a driving force in properly managing their resources.

Sincerely,

David Orth
General Manager

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cc: San Luis & Delta Mendota Water Authority

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Surfrider Foundation San Francisco Chapter

April 16, 1996

VIA FACSIMILE AND U.S. MAIL

Mr. Rudy Schnagl
Chief Agricultural Unit
Regional Water Quality Control Board
Central Valley Region
3443 Routier Road, Suite A
Sacramento, CA 95827-3098
FAX (916) 255-3015

Re: Comments on the Amendments to the Water Quality Control Plan for the Sacramento and San Joaquin River Basins (May 3, 1996 meeting)

Dear Mr. Schnagl:

The Surfrider Foundation is a national non-profit organization dedicated to the protection and enhancement of coastal and inland estuary resources. Surfrider is appreciative of the opportunity to comment on the proposed Amendments to the Water Quality Control Plan for the Sacramento and San Joaquin River Basins (Basin Plan).

Surfrider strongly supports the Regional Board's efforts to (1) set new, more stringent selenium water quality objectives in the Grassland watershed wetland supply channels, Salt Slough, Mud Slough (north), and the San Joaquin River; (2) eliminate subsurface drainage discharges into wetland supply channels, Salt Slough, and Mud Slough (north), unless water quality objectives are being met; (3) use waste discharge requirements to control agricultural subsurface drainage discharges to the San Joaquin River below the Merced River confluence; and (4) prohibit any new agricultural subsurface drainage discharges from the Grassland watershed unless that discharge is governed by waste discharge requirements.

Surfrider's concern, however, is with regard to proposed policy statements regarding the control of agricultural subsurface drainage. Specifically, Surfrider is concerned with policy (e) which provides that "Export out of the basin of accumulated salts due to agricultural, irrigation and wetlands management is the favored disposal option." Surfrider is also concerned with policy (f) which provides that "A valley-wide drain to carry the salts

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out of the valley remains the best technical solution to the water quality problems of the San Joaquin River and Tulare Lake basins. . . . The Regional Board, at this time, feels that a valley-wide drain will be the only feasible, long-range solution for achieving a salt balance in the Central Valley." (See Table 4, page 12 of the Executive Summary to the draft report, March 1996.)

Surfrider strongly objects to any Regional Board policy encouraging the export of agricultural, municipal, and industrial and other wastewater out of the San Joaquin River and Tulare Lake basins and into the Sacramento/San Joaquin Bay-Delta Estuary or to the Pacific Ocean. Though the Staff Report and Executive Summary do not mention the ultimate destination of this wastewater, the Tulare Lake Basin Staff Report dated August 17, 1995, describes the destination of this wastewater as the "Bay-Delta area." (Staff Report, at p. 57.) It has been proposed fairly frequently over the past several years that the San Luis Drain be completed to the Bay-Delta Estuary or an extension of it built to the Pacific Ocean, discharging either in or adjacent to the Monterey Bay or Gulf of the Farallones National Marine Sanctuaries. The Surfrider Foundation, other environmental groups, representatives of the fishing industry, and affected neighborhood groups all are committed to protecting our valuable coastal and ocean resources from any such proposed action.

The Surfrider Foundation therefore requests that the Regional Board clarify policy statements (e) and (f) with regard to completion of the San Luis Drain as part of its proposed amendments to the Basin Plan. If Regional Board policy does not include plans to complete the drain to the Bay-Delta or the Pacific Ocean, this should be clearly outlined in its policy statement.

If you have any questions regarding these comments, please do not hesitate to call. Thank you for your time and consideration.

Very truly yours,

Peter L. Candy

PLC/bll
schnagl

Please return any written comments to:

Peter L. Candy, Esq.
Surfrider Foundation
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April 17, 1996

VIA TELEFAX AND U.S. MAIL

Rudy Schnagl
Chief, Agricultural Unit
California Regional Water Quality Control Board
Central Valley Region
3443 Routier Road, Suite A
Sacramento, California 95827-3098

Re: Basin Plan Amendment Addressing Agricultural Subsurface Drainage in the Grassland Watershed of the San Joaquin River Basin

Dear Mr. Schnagl:

The following comments to the Staff Report on the Proposed Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins for the Control of agricultural subsurface drainage discharges are provided on behalf of Stockton East Water District ("Stockton East").

CONTROL ACTIONS CONSIDERATIONS OF THE CENTRAL VALLEY REGIONAL WATER BOARD

Policies and Plans -- 6. San Joaquin River Agricultural Subsurface Drainage Policy:

1. Revised policy (b) regarding the discharge of poor quality agricultural subsurface drainage.

Stockton East opposes the proposed revision which would "**discourage**" activities that increase the discharge of poor quality agricultural subsurface drainage, instead of "**prohibit**" such discharges as contained in the current Basin Plan. The staff analysis of policy needs for this section supports retention of the existing language. The 1988 Basin Plan staff report added this provision and provided that and the language may be considered for deletion 'when selenium water quality objectives are met.' By the staff's own admission "[t]o date, however,

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the water quality objectives have not been met in either the Grassland sloughs or in the San Joaquin River." The failure to meet water quality objectives in Salt and Mud Sloughs or in the San Joaquin River is precisely the reason to retain the more stringent language. In fact, this Basin Plan amendment does not even propose achieving the water quality objectives in the San Joaquin River for 7 years, thus, an absolute prohibition on activities which would increase the discharge of poor quality agricultural subsurface drainage is legally mandated.

2. Revised policy (e) regarding disposal of accumulated salts due to agricultural irrigation and wetlands management.

For years, Stockton East has reminded the Regional Board of its duty under law to establish water quality objectives along the entire stem of the San Joaquin River, not simply at Vernalis. Nevertheless, the proposed revision to policy (e) recognizes that the salt problem in the San Joaquin River is due to agricultural irrigation and wetlands management but nevertheless allows it to continue. The policy statement that: "[t]he San Joaquin River may continue to be used to remove these salts from the basin so long as water quality objectives are being met" is simply a violation of law and an admission that the Regional Board is abrogating its duty.

There are no water quality objectives for salinity on the entire San Joaquin River. The only method for achieving the water quality objective for salinity at Vernalis is through fresh water releases from New Melones to **dilute** the pollution caused from the agricultural drainage. The Regional Board must eliminate the policy of allowing the San Joaquin River to be the dumping ground for salty agricultural drainage and instead take immediate action to amend the Basin Plan to add salinity objectives for the entire San Joaquin River.

The use of high quality surface water from New Melones Reservoir to dilute pollution which the Regional Board allows to be dumped into the San Joaquin River is a violation of the requirement of the California Constitution Article X Section 2 that the waters of the state be placed to their highest beneficial use. Because the water is needed to dilute pollution, it is foregone

from use for beneficial uses such as domestic, irrigation, fish and wildlife enhancement, recharge of critically overdrafted groundwater basin. The Regional Board cannot continue to violate the law in this manner through its inaction and acquiescence to the historic use of the San Joaquin River as a toxic drain.

3. Revised policy (f) regarding a valley-wide drain to carry salts out of the valley.

Stockton East supports the amendments made to policy (f) which indicate the Regional Board's support for the mandate imposed on the Bureau of Reclamation to build at out-of-basin drain which will terminate the dumping of high salinity water into the San Joaquin River and instead transport the salty water to a destination which can assimilate the high salinity water.

Regional Water Board Prohibitions -- 6. San Joaquin River Agricultural Subsurface Drainage Policy:

4. Revised prohibition regarding the discharge of poor quality agricultural subsurface drainage.

Stockton East opposes the proposed deletion of the prohibition against activities which would increase the discharge of poor quality agricultural subsurface drainage. As the Regional Board is well aware, Water Code section 12232 **prohibits** any state agency having jurisdiction over the San Joaquin River to allow any further significant degradation of the quality of the water in the San Joaquin River. In light of the clear mandate of the law, the Regional Board should retain this prohibition as it conforms with the requirements of state law.

5. New provision (a) regarding discharge of agricultural subsurface drainage from Grassland watershed to the San Joaquin River from on-farm subsurface drain, open drain, or similar drain system.

This provision should be modified to require the prohibition of agricultural subsurface drainage from Grassland watershed to the San Joaquin River from on-farm subsurface drain, open drain, or similar drain system unless such discharge began prior to the effective date

of this Basin Plan amendment **AND** unless such discharge is governed by waste discharge requirements. In order to effectively reduce the selenium load entering the San Joaquin River, and in order to effectively monitor the impacts associated with re-routing the water into Mud Slough (north), waste discharge requirements must be imposed on all agricultural discharges.

6. New provision (c) regarding discharge of agricultural subsurface drainage to Mud Slough (north) and the San Joaquin River from Sack Dam to the mouth of the Merced River.

This provision would prohibit the discharge of agricultural subsurface drainage to Mud Slough (north) and the San Joaquin River from Sack Dam to the mouth of the Merced River after October 1, 2010, unless water quality objectives are being met. Why are waste discharge requirements not required for these discharges?

ACTIONS AND SCHEDULE TO ACHIEVE WATER QUALITY OBJECTIVES

Agricultural Drainage Discharges in the San Joaquin River Basin:

7. New provision (6) regarding selenium load reduction milestones and waste discharge requirements.

Stockton East agrees that waste discharge requirements should be imposed on agricultural subsurface drainage water discharged in the San Joaquin River. This provision should be modified to require waste discharge requirement on all discharges, not simply "as necessary."

8. New provision (10) regarding Regional Board review of effectiveness of actions and technology.

Stockton East believes that a shorter review period should be established. This provision provides for the Regional Board to review waste discharge requirements and compliance schedule at least every five years. Because the San Joaquin River has been designated as a water quality limited segment with respect to selenium, the Regional Board should give top priority to insure that the requirements which they impose are actually effective and are being met. Stockton East would recommend that the Regional Board review waste discharge requirements

and attainment of the compliance schedule on a yearly basis. This annual review would coincide with new provision (12) which requires an annual review of the effectiveness of control actions by those generating the agricultural subsurface drainage.

9. Revised provision (15) regarding establishing water quality objectives for salinity on the San Joaquin River.

Stockton East applauds the recognition of the necessity to adopt water quality objectives for salinity on the entire San Joaquin River. However, absent from this provision is any definitive timetable for establishment of these objectives. We believe that the Regional Board must begin immediately to address the salinity problem on the San Joaquin River.

As you are well aware, the salinity problem has been an issue since the 1970's. Volumes of studies have been conducted which identify salinity as a major contributing factor to poor water quality in the San Joaquin River, but to date that information has been ignored.

The staff report recognizes that discharges of agricultural drainage water results in a significant degradation of the water quality in the San Joaquin River. The result of the degradation of the water quality directly impacts Stockton East because releases of water are required to be made from New Melones Reservoir to dilute the pollution from the agricultural discharges. These releases for water quality purposes have prevented Stockton East from receiving the water to which it is entitled under its contract with the Bureau of Reclamation. The Regional Board must immediately establish water quality objectives for salinity on the San Joaquin River in order to stop this useless and illegal waste of water.

CEQA REVIEW

10. Inadequate mitigation measures for potentially significant effect on San Joaquin River.

Because the Secretary of Resources has certified the Basin Planning process as meeting the requirements of

the California Environmental Quality Act (CEQA) an Environmental Impact Report is not required to be prepared for this basin plan amendment. However, documents prepared in connection with the basin plan amendment are submitted in lieu of an environmental impact report and are required to satisfy CEQA. These documents must include mitigation measures to reduce any significant or potentially significant impact that the project may have on the environment.

Attachment 1 to the Environmental Checklist Form discloses that there may be potential significant impacts from use of the San Luis Drain to bypass drainage from the wetland channels. Specifically, it states that "[t]he drainage discharged to Mud Slough (north), through the wetland bypass is, however, of poor quality and will **further degrade** the already poor water quality in Mud Slough (north)." No mitigation has been proposed to reduce the significant impact to the environment in violation of the clear mandate of CEQA. Mitigation measures must be proposed to eliminate this significant impact on San Joaquin River water quality.

GENERAL COMMENT

11. <u>Use of the Grasslands Bypass for disposal of agricultural subsurface drainage into the San Joaquin River</u>.

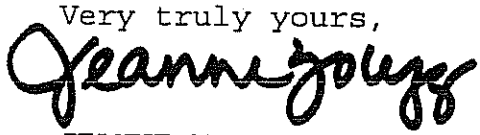
Littered throughout the entire staff report and supporting materials is the conclusion that the only way to improve the Grassland wetlands and the wetland water supply channels is to remove the selenium-laden agricultural subsurface drainage water from the wetland supply channels. This is being proposed through the Grassland Bypass project which removes from the wetland water supply channels the selenium-laden drainage water and conveys it around the entire wetland area using a portion of the San Luis Drain.

The associated benefit to the wetlands and its water supply channels are demonstrated in the staff report. However, the pressing unanswered question raised by implementation of this project is who will pay the price of improving the Grassland wetlands and the wetland water supply channels? It is clear from the supplemental materials analyzing beneficial uses, water quality

objectives, and the like, that the San Joaquin River will pay the price. This is intolerable. As was mentioned above, the Water Code **prohibits** any state agency having jurisdiction over the San Joaquin River to allow any further significant degradation of the quality of the water in the San Joaquin River. In light of the clear mandate of the law and the statements contained in the staff report and supporting materials, the Regional Board must re-evaluate the Grasslands Bypass project proposal to insure that it conforms with the requirements of state law, and to insure that it is not moving the water quality problems of one area of the San Joaquin River drainage to another.

Thank you for allowing us to comment on this staff report. We look forward to participating further in the Basin Plan amendment process.

Very truly yours,



JEANNE M. ZOLEZZI
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cc: Edward Steffani
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CARLETON GRAY, 1893-1944
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Via Facsimile Transmission & Surface Mail

April 17, 1996

Mr. Al Vargas, Agricultural Unit
Central Valley Regional Water Quality Control Board
3443 Routier Road, Suite A
Sacramento, CA 95827-3098

Re: Comments of the Exchange Contractors to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins for the Control of Agricultural Subsurface Drainage Discharges

Dear Mr. Vargas:

These comments are provided on behalf of the San Joaquin River Exchange Contractors Water Authority which consists of Central California Irrigation District (CCID), San Luis Canal Company, Firebaugh Canal Water District (Firebaugh), and Columbia Canal Company. These four entities are commonly referred to as the Exchange Contractors.

CEQA Checklist - Section IV - Water.

Sections f and i do not address changes in groundwater impacts that are likely to result from adoption of the standards. One manner of reducing the discharge of selenium load to the river is to draw down water levels through a groundwater pumping program as outlined in the San Joaquin Valley Drainage Program "Rainbow Report". Such a program, while reducing discharge of selenium load to the river, would also have groundwater impacts not addressed in the Staff Report.

CEQA Checklist - Section XVI - Mandatory Findings of Significance.

Sections c and d question whether the project has impacts that are individually limited but cumulatively considerable and whether the project has environmental affects which will cause substantial adverse affects on human beings. The Staff Report at page 128 within the statement of overriding consideration states that "proposed regulation is deemed to be a balance between protection of environment and minimizing economic hardships." In the economic report within

the Staff Report found between pages 179 and 185, the State's own economist writes at page 179 regarding the report submitted by Dennis Wichelns that the report "doesn't give a complete answer to the question "What are the economic impacts of reducing discharges of selenium into the San Joaquin River?""

For the reasons which follow, the Exchange Contractors do not believe that the report adequately analyzes environmental effects on human beings so as to support the statement of overriding consideration at page 128 that the "proposed regulation is deemed to be a balance between protection of environment and minimizing economic hardships."

Economic Impacts from Regulation to Control Agricultural Subsurface Drainage Discharges.

By these comments, the Exchange Contractors will demonstrate that the drainage water quality standards for selenium proposed by the amendments will result in unreasonable economic impacts upon Firebaugh and a portion of CCID of approximately 6,000 acres known as Camp 13. The unreasonable nature of the standards vis-a-vis Firebaugh and Camp 13 is due to the fact that agricultural tile drainage which discharges from those lands is not as a result of their own irrigation practices. Rather, upslope irrigation has caused a rise in groundwater levels within Firebaugh and Camp 13 so as to make tile drainage necessary. The proposed agriculture discharge standards will result in severe environmental human consequences arising from economic impacts.

INTRODUCTION

The Exchange Contractors And The Basis Of Their Water Right.

In July 1939, the Exchange Contractors, either directly or through a predecessor-in-interest became parties to an agreement with the United States entitled "Contract for Exchange of Waters" which is generally referred to as the Exchange Contract. Under the terms of this contract, the Exchange Contractors agreed not to exercise their pre-1914 and riparian rights on the San Joaquin River so long as, and only so long as, the United States delivered to the Exchange Contractors by means of the Central Valley Project or otherwise, substitute water in conformity with the Exchange Contract. The Exchange Contractors, successors-in-interest to Miller & Lux Incorporated, perfected their pre-1914 and riparian water rights on the San Joaquin River in the 1800's. Those water rights also entitled the Exchange Contractors to drainage through natural sloughs within the Grasslands area, the area now referred to as Grasslands Water District.

In the 1950's surface water was introduced into areas upslope of Firebaugh Canal Water District (Firebaugh). Pacheco Water District was formed in approximately 1953 and Broadview Water District was organized in approximately 1955 for the purpose of contracting for a surface water supply from the Central Valley Project Delta-Mendota Canal. In connection with the San Luis Act and Public Law 86-488, the San Luis Act authorized the Secretary of the Interior to construct the San Luis Unit of the Central Valley Project for the purpose of furnishing water for the irrigation of approximately 500,000 acres of land in Merced, Fresno and Kings Counties upslope of the Exchange Contractors service area. In the 1960's the Bureau of Reclamation began bringing the San Luis Unit of the Central Valley Project on-line and expanded water deliveries to lands upslope of the Exchange Contractors service area.

The Exchange Contractors sought protection for their lands before the huge amounts of surface water were applied upslope. The San Luis Act requires that a drain be built to handle the drainage of lands within the San Luis Unit and adjacent lands impacted by irrigation within the San Luis Unit. The Bureau of Reclamation assured a federal judge on two occasions that the San Luis Drain would in fact be built to convey drainage from the San Luis Unit to an outfall location which at that time was assumed to be the Delta. The San Luis Drain was completed from Kettleman City to Kesterson, but no further. Kesterson became a terminus reservoir, and when migratory bird impacts were discovered in the mid-1980's from selenium contained in agriculture drain waters ponded at Kesterson, the San Luis Drain was closed down by the Bureau of Reclamation.

The Nature Of The Drainage Problem Within The Exchange Contractors Service Area.

Since the closure of the San Luis Drain, CVP water deliveries have continued to the lands upslope of the Exchange Contractors. A consultant to the Exchange Contractors, Dr. Charles Burt, Director of Irrigation Training and Research Center, California Polytechnic University, San Luis Obispo, reports that if surface water had not been imported to Firebaugh Canal Water District's ("Firebaugh") upslope neighbors, it is probable that the shallow water table within Firebaugh would have actually dropped, because:

1. There would be less deep percolation within Firebaugh due to a shifting cropping pattern, reduced canal seepage and improved irrigation efficiencies; and

2. The natural downward drainage through the Corcoran Clay layer has increased with time and would be sufficient for Firebaugh's deep percolation.

Dr. Burt concludes, however, that this natural drainage is insufficient to handle both Firebaugh's deep percolation plus the extra deep percolation caused by the large adjacent acreages upslope of Firebaugh which are irrigated with imported water.

Firebaugh and the Camp 13 area of CCID are located on the toe of the Panoche Fan near the San Joaquin River. The upslope and adjacent areas are located on the Panoche Fan. These areas are occupied by members of the San Luis Unit: Panoche Water District, San Luis Water District, Westlands Water District, and also Broadview Water District which is not part of the San Luis Unit but receives water from the CVP.

Firebaugh and the Camp 13 area of CCID have been impacted adversely by irrigation in the upslope and adjacent areas of the San Luis Unit and Broadview Water District. The adverse impact is the discharge of drainage water through Firebaugh and CCID from subsurface agricultural drains that have high selenium concentrations.

The groundwater systems beneath the Panoche Fan consist of an upper aquifer which is semi-confined, and a lower aquifer which is confined, and these aquifers are separated by the Corcoran Clay (Belitz and Heimes, 1989, Figure 4).[1] The upper aquifer in turn is comprised of Coast Range sediments and Sierra Nevada sediments, where the Sierra Nevada sediments underlie the Coast Range sediments and overlie the Corcoran Clay (Belitz and Heimes, 1989, Figure 4). In the vicinity of Firebaugh Canal Water District and the Camp 13 area of CCID the thickness of the Coast Range sediments is about 50 feet (Belitz and Heimes, 1989, Figure 5) and the thickness of the Sierra Nevada sediments is about 300 feet (Belitz and Heimes, 1989, Figure 9).

Under natural conditions, the groundwater system beneath the Panoche Fan was recharged primarily by infiltration of water from intermittent stream flows in Panoche, Silver and Little Panoche Creeks as they traversed the Fan which produced low groundwater gradients from the margins of the valley toward the San Joaquin River (Belitz and Heimes, 1989, p.22 and Figure 11). Agricultural irrigation on the Panoche Fan changed the groundwater system (Prokopovich, 1989, Figure 26 and pp. 33-37).[2]. By 1952, ground-water levels in the lower aquifer had declined by 100 to 200 feet from the predevelopment ground-water levels (Belitz and Heimes, 1989, p.24), and groundwater levels in the upper aquifer had declined as much as 30 feet in the upper aquifer. (Belitz and Heimes, 1989, p.28). The rapid decrease in groundwater pumping that corresponded with the start of surface water deliveries from the San Luis Canal and Delta-Mendota Canal caused groundwater levels to rise 100 feet in the lower aquifer (Belitz and Heimes, 1989, p.27) and more than 40 feet in the upper aquifer (Belitz and Heimes, 1989, p.29). Along the upper boundary of Firebaugh, groundwater levels in the upper aquifer rose 40 feet during 1952-1984 (Belitz and Heimes, 1989, Figure 17).

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[1] *Belitz, K., and Heimes, F.J., 1989, Ground-water flow system of the central part of the western valley, in Gilliom, R.J. and others, Preliminary assessment of sources, distribution, and mobility of selenium in the San Joaquin Valley , California: U.S. Geological Survey Water-Resources Investigations Report 88-4186, 129 p.*

[2] *Prokopovich, N.P., 1989, Irrigation history of the west-central San Joaquin Valley, 73 p.*

The rise in groundwater levels within the upper aquifer caused the water table to rise within Firebaugh. In 1952, the average depth to ground-water within Firebaugh was about 9 feet which is a condition that persisted many decades prior to 1952 (U.S. Bureau of Reclamation, 1953, Plate 14, p. 33)[3]. In 1987, the average depth to groundwater within Firebaugh was less than 5 feet (Imhoff, 1990, Figure 6)[4]. Accordingly, the average depth to ground-water decreased more than 4 feet during 1952-1987, which corresponds to an average depth of 9 feet in 1952 and less than 5 feet in 1987. This rise in groundwater is the principal reason that subsurface agricultural drains have been required since about 1952 in Firebaugh and the Camp 13 areas of CCID.

The need for subsurface agricultural drains is the direct result of the rise in groundwater levels within the upper aquifer. This is the case because the rise disrupted the previous equilibrium between the deep percolation of applied irrigation water and the downward movement of that percolation through the Coast Range sediments that underlie Firebaugh and Camp 13 areas of CCID.

Impact On Exchange Contractors If Proposed Selenium Water Quality Standards Are Adopted.

From the above description, it is obvious that but for surface water irrigation in the areas upslope of Firebaugh and the Camp 13 area of CCID there would be sufficient natural drainage within Firebaugh and the Camp 13 area of CCID so that tile drains would not be required in those areas. It is specifically because surface water application in the upslope areas have caused rising groundwater levels in Firebaugh and the Camp 13 area of CCID that tile drains in those areas are necessary.

If the Regional Board adopts the 2 parts per billion selenium standard for Grasslands and 5 parts per billion standard for the San Joaquin River, it will essentially shut down irrigation within Firebaugh and the Camp 13 area of CCID because those lands cannot meet those standards.

Consider the following:

1. USBR allows tile water agriculture return flows to be pumped into the Delta-Mendota Canal. This means that the water received by San Luis Canal Company, Columbia Canal Company, Central California Irrigation District and Firebaugh Canal Water District artificially has added to it boron, selenium, and salts from the drainage recovery facilities of the

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[3] *U.S. Bureau of Reclamation, 1953, Firebaugh Drainage Investigation, 56 p.*

[4] *Imhoff, E.A., 1990, A management plan for agricultural subsurface drainage and related problems in the western San Joaquin Valley: San Joaquin Valley Drainage Program, 183 p.*

Bureau of Reclamation. This purposeful contamination of DMC water would not be necessary if the Bureau had completed the San Luis Drain.

2. Tile water entering the Delta-Mendota Canal from tile drains located between Delta-Mendota Canal Milepost 100.91 and Milepost 109.5 have selenium levels between 83 and 1400 parts per billion. There is therefore no way that the Exchange Contractors can be held to Basin Plan discharge standards as to this same water after its application to our lands when the water we receive has these contaminants artificially added by the United States itself.

3. Selenium concentration of water measured at Milepost 110.12 immediately downstream of all tile drain discharges range from 1 to 11 parts per billion.

4. Selenium concentration of water measured at Check 21 just upstream of the Exchange Contractors' diversion points range from 1 to 3 parts per billion.

5. During the months of March and April 1994, there was a slug of selenium in water pumped from the Delta. Selenium levels were detected at 4 and 3 parts per billion for samples taken at Delta-Mendota Canal Milepost 9.87 in March and April 1994 respectively. When the water we receive contains 4 ppb selenium, we cannot possibly discharge at the Grassland 2 ppb selenium standard.

6. The Bureau of Reclamation allows groundwater to be pumped into the Delta-Mendota Canal for water credit. In 1994, approximately 55,000 acre-feet of groundwater was pumped into the Delta-Mendota Canal just upstream of the headworks of the Exchange Contractors diversions. The TDS of this groundwater is extremely high and results in increased TDS of waters delivered to the Exchange Contractors. We have requested that the Regional Board demand a discharge permit of the Bureau or the pumpers. The Basin Plan should explain why, with your concern about water quality, you are unwilling to deal with the source. The Basin Plan should also deal with the impacts upon the Exchange Contractors' ability to meet drainage discharge standards. Pumping of high TDS groundwater into the DMC just above the location of the Exchange Contractors' diversion headworks results in the high TDS water being taken by the Exchange Contractors. Dr. Charles M. Burt, Director Irrigation Training and Research Center, California Polytechnic State University, San Luis Obispo has stated that there is a direct relationship between the need for surface water application to achieve salt balance through leaching, and the TDS of applied water. In other words, the higher the TDS, the more surface water is needed to leach salts below the crop root zone to achieve salt balance.

This need for additional surface application then acts to raise groundwater levels resulting in additional subsurface tile drainage which then compounds the Firebaugh and Camp 13 drainage problem.

Without tile drains there would not be any discharge by landowners within these districts to rivers or sloughs of drainage water containing selenium.

The Basin Plan should look at these impacts upon Firebaugh and CCID.

7. Between 1990 and 1994, the Bureau of Reclamation allowed groundwater to be pumped into the Mendota Pool, the area which forms the headworks of the Exchange Contractors diversions, for water credit. During those years, groundwater pumping into the Mendota Pool averaged approximately 55,000 acre-feet per year. We asked the Regional Board to intervene and require discharge permits. It declined to do so. We asked the State Board to intervene. It conducted an evidentiary workshop and then declined to act further pending the outcome of a study by the Bureau of Reclamation conducted at the behest of Congressman George Miller to determine seepage losses in the Mendota Pool as a result of the proliferation of groundwater pumping in that area.

The Bureau of Reclamation's Groundwater Study of Mendota Pool and Vicinity prepared by Woodward-Clyde Consultants was finalized September 1994 and transmitted to the Exchange Contractors on November 3, 1994. That report concludes that there is an apparent migration of saline groundwater from the area to the west and southwest of the Mendota Pool and that the increases in high salinity water have been attributed by some researchers to pumping-induced migration of high salinity groundwater from the areas. The report admits that "pumping from wells adjacent to the pool probably contributes to this phenomenon." (Groundwater Study of Mendota Pool and Vicinity, September 1994, p. ES-4). The Regional Board should take cognizance of the report's findings and recognize the impacts that the overpumping in the Mendota Pool area has on the ability of the Exchange Contractor districts to meet water quality discharge standards.

8. In 1994, the Department of Water Resources has entered into agreements with Westlands Water District and the Mendota Pool Pumpers Group to allow water to be moved into the California Aqueduct up Westlands' laterals 6 and 7 from the Mendota Pool for credit. Approximately 65,000 acre-feet of water will be pumped into the Mendota Pool and moved in this manner for credit in 1994. Westlands has estimated that the amount will increase to 75,000 acre-feet per year in the foreseeable future.

9. A consultant to the Exchange Contractors, Dr. Kenneth Schmidt, has been engaged as a groundwater hydrologist studying groundwater conditions and occurrences in the Central Valley of California for in excess of 25 years. Dr. Schmidt has provided evaluations for Spreckles Sugar Company which owns extensive lands for a sugar processing factory in the area west and east of the Mendota Pool; the Mendota Biomass facility which is located in the Mendota Industrial Area west of the Mendota Pool; the City of Mendota in regard to development of new public water supply wells and the degradation of groundwater quality in city wells; and for the Exchange Contractors who divert their surface water through the Mendota Pool and maintain the Mendota Dam. Dr. Schmidt was asked to evaluate impacts, if any, upon the Exchange Contractors as a result of the substantial groundwater pumping in and around the Mendota Pool area. Dr. Schmidt tells us that the area occupied by the Mendota Pool Pumpers wells is about 3-1/2 miles long and less than 1/4 mile wide, or less than 600 acres in size. At

a pumping rate of 75,000 acre-feet per year, this represents a water column more than 130 feet high over this area. Such a concentration of pumping can have a number of significant impacts, including:

a. Increased seepage losses from the Mendota Pool.
b. Land surface subsidence.
c. Expanding the size of the area already being overdrafted.
d. Large well interference effects.
*e. Enhanced migration of poor quality groundwater from the west.

10. Dr. Schmidt further tells us that an area of high salinity groundwater has been present for decades in the upper aquifer above the Corcoran Clay southwest of Mendota. Presently there is an easterly or northeasterly direction of groundwater flow in this aquifer. Thus, the poor quality groundwater has been slowly moving toward the Mendota Pool. However, the pool pumping greatly enhances the movement of this poor quality groundwater by increasing the hydraulic gradient substantially. For example, the City of Mendota's water supply has already degraded from approximately 1,000 TDS in the late 1980's to approximately 2,000 TDS in 1994 due to the migration of poor quality groundwater to the northeast. The chemical quality of water pumped from other wells near the Mendota Pool has also substantially degraded in recent years.

These facts demonstrate that subsurface drainage problems are exacerbated and groundwater quality problems created by upslope irrigators and groundwater pumpers over whom the Exchange Contractors have no control.

The Regional Board should consider these impacts upon the Exchange Contractors when it establishes discharge water standards which the Exchange Contractors and principally Firebaugh and the Camp 13 area of CCID cannot possibly meet through no fault of their own.

The adoption of standards as part of a Basin Plan which cannot be met by the Exchange Contractors because the Regional Board itself refuses to regulate the inclusion of selenium, boron and TDS in general in the waters received by the Exchange Contractors for irrigation purposes or which migrate downslope into the root zones of our fields, will have a disastrous financial impact and result in extreme environmental consequences to the Exchange Contractors which must be identified and mitigated if possible by your plan, because:

1. Adoption of regulations which do not take into account the inability of the agricultural users and water purveyors of the Exchange Contractors to meet the standards places them in the position of being required to go out of business because of causes which they do not control, have tried through litigation and extensive public participation to remove and which are in the control of the Regional Board and State Water Resources Control Board *i.e.*, the introduction of these substances into the DMC and Mendota Pool by others in quantities which exceed the standards of the Basin Plan.

2. The Basin Plan standards do not reflect that the amounts of the deleterious materials added to waters by the Exchange Contractors and their landowners is negligible. The violation of the Basin Plan standards will be caused by others, but the enforcement will be against the Exchange Contractors lands because this is where the discharge "appears." Any administrative plan such as a Basin Plan must consider the environmental impacts caused by economic burdens upon lands which have no physical ability to mitigate the condition.

The possible mitigation measures which should be included in the Basin Plan include:

(i) Provisions that a violation of the Basin Plan standard will not be found to exist if the discharge can be shown to have been caused by the acts of the United States or upslope irrigators even though the violation is detected within or adjacent to the Exchange Contractors service areas.

(ii) That economic, regulatory and monitoring costs which would be applied to lands within the Exchange Contractors where the symptoms "appear" will, before those burdens are placed, include regulatory enforcement by the Regional Board and State Water Resources Control Board to recover those costs from the parties causing the condition, i.e., the Bureau of Reclamation and the upslope irrigators, prior to enforcement upon the Exchange Contractors.

(iii) That a violation of the Basin Plan standards will not be found to exist if the amounts of deleterious materials added to the waters received by the Exchange Contractors by the Bureau of Reclamation or third parties operating with the consent or forbearance of the Bureau of Reclamation, if not added, would have resulted in no violation existing.

(iv) That the Exchange Contractors service area existed prior to the existence of the upslope irrigation within the San Luis Unit. The Exchange Contractors clearly did not create conditions through drainage in Grasslands or within the San Joaquin area which would violate the Basin Plan standards. Therefore, the standards should specify that the drainage load, constituents and concentrations from the Exchange Contractors will be given first priority, and established as a base upon which the later developed agriculture lands will be permitted to drain so long as the Basin Plan standards are not exceeded. The only means of mitigating the disastrous environmental consequences of shutting down the farming upon 250,000 acres of land which pre-existed the lands being farmed in the Bureau's San Luis Unit is to allocate those lands the first amounts of load concentration and to permit drainage above that "baseline" only to the extent that the Basin Plan standards are met.

Basin Plan Proposed Selenium Discharge Standards Cannot Be Met.

One can see from the above that where delivered surface waters have high quantities of selenium introduced into them and waters delivered from the Delta contain higher quantities of selenium than that which can be discharged under the Basin Plan proposed standards, that it is impossible to meet those standards. Consider the following:

The Grasslands area, now Grassland Water District, through Miller & Lux, sold its water rights to the Bureau of Reclamation and since then has developed through negotiation with the Bureau and through developing a return-flow from CCID, Firebaugh and San Luis Canal Company, a water right. So after selling its water rights, the Grassland area has now developed a water right which is being permitted to adversely impact prior rights to water and drainage which are first in time and right ahead of Grasslands. The result of the development of Grasslands' water right is the imposition of impossible-to-meet discharge water quality standards on Firebaugh and CCID who have historically drained through the Grasslands area. The imposition of these drainage standards results in a taking of the drainage rights which the Exchange Contractors maintained on account of their Miller & Lux water rights through natural sloughs through the Grassland area.

The beneficial uses of water must be balanced in establishing both discharge standards and Basin Plan objectives. Because the natural channels through the Grasslands are used for water deliveries to the wildlife habitat area and were used for both drainage of the Exchange Contractors lands and wildlife enhancement with no harm for years, this dual purpose must be balanced to allow both uses. To recreate the distribution system for surface water within the Grasslands would cause the incurrence of millions of dollars of cost, yet the economic consequences analysis does not include a mention of these factors. In order to comply with the law, we believe that your Basin Plan analysis must provide a balancing and consideration of alternatives in regard to the continued availability and use of agricultural water from the Exchange Contractors for Grasslands irrigation and wildlife habitat. This balance requires at least an analysis of the costs to be incurred in attaining the proposed 2 ppb standard in finding alternative water supplies and delivering them through new conveyance facilities compared to the costs of reducing the presence of selenium in the Exchange Contractors drainage through regulation of the Bureau of Reclamation and upslope irrigators. Without this, the plan is deficient.

Misguided Environmental Zeal Causes Economic Chaos.

The Regional Board should not substitute environmental perfection for reasonable solutions and standards which balance economic viability and environmental protection.

The Basin Plan water quality discharge standards for selenium which, if adopted, will essentially put Firebaugh and 6,000 acres of CCID out of business, is a misguided attempt to achieve environmental perfection at the expense of economic undertaking. The fact that the Exchange Contractors were here first must be recognized and count for something.

The Regional Board staff and Board members have an opportunity in this Basin Plan review to provide a good faith analysis of alternatives, costs, and impacts from costs in order to find the most advantageous combination of standards, techniques for management of discharges and agriculture water use to maximize the beneficial uses of water. We cannot afford to continue to set goals or standards which artificially please environmental interests without

balancing and reducing those goals if the environmental consequences due to the economic burdens will (1) deprive the Grasslands of substantial water supplies, (2) require substantial water to be removed from agriculture lands to provide a new supply to the Grasslands, or (3) put out of business the lands where the problem appears, while doing nothing to prevent the problems being caused by the Bureau of Reclamation and upslope irrigators.

Suggestions For Implementation Of Proposed Standards.

Because the Exchange Contractors historic water rights entitle them to operating priority to maintain their agricultural uses of water, the following suggestions are made in the event that the Regional Board decides to go forward with the proposed discharge standards:

1. The Exchange Contractors should be accorded baseline on a high percentage of the total quantity and load concentration for discharge of selenium, boron and TDS permitted into the Grasslands and San Joaquin River. The Bureau of Reclamation and those entities upslope of the Exchange Contractors whose surface water irrigation practices have resulted in the creation of drainage problems within the Exchange Contractors service areas should be relegated to the remaining available percentage of selenium or other constituent discharge up to the Basin Plan standard.

2. Upslope areas should be required to maintain a proper water balance through conjunctive use of surface and groundwater supplies in order to reduce hydraulic gradient water impacts within the Exchange Contractors service areas.

3. The Exchange Contractors should be accorded sufficient time to comply with narrative and/or numeric standards for selenium discharge so as to mitigate economic impacts within their service areas.

4. Parties that introduce irrigation return flow or groundwater into mainline federal and state water conveyance facilities and into Mendota Pool should pay all costs associated with meeting water quality discharge standard increases which are brought on by having introduced the irrigation return flow and/or groundwater into mainline delivery systems. The purpose of this recommendation is to have those who add to a drainage control problem pay a contribution toward drainage control. A discharge permit procedure should be established immediately for these additions to our source waters.

California Environmental Quality Act ("CEQA").

As stated in the Staff Report, any regulatory programs of the Regional Board certified as functionally equivalent to the CEQA process must satisfy the documentation requirements of Title 23, C.C.R. Section 3777(a). The environmental checklist and determination with respect to environmental impacts does not satisfy that requirement because it fails to consider the severe environmental consequences to human beings arising from certain economic impacts.

Short Run Economic Impacts 1 to 5 Years.

If the Basin Plan water quality discharge standards are established then Firebaugh Canal Water District consisting of 21,761 acres will be unable to meet the discharge water quality standards. Neither will approximately 6,000 acres in the Camp 13 area of CCID meet these standards. Nor will Panoche Water District consisting of approximately 35,000 acres, Broadview Water District consisting of approximately 10,000 acres, Pacheco Water District consisting of approximately 4,000 acres, or Charleston Water District consisting of approximately 3,000 acres meet these water quality standards. We will focus on the Firebaugh and CCID economic impacts.

Without a discharge being permitted of drainage flows from the Firebaugh and Camp 13 area of CCID, water will need to be recirculated and reused on lands. To fully recycle all water within Firebaugh it will be necessary for the district to expend approximately $17 million to install pipelines and pumping plants to pump drainage water to the headworks of Firebaugh Canals. These works would take approximately 2 years to install assuming that financing can be obtained. Furthermore, assuming that financing can be obtained the debt service on Firebaugh's 21,761 irrigable acres will equal $781 per acre of debt, exclusive of interest which will have to be repaid within the project period of approximately 5 years.

Unfortunately, this option does not take into consideration the fact that in addition to are loading up heavy debt service on the irrigable acreage, we will also be loading up Firebaugh lands with salt. Currently, Firebaugh produces approximately 2,500 acres of tomatoes, 13,000 acres of cotton, and approximately 2,500 acres of melons and honeydews. The production of these crops permits the growers within the Firebaugh service area to maintain agricultural viability. Within the 6,000 acres of CCID in Camp 13, typical crops include cotton, sugar beets, alfalfa and tomatoes.

Many of these crops are not salt tolerant. Therefore, the requirements to recirculate drainage water in these areas will result in taking out of production the tomatoes, cotton, melons, honeydews, alfalfa and sugar beets. About all that can be substituted for those crops would be grain and barley which are more salt tolerant and could grow for a time. However, grain and barley are not what we consider to be high value crops and the same growers who will now have substantially higher debt service placed upon their lands will have no economic means of retiring the debt service.

Dr. Burt has further advised us that recycling agricultural drainage water containing high TDS and other constituents cannot be sustained. The salt builds up on the land which then requires additional water to leach salt below the root zone; and the additional water being applied for this very purpose contains higher salts which adversely impacts the leaching objective. After a few years the land becomes so salty that salt intolerant crops won't even germinate and other crops will not reach maturity.

Financing Considerations.

Jeff Bryant, General Manager of the Firebaugh Canal Water District, reports that he continually receives calls from the agricultural lending departments of the Bank of America, Wells Fargo Bank, Bank One and Producers Cotton who want to know if any of Firebaugh's drain water is going to be recycled. He has been advised by agricultural lenders that crop and operating financing is not available when a water distributing entity recycles its drain water. Obviously, agricultural lenders realize that recycling drain water is the beginning of the end of the viability of the land to sustain irrigation.

Consequently, we are faced with an untenable situation: in order to recirculate all water within the District it is necessary to obtain financing for approximately $17 million to install pipelines and pumping plants; this debt service equals approximately $781 per acre exclusive of interest which must be assessed to each acre within Firebaugh service area; however, it is not feasible to enter into this project due to the fact that it is unlikely that Firebaugh can obtain financing. And, even if financing were available, the land cannot sustain the debt service because it is limited by salt buildup to low value crops.

The second area we will address is the Grassland Bypass Project for use of a section of the previously closed San Luis drain.

Firebaugh is a party, along with other entities, which have formed the Grassland Basin Drainage Management Activity Agreement. Pursuant to this agreement, a 28 mile section of the previously closed San Luis Drain is to be reopened to stop irrigation drainwater from flowing through channels used by privately held grassland wetlands within the Grassland Water District area. This project, known as the Grassland Bypass, was developed and agreed to by the Bureau of Reclamation and the San Luis and Delta Mendota Water Authority, which serves as the umbrella agency for the Grassland Drainers' drainage activities. The agreement will extend for five years, subject to review after the initial two years of operation.

The agreement establishes the mechanism by which agricultural drainwater tainted with salts will be carried by a concrete lined canal around the Grassland wetland areas and is then connected to Mud Slough which drains into the San Joaquin River.

Under the agreement, the following environmental commitments have been made:

- To develop a drainage entity under the San Luis Delta Mendota Water Authority among several of the Grassland Basin irrigation and drainage districts with authority sufficient to provide regional drainage management.

- To remove agricultural drainage flows from 93 miles of the Grassland Basin wetland channels, including Salt Slough, to free

them for delivery of fresh water supplies for refuges and privately owned wetlands through the Central Valley Project Improvement Act.

- To monitor the drainwater discharged into the San Joaquin River by not exceeding monthly and annual selenium loads established under the agreement with annual selenium load reductions.

- To operate the Grassland Bypass under a waste discharge requirement issued by the Central Valley Regional Water Quality Control Board.

- To develop a long-term regional drainage management plan.

The reopening of this section of the controversial San Luis Drain has been hailed by wildlife managers and the Grassland Water District as a project worthy of widespread support.

The economic commitment which the Districts must make are substantial. They were placed in the position having to agree at the outset to front capital costs and those costs associated with load reductions of selenium when they had no assurance that they would not be shut down in a very short period of time. Nevertheless, Firebaugh and CCID Camp 13 area along with the other members of the draining entities have undertaken that obligation. We would expect that the Regional Board will continue to work with these entities to achieve load reductions while, at the same time, maintaining agricultural viability within their service areas.

Economic Impacts on Human Beings.

It is generally recognized that an economic multiplier of 3.5 must be applied to every dollar's worth of agriculture production in order to take into account the impacts on the local area, the county, the region, and the state. Within the area served by Firebaugh and Camp 13 area of CCID there are several farm implement dealers: two Caterpillar dealers, a John Deere dealer, and a Case International dealer. There are at least two fertilizer companies in the area, and seed companies exist for every crop grown. There are at least two irrigation equipment companies in the area which carry everything from gated pipe, sprinklers, and siphon tubes to mainline pipes and other irrigation equipment.

Farm workers consist of a huge labor force which funds local housing, including hotels. The farm workers support local restaurants and stores. Furthermore, farm workers as well as farmers and agricultural water entities support new car and truck sales, vehicle repair shops and parts shops in the area.

These economic impacts upon human beings must be taken into consideration by the Regional Board. Establishing a drainage water quality discharge which cannot be met will result

in land fallowing, lost jobs, reduction of purchases to implement dealers, fertilizer dealers, seed companies, and irrigation equipment companies, not to mention impacts upon farm workers and their families.

Long-term Impacts - Land Fallowing.

Implementation of the stringent water quality standards placed upon discharges of agricultural drainage will result in land fallowing. This fallowing could commence immediately but it is likely that wide-spread fallowing will not occur for approximately 5 years. At that time the Regional Board should expect to see approximately 22,000 acres to be fallowed within Firebaugh, 35,000 within Panoche, 10,000 in Broadview, 4,000 in Pacheco, 3,000 in Charleston and 6,000 in CCID. Long-term impacts would be expected to spread to include San Luis Canal Company and Columbia Canal Company. The economic impacts associated with the loss of agricultural revenue from this acreage is mind boggling: Lost tax revenues to the county. Lost income taxes to the state and federal government. Lost property taxes to the county. Inability to support any of the agricultural support entities which we have discussed previously. The average annual gross crop value within the Exchange Contractors service area is between $1,000 to $1,500 per acre and in excess of 200,000 acres is farmed. It is generally accepted that farm work requires one full time farm worker per 80 irrigated acres. Consequently, we can readily see that the economic impact of fallowing just the service area of Firebaugh and 6,000 acres of CCID amounts to approximately $43 million per year of lost crop production; and assuming that the third party effect multiplier of 3.5 per each dollar of agriculture production is applied, the real economic impact is more like in excess of $150 million per year.

Additionally, we would fully expect that the fallowing of just this acreage alone would result in the loss of in excess of 350 full time farm working jobs.

The Regional Board cannot assume that its regulation of drainage will not have the economic impacts and environmental consequences on human beings that have been set forth here. The plan must conduct environmental review to determine the full nature and extent of these impacts.

For all of the reasons set forth herein, we believe that substantial adverse effects on human beings are likely and consequently, if the Regional Board is determined to adopt the Basin Plan's agricultural discharge standards, mandatory findings of overriding significance will

need to be adopted after the preparation of a much more comprehensive and detailed economic and environmental analysis as described above.

Very truly yours,

MINASIAN, MINASIAN, MINASIAN,
SPRUANCE, BABER, MEITH & SOARES

By _____
MICHAEL V. SEXTON

MVS/dr

CLEAN WATER ACTION

Board Members
Central Valley RWQCB
c/o William H. Crooks, Executive Officer
3443 Routier Road, Suite A
Sacramento, CA 95827-3098

April 17, 1996

VIA Facsimile and U.S. Mail

Subject: Comments on the amendments to the Water quality Control Plan for the Sacramento and San Joaquin River Basins (May 3, 1996 meeting)

Dear Board Members:

Clean Water Action vehemently opposes the proposed policy changes (on page 12, Table 4, lines e. and f.) as being completely unsubstantiated by science or environmental concerns.

One of the most obvious routes for discharge to the Ocean of accumulated salts is through a pipe to San Francisco which would utilize a projected crosstown tunnel. This route has been studied by the Central Valley Project. However, there has **never been a scientific and environmental study of the potential long term environmental effects on the ocean habitat of discharging large salt loads through the San Francisco Ocean Outfall**.

It is irresponsible to recommend that the best management of accumulated salts from agricultural irrigation is to dispose outside the basin when one of the most obvious disposal projects has not been studied for its affects on the marine environment. Clean Water Action raised environmental questions of ocean discharge of Central Valley salts in response to the proposed Environmental Impact Report of the Alternatives to Bayside Discharge produced by the City and County of San Francisco. None of our questions have yet been answered. We have never seen an environmental study by either San Francisco or the Central Valley RWQCB of the effects on the Ocean from the most likely point of discharge of your out-of-basin salts.

Please leave your old language at least in the policy changes -- even though that language is over-reaching in making an unsubstantiated recommendation for out of valley drainage.

The only real environmental solution is salt drainage prevention and fair market value retirement of land with toxic soil. Clean Water Action would be delighted to work with the regional board and agricultural interests to generate the funding needed for this superior and economically beneficial approach.

Sincerely,

Bruce Livingston
Wastewater Committee Chairman
Clean Water Action
(415)431-3430 (work number)

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(510) 779-7050

April 17, 1996

Mr. William Crooks, Executive Officer
California Regional Water Quality Control Board
Central Valley Region
3443 Routier Road, Suite A
Sacramento, CA 95827-3098

Dear Mr. Crooks:

The City of Antioch has been reviewing the documents prepared for the hearing on May 3, 1996, on a Basin Plan Amendment addressing agricultural subsurface drainage in the grassland watershed of the San Joaquin River Basin.

We believe that the selenium concentration will increase in the San Joaquin River due to the use of the San Luis Drain and while this may improve water quality in the grasslands channels, it will certainly decrease water quality in the San Joaquin River. This directly affects our treated water customers and all the other public and private water agencies utilizing the Contra Costa Canal as our primary water source.

I am aware of the total maximum daily load proposed for selenium; however, industry in the Bay Area is not allowed to discharge in this manner and neither should the agriculture industry. Removing land from production is the only economical solution to this problem. The State has allowed irrigation of hazardous lands, and it should be stopped. We cannot continue to grow cotton at the expense of our public's health.

We urge the Board to adopt a zero discharge policy and remove all hazardous lands from production.

Thank you for the opportunity to comment on the Proposed Basin Plan Amendment.

Very truly yours,

STANFORD E. DAVIS, P.E.
Director of Public Works

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SED/sml
cc: Mayor and City Council
City Manager
City Attorney

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State of California

Memorandum

TO : William H. Crooks
Executive Officer
Central Valley Regional Water Board

DATE: APR 17 1996

Jesse M. Diaz, Chief
Division of Water Quality

FROM : **STATE WATER RESOURCES CONTROL BOARD**
901 P Street, Sacramento, CA 95814
Mail Code G-8

SUBJECT : REVIEW OF PROPOSED AMENDMENT TO THE WATER QUALITY CONTROL PLAN FOR THE SACRAMENTO RIVER AND SAN JOAQUIN RIVER BASINS CONCERNING THE CONTROL OF AGRICULTURAL SUBSURFACE DRAINAGE DISCHARGES

Thank you for the opportunity to review the March 1996 Staff Report on the subject amendment. The following staff comments from the Division of Water Quality and the Office of the Chief Counsel make reference to page numbers of the Regional Water Board staff report on the proposed amendment.

1. "Limited Beneficial Use" Terminology (p.18)

   The term "L", for "Limited Beneficial Use", is introduced in Table II-1, but is not well defined. A brief description or example of a "Limited Beneficial Use" should be added to the narrative text under "Surface Waters" on page 16.

2. Hydrologic Unit Number (p.19)

   The hydrologic unit number should be included with the Grassland Watershed in Table II-1 in order to simplify finding Mud and Salt Slough on a surface water map and to provide consistency with other surface water bodies and beneficial uses. The hydrologic unit number corresponding to the Grassland Watershed is 541.20.

3. San Joaquin River Subsurface Agricultural Drainage (p. 26 and 27)

   The staff report states that the prohibition of discharge of agricultural subsurface drainage water to Salt Slough, Wetland Water Supply Channels, and

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Mud Slough (North) may be reconsidered if a separate Conveyance Facility or bypass channel to convey agricultural subsurface drainage to the San Joaquin River is not implemented. Since the basin plan mentions both a valley-wide drain and a grasslands bypass channel, it is not clear which of these, or either, would satisfy this reference to a "bypass channel". This should be clarified.

4. Water Quality Objectives (p. 29)

   a. Table IV-4 provides selenium water quality objectives and performance goals based on a schedule of compliance to meet the objectives. We recommend that both maximum and continuous objectives be listed in this table to be consistent with Table 3 of the Draft March 1996 Executive Summary of the proposed Amendments (page 11). Table IV-4 gives the impression that, prior to the date of compliance with continuous objectives, no objectives apply, while the "maximum" objective is in effect proposed to serve as the continuous objective during this period. The table should be revised to make this clear.

   b. The terms "average" and "mean" are used interchangeably. One of these terms should be used consistently in Tables IV-4 and III-1.

5. Selenium Load Reduction Milestones (p.30)

   While the text states that "Selenium load reduction milestones will be incorporated into waste discharge requirements as effluent limits", the basin plan amendments are silent as to what these milestones will be. Under the section titled "Regional Water Board Prohibitions" (page 26), agricultural subsurface drainage discharge of selenium is prohibited in amounts exceeding 8,000 lbs/yr. The Basin Plan should make clear whether this amount will be changed over time using scheduled milestone reductions and whether limiting selenium loads to 8,000 lbs/yr will be protective of beneficial uses for downstream reaches for the San Joaquin River. In addition, anticipated selenium water quality parameters (e.g., concentrations/impacts) that are likely to be associated with the levels of discharge should be specified.

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If you have any questions on this subject, please call me at 657-0756. You may also contact Bob Ford, the staff person assigned to this issue, at 657-1117, or Paul Lillebo, Chief of the Basin Planning Unit, at 657-1031.

Grassland Water District

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April 19, 1996

Mr. William H. Crooks, Executive Officer
California Regional Water Quality Control Board
Central Valley Region
3443 Routier Road, Suite A
Sacramento, CA 95827-3098

Subject: **Comments of Grassland Water District / Grassland Resource Conservation District on March 1996 Draft Report, Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins**

Dear Mr. Crooks:

The Grassland Water District (GWD) and Grassland Resource Conservation District (GRCD) appreciate the opportunity to comment on the above referenced draft report. Our specific comments are as follows:

Proposed Selenium Objective for Wetland Water Supply Channels

The GWD strongly supports the proposed 2ppb selenium objective for the wetland water supply channels identified in Appendix 1.

As is stated in the report the amount of water available to Grasslands and the refuges for wetland management has increased considerably since the Basin Plan Amendment of 1988. The report correctly notes that due to the increased wetland water supplies brought about by the 1992 Central Valley Project Improvement Act (CPVIA), the plumbing modifications made within the Grassland Basin during the late 1980's to segregate freshwater from drainwater can no longer provide adequate wetland protection. The task of assuring this protection has clearly been placed with the wetland managers who, on numerous occasions during the last several years, have been forced to delay or abandon critical wetland water deliveries because the system was overburdened by contaminated drainwater.

In this regard it should be noted that the amounts of water allocated for wetland areas within the Grasslands watershed both pre and post CVPIA were and are substantially more than the amounts indicated on page 10 and again on page 60 of the report. Prior to CVPIA the Report on Refuge

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Water Supply Investigations, USBR, March 1989, had identified existing firm supplies for those refuges impacted by drainwater (GRCD, Los Banos WMA, Kesterson NWR & San Luis NWR) of 59,700 acre feet per year. This amount was augmented by an additional 40,000 AF annually when water authorized by the 1954 Grasslands Act was called upon by the refuges.

With the enactment of the CVPIA, full Level 4 supplies for these same wetland areas plus water supplies for those new refuge lands acquired partly as mitigation for Kesterson Reservoir will, by the year 2002, total 256,000 acre feet — not 180,000 acre feet as stated in the report. The amount scheduled for delivery to these areas during the 1996 water year is nearly 210,000 acre feet.

These revised allocation numbers effectively serve to underscore the need for adequate protection of the wetland supplies and lend further support, we believe, for the adoption of the 2ppb selenium objective for the wetland water supply channels.

Sincerely,

Don Marciochi, General Manager
Grassland Water District

DM:mc

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Harvey E. Bragdon
Director of Community Development

April 17, 1996

Mr. Karl Longley
California Regional Water Quality Control Board
Central Valley Region
3443 Routier Road, Suite A
Sacramento, CA 95827-3098

RE: Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins for the Control of Agricultural Subsurface Drainage Discharges

Dear Mr. Longley:

Contra Costa County has a vested interest in the management of agricultural wastes from the San Joaquin Basin as county residents depend on the San Joaquin River and Delta, the receiving waters for current and proposed Central Valley discharges, for drinking water, industry, recreation, and tourism. We have a number of concerns with the proposed amendments to the Basin Plan as they pertain to the maintenance of downstream water quality, and we are pleased to have this opportunity to address our comments to you.

While some of the proposed changes to the Basin Plan constitute significant improvements to the regulation of agricultural wastes, many proposed amendments would not adequately protect water quality and many existing Basin Plan policies which should be amended are left intact. Contra Costa County has submitted comments on the proposed Basin Plan amendments throughout their development, and while we have seen some improvements, our fundamental concerns remain the same. We continue to recommend that the Regional Board:

- eliminate policy statements which endorse a valley-wide drain to the Delta
- accelerate compliance with water quality objectives
- strengthen implementation measures to guarantee water quality improvements

These suggestions are explained in greater detail below.

Valley-wide Drain: Contra Costa County fundamentally opposes construction of an isolated drain to the Delta and we are disturbed by statements in the Basin Plan advocating such a facility. Policy (f) specifically endorses a valley-wide drain as "the best technical solution to the water quality problems of the San Joaquin River and Tulare Lake Basins." We strongly disagree. Constructing

a valley-wide drain does not solve a water quality problem, it simply transfers that problem somewhere else. Since the Delta remains the only plausible site for a drain terminus, and since Delta waters are pollution-impacted, ecologically fragile, and relied upon by large portions of the state for drinking water, we believe that policy (f) advocates a particularly ill-advised means of dealing with the agricultural drainage problems of the San Joaquin Basin. With many large-scale efforts underway to repair the broken Bay-Delta system, most notably CVPIA and the CALFED Bay-Delta Program, policies which advocate further degradation of this important resource are indefensible, particularly when they originate from an agency which is responsible for protecting water quality.

We believe that endorsement of a valley-wide drain contradicts Basin Plan policy (g) which states that "the optimization of beneficial uses on a watershed basis will guide the development of actions to regulate agricultural subsurface drainage discharges." We are not satisfied that water quality concerns in the Delta portion of the San Joaquin watershed were given adequate consideration in the decision to advocate a valley-wide drain and do not believe that discharging wastes from the Tulare Lake Basins to the Delta would be consistent with a watershed approach to drainage management. Likewise, Basin Plan policies (e) and (f) contradict existing State Water Resources Control Board policies, namely the Mass Emissions Strategy adopted by the SWRCB in 1990 in its Pollutant Policy Document which calls for reductions in the mass emissions of pollutants in water bodies where beneficial uses are degraded.

Constructing a valley-wide drain is not only bad water policy, it is also unnecessary. The San Joaquin Valley Drainage Program's 1990 Management Plan for Agricultural Subsurface Drainage found that in-valley options would provide adequate management of salts for fifty years or longer. The calculations presented in Appendix B of your August 1995 staff report on water quality objectives and compliance time schedule demonstrates that such alternatives to out-of-vallery export as source control measures, passive water table management, and land retirement can significantly reduce drainage discharges. Finally, if the effluent from the proposed drain had the reduced level of toxicants mandated by policy (f), then we believe there would be no reason for building a drain at all.

Compliance Schedule for Water Quality Objectives: While we are pleased that the Basin Plan amendments would tighten many of the numerical standards for selenium in the San Joaquin Basin, we believe that postponing mandated compliance with the standards for the San Joaquin River (which are only marginally different from the standards that should have been enforced in 1991) 10 or 15 years will not generate the swift improvements in water which are both possible and necessary. We believe that Potential Control Action 6 on page 26 should be rewritten with much earlier compliance dates (5 years or less) that reflect the San Joaquin River's history of poor water quality as well as the current availability of drainage management strategies which could generate rapid improvements. An assessment of drainage strategies in Appendix B of your August 1995 staff report on water quality objectives and compliance time schedule predicts that drainage effluent from the Grasslands watershed could be reduced to levels below those necessary to meet water quality objectives if a system of improved irrigation, passive water table management, and land retirement were implemented. The calculations presented there indicate that only 12% of the total tile-drained lands

in the watershed would be retired or dedicated to water table management--an amount that is slightly less than the amount of land within the entire watershed (drained or not) which is fallowed during a drought.

Implementation Measures: We welcome the adoption of the Waste Discharge Requirement as well as many of the other proposed changes to the implementation element of the Basin Plan, but we do have a number of specific concerns. We believe that the implementation plan must address the provision of Policy (e) on page 18 which states that "the San Joaquin River may continue to be used to remove these salts from the basin so long as water quality objectives are being met." Water quality objectives in the river are not being met at the present and the proposed load reductions to be contained within Waste Discharge Permits will not achieve compliance with water quality objectives for 10 or 15 years. The implementation plan must address this violation of Basin Plan policy.

Prohibition (c), which would ban discharge to Mud Slough and portions of the San Joaquin River unless an isolated conveyance facility is constructed to transport drainage below the confluence with the Merced River, should be eliminated. Further extension of the San Luis Drain accomplishes nothing other than to transport pollution problems further downstream. We also recommend adjusting the 8,000 lbs./year limit for selenium form the Grasslands (Prohibition (d), page 29) to at least match the 7,096 lbs./year limit which the draining parties have agreed to in their plan to use a portion of the San Luis Drain.

Finally, we believe that the implementation plan must make the penalties for non-compliance with the water quality objectives explicit. Control Action (1) related to the State Water Board states, "The Regional Board will request that the State Water Board use its water rights authority to preclude the supplying of water to specific lands, if water quality objectives are not met by the specified compliance dates and Regional Board administrative remedies fail to achieve compliance." We recommend that the language of this Control Action be changed to cause the Regional Board to request the withholding of water by the State Board if water quality objectives are not met regardless of the success or failure of Regional Board administrative remedies. We contend that if water quality objectives are not met by the compliance date that the Regional Board's administrative remedies have failed.

Thank you for providing us with this opportunity to comment on the proposed Basin Plan Amendments. If you have any questions regarding our comments, please call John Kopchik at (510) 335-1227.

Sincerely,

Harvey E. Bragdon
By Charles A. Zell

Harvey E. Bragdon
Director of Community Development

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April 17, 1996

Karl Longley, Chairman and Board Members
Central Valley Regional Water Quality Control Board
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RE: Basin Plan Amendment Addressing Agricultural Subsurface Drainage in the Grassland Watershed of the San Joaquin River Basin

Chairman Longley and Board Members:

Thank you for opportunity to comment on the Basin Plan Amendment. While I appreciate the complexity and difficulty of the problems facing you and your staff, I and recognize the hard work that has gone into the Basin Plan amendment, I nevertheless have some serious concerns:

General Comments

The staff report declares that in the 7 years since 1989, when the last Basin Plan was adopted, the selenium contamination picture of the San Joaquin River and its tributaries is worse today than it was then. Staff notes with what appears to be regret that the water conservation measures implemented during the drought and afterwards, reduced the surface runoff which had previously diluted some of the toxic selenium loads in agricultural drainage to the river. Thus the selenium levels are still at roughly the same horrendous levels as in 1989 i.e.: monthly mean concentrations exceeding 8ug/L in three out of 12 months downstream of the Merced River confluence with the San Joaquin. This continuing poisoning of public trust resources is a tragedy and a disgrace for San Joaquin River, the Central Valley as a whole and for the State of California. This destruction of public trust resources is the basis of the Public Trust Complaint, recently filed with the State Water Resources Control Board (SWRCB) by

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Table 5 Prohibitions

a. The only agricultural drainage that will be prohibited will be NEW drainage. Dischargers already in place can continue to use the San Joaquin River and its tributaries as sewers under the agreement to reopen a portion of the San Luis Drain. There will be no improvement in San Joaquin salt loading for 5 years. After that, there are only water quality objectives and "GOALS" not enforceable standards. Another clear weakening.

b.The staff report claims that there will be a "prohibition" of drainage to Salt Slough and wetland water supply channels. This is a ruse. The "prohibition can be lifted, unless the drain is completed.

c. The same comment for the "prohibition" for agricultural sewage discharged to Mud Slough and the San Joaquin River from Sack Dam to the Merced River. Infusions of fresh water from the Merced will dilute the San Joaquin River, making up for the 98% flows taken by Friant Dam. There is no discussion of the unfairness of taking flows from the Merced, Tuolomne and Stanislaus to meet the standards at Vernalis, part of the complaint by Felix Smith.

d. The staff report recommends allowing the loading of 8,000 pounds a year of selenium to the San Joaquin River. This amount is 2,000 pounds MORE than the 6,000 pounds per year agreed to by the Bureau and the Delta Mendota Water Authority. I demand to know why the Regional Board is proposing even weaker requirements than the discharger has proposed?

Table 6. Proposed Changes in Control Actions

2. Why does the Regional Board not act NOW to secure compliance with the 2ug/L standard?

4. Why has the Upper Panoche Watershed been removed from consideration as being a high priority non-point source problem? It is still a disaster area.

Other Entities:

Why does the report make no mention of the program for the retirement of lands whose soils are loaded with toxic selenium?

Table 7. Proposed Changes to Cost Estimates

There is no explanation of why "wildlife areas" are removed from consideration for cleanup costs.

Table 8. Proposed Changes to Surveillance and Monitoring

Felix Smith. He is the retired fisheries biologist with the United States Fish and Wildlife Service (The Service) the hero of the Kesterson National Wildlife Refuge scandal.

Inadequate Selenium Standards for the San Joaquin River

The proposed Basin Plan amendment specifically excludes consideration of anything but selenium as a constituent problem for the Grasslands area . Meanwhile, the Regional Board currently has NO selenium standard. Staff now proposes to adopt the standard of 5ug/L, in the face of recent, validated, scientific data from the U.S. Fish and Wildlife Service, clearly showing that a standard of 2 to 5 ppb does not protect sensitive species. Concentration-based standards also do not take into account the bioaccumulative impacts of selenium proven by the devastation of wildlife at Kesterson. It is therefore your obligation under Porter Cologne to adopt the more restrictive standard of 2ppb to protect beneficial uses.

Table 4 Proposed Changes to the Policies

Most of these changes are consistent weakenings of former policies:

b. Staff recommends language which says: "Activities that increase the discharge of poor quality agricultural drainage will be DISCOURAGED" rather than prohibited - clearly a serious change, weakening already inadequate enforcement.

e. The staff report recommends agribusiness drainers continue to use of the pitiful remnant of the San Joaquin River to dilute selenium and other toxics. Worse the staff report says that this practice can continue "so long as water quality objectives are met". I protest this statement. The water quality objectives have not been met for over 12 years and it is disingenuous to mention meeting water quality objectives in light of the sorry enforcement record of the Central Valley Regional Water Quality Control Board.

f. The staff report reiterates the claim, previously made by the Regional Board, that the San Luis Drain is the best solution to the salt problem in the Central Valley but the report nowhere makes reference to other alternatives such as the program of land retirement for selenium laden soils. The report does not mention the fact that the Bureau is going forward with applications for a waste discharge permit for the San Luis Drain completion from the SWRCB. The Bureau, following the lead of the Regional Board staff, is making no reference as to where the drain is proposed to discharge. However, the Bureau is requesting the State Board to grant the Bureau a dilution zone and one can surmise that the Bay/Delta is still the discharge of choice for the Bureau and perhaps for the Regional Board?

The series of benign statements under this title only serve to underscore the general weakness of the Regional Board's approach to the serious and immediate pollution crisis in the san Joaquin River. In addition, since neither EPA nor USGS has yet signed off on the monitoring program proposed by the Bureau and the Delta Mendota Water Authority, there can be no clear public understanding of what the monitoring program is to consist of and who will oversee the historic lack of Regional Board enforcement.

I respectfully request that your board carefully review the proposed Basin Plan Amendment and rework it with your staff to create a document of which we can all be proud. In its present form, the staff report is a great disappointment to all who fought the Kesterson pollution and who care about restoration of public trust resources in what is left of the San Joaquin River.

Thank you.

SWRCB chairwoman 1979-1982

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April 16, 1996

William H. Crooks, Executive Officer
Regional Water Quality Control Board
3443 Routier Rd., Suite A
Sacramento, CA 95827-3098

Dear Bill:

I have reviewed the draft staff report dated March 1996 on the "Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins for the Control of Agricultural Subsurface Drainage Discharges." The following are my comments on various aspects of the report.

A summary of developments since the State Water Board approved the existing basin plan amendment in 1989 are listed on pages 10 and 11. The first one states "although water conservation measures have been implemented, selenium loads are at the same level as in 1989." This statement is extended on page 5 of the executive summary. "Studies conducted for the Regional Board show that irrigation efficiency has improved in the drainage problem area. However, although selenium loads decreased by 66 percent between water year (WY) 1989 and WY 1992, they increased in WY 1993 and remained elevated in WY 1994. Selenium loads in WY 1994 were similar to those in WY 1989, when the Basin Plan amendment was adopted. The increase in load in WYs 1993 and 1994 occurred despite continuing increases in irrigation efficiency." One conclusion which can be drawn from these statements is that the selenium loads to the San Joaquin River are not well correlated with irrigation efficiency, at least as efficiency has been defined.

The attached figure illustrates the measured system losses of selenium between the monitoring sites south of the Grassland Water District and the monitoring sites located within mud and salt sloughs. This figure was taken from a report prepared by the U.S. Bureau of Reclamation relative to the Grassland Bypass Channel project. I note a correlation between the annual selenium in-transit losses and selenium loads to the San Joaquin River as quoted above. Specifically, there was a decrease in selenium loads between 1989 and 1992 and then an increase in 1993 and 1994. The selenium loads in 1994 were similar to those in 1989. One can observe from the figure that the selenium in-transit losses were similar in 1989 and 1994 and that there was the greatest amount of selenium losses in 1992 which represented the year with the least load.

One conclusion that might be drawn from these results is that reductions in selenium load to the San Joaquin River might best be accomplished by understanding and promoting the mechanisms which contribute to in-transit loses since they seem to be well correlated with the selenium loads to the

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River. On the other hand, while improved irrigation practices undoubtably contribute to reduced selenium loads, they seem to have less impact.

Item 8 on page 11 of the report states "The need to consider agricultural water management on a watershed basis as proposed in the SJVDP Management Plan." This thought is repeated as a policy statement on page 82 "Optimizing protection of beneficial uses on a watershed basis will guide the development of actions to regulate agricultural subsurface drainage discharges." This consideration is enforced by the statement "those actions which lead to the greatest improvement in the watershed as a whole should be given priority."

The Grasslands watershed can be broadly categorized as containing agricultural lands and wetlands, therefore, to consider the watershed as a "whole" the coordinated management of agriculture and wetlands should be considered to optimize the protection and achievement of water quality goals in the San Joaquin River. The Porter-Cologne Water Quality Control Act specifies that development of water quality objective requires economic considerations. It is possible that the social net benefits might be higher if the costs were distributed in an optimal manner between the agricultural and wetland segments of the watershed. Furthermore, more reliable estimates on the costs, impacts, and benefits associated with various managements alternatives are needed.

I believe it is important to recognize what is known and what is not known. The following represents what I consider to be known and unknown.

Prior to Kesterson Reservoir, agricultural subsurface drainage waters were comingled with surface waters which were not only passed through the Grassland wetlands but also purposely used for creating wetlands and serving duck clubs, etc. The selenium loads entering and leaving the wetlands prior to entering the San Joaquin River are unknown and unfortunately will never be known. The impacts of using drainage waters in the wetlands on wildlife is unknown. However, to the extent damage to wildlife was occurring, it was not sufficiently great to be readily visible to those frequenting the wetlands.

With the advent of bird damage at Kesterson Reservoir, agricultural subsurface drainage waters were channelized through the Grassland wetlands and were no longer used as a water supply. It is known, based on the data presented in the figure, that flowing drainage water though the channel reduced the selenium load arriving at the San Joaquin River every year except for one. The disposition of the in-transit selenium losses is unknown. Impacts of flowing the drainage water through the channels on wildlife is also unknown. It is known that flowing the water through the channels had a positive effect on the water quality in the San Joaquin River during several years.

The present proposal gives absolute guaranteed protection to the wildlife in the Grasslands wetlands. Any protection to the San Joaquin River afforded by the Grassland wetlands for selenium remediation

is lost. Entire economic costs of protecting the San Joaquin River is placed on the agricultural community. The extent of these costs and the degree to which the San Joaquin River can be protected by agricultural management adjustments are both unknown.

Lest I be accused of being a defender of agriculture at the expense of the environment, I would point out that I consider the San Joaquin River and all water bodies into which the San Joaquin River flows as being extremely important. Indeed, protection of these waters is as important as protection of the Grassland wetlands. I am merely proposing that an entire system analysis leading to optimal protection of all waters as related to a beneficial agricultural activity should be considered.

Table 6 on pages 87-89 outline the proposed changes to control actions governing the regulations of agricultural subsurface drainage discharges into the San Joaquin Valley. The following is my reaction to some of them.

1. "In developing control actions for selenium, the Regional Board would utilize a priority system which focuses on a combination of sensitivity of the beneficial use to selenium and the environmental benefit expected from the action." I do not believe that the proposed action focuses on the combination of sensitivity of beneficial uses and the environmental benefit which can be definitely expected.

2. "Control action which results in selenium load reduction are most effective in meeting water quality objectives." I completely agree with this but the present plan ignores the opportunity for selenium load reduction by using the wetlands. Indeed, recent history suggests that load reductions in the wetlands are far more effective than load reductions which have been achieved by irrigation management. I do not suggest, however, that irrigation and drainage management should not be pursued to a greater extent than presently adopted.

3. "With the uncertainty in the effectiveness of each control action, the regulatory program will be conducted as a series of short-term actions that are designed to meet long-term water quality objectives." I do not believe the proposal is consistent with this statement.

9. "Public and private managed-wetlands will participate in the program to achieve water quality objectives." This item appears to be completely ignored in the proposal.

In conclusion, the Board had an extremely difficult and complex task to develop a water quality control plan to protect the Sacramento River and San Joaquin River basins. The task is greatly enlarged by the inadequacy of reliable scientific and economic analysis upon which to make recommendations. The crux of the matter is that the proposed amendments give a one hundred percent guaranteed protection to wildlife in the Grassland wetlands without adequate documentation on the impacts of alternative management plans. The entire environmental system, not only the

Grassland wetlands, deserves protection. All water bodies should share in the benefits and costs associated with unavoidable water quality degradation.

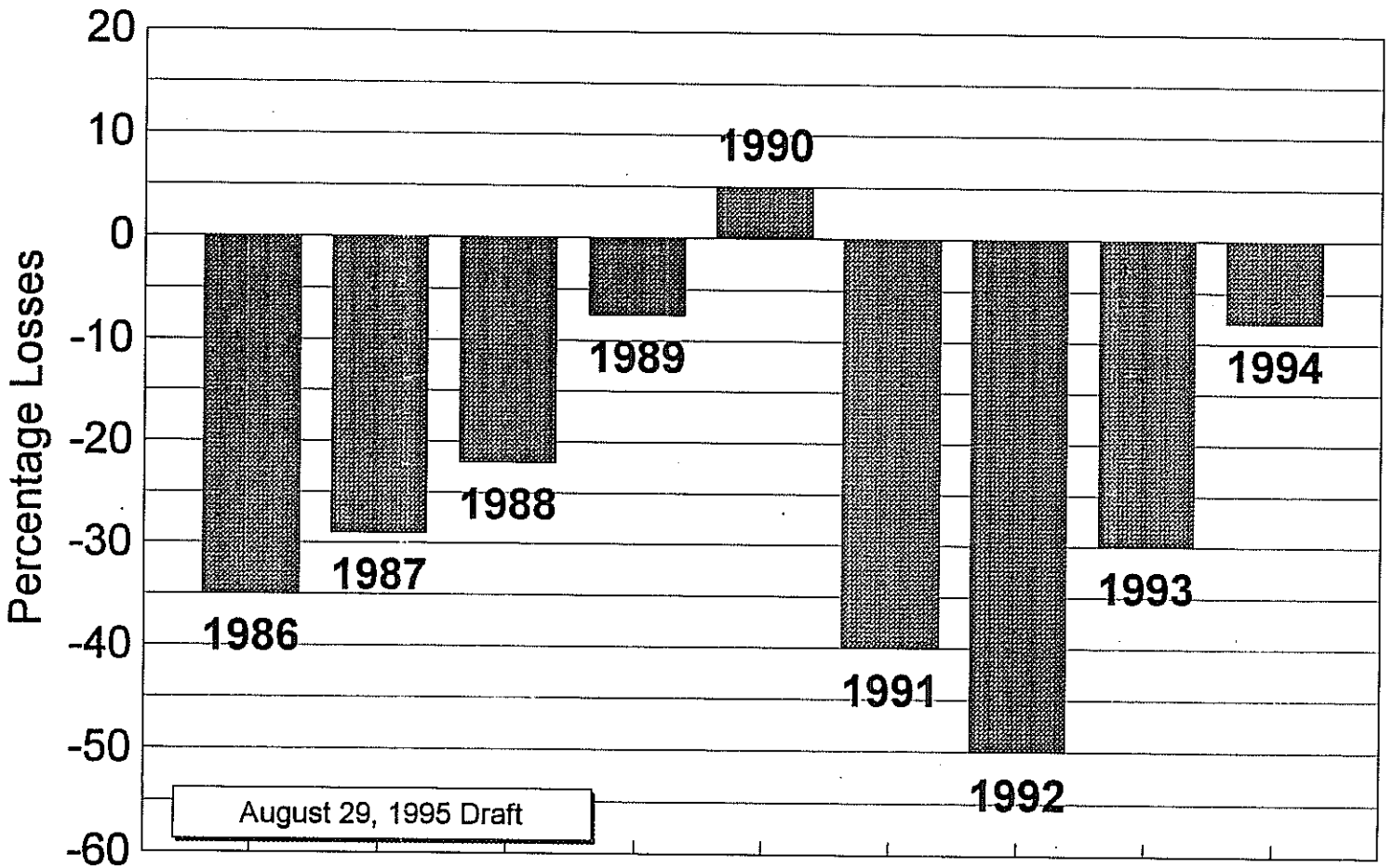
I seriously request that the Board give further consideration before adopting the proposed amendments. I should also point out that even though I am a faculty member of the University of California, all of the opinions expresses are personal opinions and do not represent an official University of California position.

Sincerely yours,

J. Letey
Associate Director

Enclosure

Year to Year Variation in Se In-Transit Losses



The Bay Institute
of San Francisco

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April 17, 1996

Karl E. Longley, Chair
Central Valley Regional Water Quality Control Board
3443 Routier Road, Suite A
Sacramento, Ca. 95827-3098

RE: BASIN PLAN AMENDMENTS FOR THE CONTROL OF AGRICULTURAL SUBSURFACE DRAINAGE DICHARGES

Dear Mr. Longley,

This letter is submitted as the comments of The Bay Institute of San Francisco, the Environmental Defense Fund (EDF), and the Natural Resources Defense Council (NRDC) on the March 1996 draft amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins for the control of agricultural subsurface drainage discharges.

The Bay Institute, EDF, and NRDC support the following elements of the draft amendments to the Basin Plan:

1. Policies and control actions that focus on selenium load reduction as the preferred approach for regulating selenium discharges.

We agree that load reductions are the appropriate mechanism for assuring compliance with water quality standards for the following reasons:

- load reductions are required to implement federal Clean Water Act requirements for a Total Maximum Daily Load on this segment of the San Joaquin River;

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- load reductions are necessary to protect against adverse environmental effects downstream of the discharge point due to bioaccumulation, in addition to achieving the concentration-based water quality standard.

2. Prohibition of discharge and issuance of waste discharge requirements with enforceable effluent load limits to achieve load reductions.

The Basin Plan amendments properly identify prohibition of discharge and issuance of waste discharge requirements with enforceable effluent load limits based on total maximum daily load calculations as essential elements for regulation of agricultural subsurface drainage. In addition to ensuring adequate protection of beneficial uses, explicit limitations also provide dischargers with certainty regarding allowable discharges.

As noted below, we continue to be concerned about the 10 -15 year time schedule for compliance with water quality objectives through phased load reductions enforced in the WDRs. We are also concerned that the wet year load calculations may overestimate the assimilative capacity of receiving waters for a trace element with bioaccumulative properties.

3. Promotion of economic incentives to control drainage discharges.

We agree that economic incentives can provide an equitable, cost-effective and environmentally protective method for reducing drainage discharges, in conjunction with other measures.

The Bay Institute, EDF, and NRDC oppose the following draft amendments to the Basin Plan:

1. Establishment of a 10 - 15 year schedule for compliance with water quality standards in Mud Slough (north) and the San Joaquin River.

The 10 - 15 year compliance schedule will allow for serious long-term degradation of water quality in Mud Slough (north) and the San Joaquin River, in violation of federal and state antidegradation requirements. A shorter compliance schedule is consistent with national implementation of federal Clean Water Act discharge requirements and is feasible using currently available technologies and management strategies. Not only should regulatory requirements drive the development of compliance mechanisms, but in this case

necessary selenium load reductions can be met now with available solutions in all but the driest years. We therefore urge the Board to adopt a more timely schedule for compliance (e.g., no longer than the 5 - 7 year period identified in Alternative 4).

2. Use of 5 part per billion (ppb) and 8 ppb monthly mean performance goals.

These "performance goals" are not adequate as implementation measures during the period leading to full compliance with water quality objectives. The 5 ppb and 8 ppb monthly mean performance goals are scientifically unjustified because they do not prevent chronic toxicity and therefore fail to provide adequate protection to beneficial uses. As a result, the U.S. Environmental Protection Agency disapproved their adoption as Basin Plan objectives. They are also unnecessary as performance goals; the load reductions to be specified in enforceable effluent limits provide a better measure of progress toward compliance. We also continue to recommend adoption of a 2 ppb water quality objective for selenium as necessary to prevent degradation of beneficial uses from bioaccumulation effects. This objective should apply, at a minimum, to all waters that may be used to supply wetland areas.

3. Omission of appropriate beneficial use designations for Mud Slough (north), Salt Slough, and the Grassland wetland channels.

BIOL should be identified for Mud Slough (north) because of periodic inundation of adjacent protected state and federal wildlife areas by the waters of Mud Slough. COLD, MIGR, and SPWN (cold) should be identified as potential uses of Mud Slough (north) and Salt Slough because of potential changes in habitat quality as a result of reoperation of Friant Dam under the Central Valley Project Improvement Act and/or under the upcoming State Water Resources Control Board (SWRCB) water rights decision to implement the 1995 Water Quality Control Plan for the San Francisco Bay-Delta estuary. RARE should be identified for all sections of the Grasslands watershed because of the presence of threatened and endangered plant and animal species, including the federally protected Aleutian Canada goose.

4. Policies that promote out-of-valley export of agricultural subsurface drainage.

Policies e and f should be deleted as inconsistent with the findings of the SWRCB's 1990 Pollutant Policy Document for the Bay-Delta estuary that reductions in the mass emissions of pollutants must occur in water bodies where

beneficial uses are degraded, and with the findings of the San Joaquin Valley Drainage Program's 1990 Management Plan for Agricultural Subsurface Drainage that economicaly or environmentally feasible options for export do not exist at the present time, and that in-valley options would provide adequate management of salts and other drainage constituents for fifty years or longer.

*

The comments above summarize many of our major concerns regarding the draft Basin Plan amendments. These and related concerns, most of which are still relevant, have been more fully discussed in comments previously submitted to the Board. Accordingly, we wish to incorporate the following documents by reference: the December 8, 1994, comments of EDF regarding previous Basin Plan amendments; the July 6, 1995, comments of The Bay Institute, EDF, and NRDC regarding the beneficial uses and water quality criteria; the October 2, 1995, comments of The Bay Institute regarding the water quality objectives and implementation plan; the October 4, 1995, comments of EDF regarding the water quality objectives and implementation plan; and the December 7, 1995, comments of The Bay Institute, EDF, and NRDC regarding the compliance time schedule.

Sincerely,

Gary Bobker
The Bay Institute of San Francisco

Terry F. Young, Ph.D.
Environmental Defense Fund

Hal Candee
Natural Resources Defense Council

State of California

Memorandum

To : Rudy J. Schnagl, Chief
Agricultural Unit
California Regional Water Quality
Control Board - Central Valley Region
3443 Routier Road, Suite A
Sacramento, California 95827-3098

Date : April 18, 1996

Place :

From : **Department of Pesticide Regulation** - 1020 N Street, Room 161
Sacramento, California 95814-5624

Subject : COMMENTS ON AMENDMENTS TO BASIN PLAN

Thank you for the opportunity to comment on the proposed Basin Plan amendment addressing agricultural subsurface drainage in the Grassland watershed as presented in the March 1996 draft staff report. Below are suggested revisions to the proposed amendment and rationale for such revisions.

Suggested Revisions to Implementation Chapter

Page 26, Regional Water Board Prohibitions, Paragraph 6, "San Joaquin River Subsurface Agricultural Drainage." Subparagraphs b. and c. should be revised to read "...unless water quality objectives *for selenium* are being met...."

Page 27, Subsurface Agricultural Drainage, Paragraph 1. The text should be revised to read "...if water quality objectives *for selenium* are not met...."

Page 30, Agricultural Drainage Discharges in the San Joaquin River Basin, Paragraph 7. The text should be revised to read "...will be applied to the discharge of *selenium with* subsurface drainage water from the Grassland watershed...," and, "...equal to the receiving water objectives *for selenium* to ensure that beneficial uses are protected...."

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Rationale

Clearly the goal of these amendments is the control of selenium discharges, as stated in the Introduction and Background section (page 1). In fact, that section suggests that other problem toxicants (i.e., boron and salt) will be addressed in a subsequent amendment. The project description provided in the California Environmental Quality Act Review section (page 109) also makes it clear that this action focuses on selenium. The only water quality objective to be changed with these amendments is the selenium objective. Therefore, proposed changes in the implementation chapter should be specific to selenium as well.

Our concern is that without this specificity the Regional Board may be compelled to prohibit discharges of water in which water quality objectives for pesticides are exceeded. We maintain that the process outlined in the draft Management Agency Agreement between the Department of Pesticide Regulation and the State Water Resources Control Board and its companion document, the Pesticide Management Plan, provides a more consistent and efficient method for addressing such discharges.

Thank you for your consideration. If you have any questions on these comments, please contact Marshall Lee, of my staff, at (916) 324-4269.

John S. Sanders

John S. Sanders, Chief
Environmental Monitoring and
Pest Management Branch
(916) 324-4100

Center for Marine Conservation

April 16, 1996

Board Members
Central Valley RWQCB
c/o William H. Crooks, Exec. Officer
3443 Routier Road, Suite A
Sacramento, CA 95827-3098

VIA FACSIMILE AND U.S. MAIL

Re: Comments on the Amendments to the Water Quality Control Plan for the Sacramento and San Joaquin River Basins (May 3, 1996 Meeting)

Dear Board Members:

The Center for Marine Conservation (CMC) is a national, nonprofit citizens organization dedicated to the conservation of marine species and their habitats. CMC has over 20,000 members in the state of California alone. CMC welcomes this opportunity to comment on the proposed Amendments to the Water Quality Control Plan for the Sacramento and San Joaquin River Basins (Basin Plan).

CMC strongly objects to the Regional Board's policy of encouraging the export of agricultural, municipal, industrial and other wastewater out of the region and into San Francisco Bay or the ocean. See Table 4, page 12 of the Executive Summary to the draft report, "Amendments to the Water Quality Control Plan for the Sacramento and San Joaquin River Basins" (March 1996) (Report).

In particular, CMC objects to the recommendation that the region's long-term wastewater management plan should consist of a "valley-wide drain to carry . . . wastewater high in salt and unfit for reuse that is generated by municipal, industrial, agricultural, and wetland management activities." Report at 12. Though the Report does not mention the ultimate destination of this wastewater, the Tulare Lake Basin Staff Report dated August 17, 1995 (Staff Report) describes the destination of this wastewater tunnel as the "Bay-Delta area." Staff Report at 57.

It has been proposed regularly over the years to send Central Valley wastewater to the ocean, either in or adjacent to the Monterey Bay or Gulf of the Farallones National Marine Sanctuaries. CMC, other environmental groups, representatives of the fishing industry, and affected neighborhood groups have been committed to protecting our valuable coastal and ocean resources from this misguided "wastewater superhighway."

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Pacific Regional Office: 580 Market Street, Suite 550 San Francisco, CA 94104 (415) 391-6204 Fax (415) 956-7441
National Headquarters: 1725 DeSales Street, NW, Ste. 500 Washington, D.C. 20036 (202) 429-5609 Fax (202) 872-0619

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CMC thus urges the Regional Board to:

- abandon its long-range policy of dealing with local wastewater problems by simply sending them elsewhere, and
- focus instead on investigating and maximizing in-Valley solutions to local salinity and wastewater issues.

If you have any questions regarding these comments, please do not hesitate to call. Thank you.

Sincerely,

Linda M. Sheehan
Pollution Programs Manager

cc: Rudy Schnagl, Central Valley RWQCB

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842 Sixth Street, Suite 7
P.O. Box 2157
Los Banos, CA 93635

April 17, 1996

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Mr. Bill Crooks, Executive Director
California Regional Water Quality Control Board
For the Central Valley Region
3443 Routier Road, Suite A
Sacramento, California 95827-3098

Dear Bill,

Enclosed are comments prepared by the San Luis & Delta-Mendota Water Authority, pertaining to the March 1996 Staff Report on the "Amendments to the Water Quality Control Plan for the Sacramento and San Joaquin River Basins for the Control of Agricultural Subsurface Drainage Discharges."

The comments include General Information describing current efforts underway in the Grassland Basin to reduce subsurface drain water volume and selenium loads, comments regarding specific changes in the Basin Plan Amendment, and comments regarding the Staff Report. As you know, the Basin Plan Amendment and the Staff Report are substantive documents containing a large amount of important information. Our goal, in the limited time available, has been to recommend specific changes in the Basin Plan Amendment, while addressing key issues in the Staff Report. There are additional issues in the Staff Report that we would like to address at a later date, as time permits. In addition, we would appreciate an opportunity to describe, in greater detail, the expected economic impacts of the proposed changes in water quality objectives.

The Staff Report includes discussion of a TMDL program to regulate the discharge of selenium in agricultural subsurface drain water. As you know, a TMDL program

can be very restrictive in a river system such as the San Joaquin, where flow rates vary widely within years, and over time. The Grassland Basin Drainers are working with state and federal agencies to develop a Real-Time Monitoring program to manage water quality in the San Joaquin River, while maintaining salt balance in the region. We would greatly appreciate your help in communicating our long-term goals and programs to EPA, as you submit your TMDL program for their review.

Thank you very much for the opportunity to provide comments on the Staff Report and the Basin Plan Amendment. Please let me know if any additional information would be helpful at this time.

Sincerely,

Dennis Wichelns

Dennis Wichelns
Drainage Coordinator

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Comments Regarding

Amendments to the Water Quality Control Plan For the Sacramento River and San Joaquin River Basins for the Control of Agricultural Subsurface Drainage Discharges

Draft Staff Report, March 1996

Prepared by the
San Luis & Delta-Mendota
Water Authority

April 17, 1996

These comments pertain to the Staff Report on "Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, for the Control of Agricultural Subsurface Drainage Discharges." That Report was prepared by the California Regional Water Quality Control Board for the Central Valley Region.

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Comments from the San Luis & Delta-Mendota Water Authority Regarding "Amendments to the Water Quality Control Plan For the Sacramento River and San Joaquin River Basins For The Control of Agricultural Subsurface Drainage Discharges"

Outline

I. General Information

II. Comments on Changes in the Basin Plan Amendment, As Presented in the Executive Summary

III. Comments on the Staff Report

I. General Information

1. Seven irrigation and drainage districts have formed an Activity Agreement within the San Luis & Delta-Mendota Water Authority, for the purpose of designing and implementing solutions to irrigation and drainage issues in the Grassland Basin, within the San Joaquin Valley. These districts, also known as the Grassland Area Farmers, include the Broadview Water District, Camp-13 Drainage Association, Charleston Drainage District, Firebaugh Canal Water District, Pacheco Water District, Panoche Drainage District, and Widren Water District. The total irrigated area within these district is about 97,400 acres.

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2. We would like to include, by reference, all of the comments and reports we have submitted to the Regional Board regarding this topic in recent years. Comments include those submitted on July 6, 1995, October 4, 1995, December 11, 1995. We also submitted a report describing the potential economic impacts of water quality regulations, dated October 18, 1995.

3. We appreciate the Regional Board's recognition of the "Consensus Letter" dated November 3, 1995, and signed by representatives of the San Luis & Delta-Mendota Water Authority, the U.S. Bureau of Reclamation, the U.S. Environmental Protection Agency, and the U.S. Fish and Wildlife Service.

4. Irrigation and drainage districts in the Grassland Area have already begun implementing activities and policies to increase the awareness of water quality issues in the region and to achieve further reductions in drain water volume and selenium loads. For example, the Grassland Basin Drainage Activity has been formed as an Activity Agreement within the San Luis & Mendota-Water Authority and a Regional Drainage Coordinator has been hired to assist member districts in designing and implementing appropriate policies and programs.

5. Several workshops have already been conducted in 1996 to inform farmers about the regional drainage management effort and to enlist their support in reducing deep percolation and drain water volume. The Drainage Coordinator has also been working very closely with District staff to develop policies and strategies that will increase the probability of achieving the selenium load targets in the Use Agreement for the Wetlands Bypass.

6. The annual selenium load targets for the first year of the Use Agreement represent a 15% reduction from the nine-year average of selenium loads measured in Mud and Salt Slough during 1986 through 1994. However, the proportional reduction in selenium loads required at District outlets to achieve the Use Agreement load targets is much greater than 15% for two reasons: 1) We believe that as much as 15% of the selenium load previously discharged through Grassland channels was assimilated or volatilized in that area, before reaching the San Joaquin River; and 2) Selenium loads have

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increased in 1994 and 1995, due to higher rainfall, greater water deliveries, and an increase in planted area. As a result, we estimate that the load of selenium discharged from District outlets must be reduced by 50% from the load discharged in 1995, to achieve the Use Agreement load targets for 1996.

7. Many farmers in the Grassland Basin are currently implementing improvements in irrigation practices to reduce deep percolation and drain water volume. Some farmers are using sprinklers, rather than surface methods, for pre-irrigating cotton and melon fields, while other farmers are using sprinklers for early irrigations on tomatoes and cotton. Historically, most farmers used surface methods for these events, resulting in relatively large volumes of drain water and selenium loads. Sprinklers are more expensive than surface methods, but many farmers are voluntarily incurring these higher costs, to improve water quality in the region.

8. Several irrigation districts in the Grassland Basin have already implemented innovative economic incentives to encourage farm-level improvements in water management practices. These programs include tiered water pricing, water marketing, and low-interest loans for the purchase of higher technology irrigation systems. Districts will continue to evaluate alternative incentive programs to seek the best combination of economic incentives and district-level policies that complement farm-level efforts to improve water management.

II. Comments on Changes in the Basin Plan Amendment, As Presented in the Executive Summary

1. Page 1. The first paragraph introduces the proposed Basin Plan Amendment. To correctly establish the focal point, **the Water Authority recommends adding to the end of the first paragraph, "in a portion of the San Joaquin River watershed <u>described as the Grassland Watershed</u>."**

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2. Page 1. The final paragraph on page 1 describes this Amendment's focus on selenium in the proposed Amendment. **The Water Authority strongly supports the narrow focus on selenium.**

3. Page 2. Regional Board Staff are proposing to submit a TMDL program to EPA. We understand the requirement for this action. However, EPA is a signatory to the Consensus Letter, indicating that a modified TMML is acceptable as an interim measure. Please note that the parties who have signed the Consensus Letter did not reach agreement on the appropriateness of a TMML program for establishing long-term objectives. **We recommend that the Basin Plan Amendment recognize that the TMDL approach does not have consensus, and that the plan should be reviewed in the future.**

4. Page 3. The second paragraph in this section describes the Grassland Watershed, as identified in Figure 1. **The Water Authority recommends that the second paragraph contain a sentence indicating that Figure 1 also shows the Drainage Problem Area, which is the term used in the Basin Plan Amendment.**

5. Page 9, Table 1. The second paragraph of the description describes the hydrology of the watershed. **The Water Authority recommends that the paragraph be modified to note that the alteration of hydrology has occurred <u>outside the watershed and within the watershed</u>, and that the water bodies in the area are primarily effluent-dominated streams. The paragraph should also acknowledge that salts and selenium are continuously brought into the area by natural flooding and rainfall events, in addition to irrigation.**

6. Page 11, Table 3. Proposed Selenium Water Quality Objectives. The staff proposed adoption of the EPA promulgated objectives. This was recommended in the "Consensus Letter". It should be noted that the "Consensus Letter" indicates a commitment by the signatory parties to participate in a cooperative review process by which to evaluate any new scientific information relevant to the subject (page 3 of letter). **It is recommended that the Basin Plan acknowledge this review process.**

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7. Page 12, Table 4, Item f. This section summarized proposed changes to a policy acknowledging the need for a Valley-wide drain. **The Water Authority strongly supports the Regional Board in the policy that a Valley-wide drain remains the best technical solution to water quality problems of the San Joaquin River.**

8. Page 12, Table 4, Item f. A new sentence has been added, indicating that a Valley-wide drain would carry <u>wastewater generated by municipal and industrial activities</u>, in addition to agricultural drain water. This statement suggests a vastly different type of drainage requirement than any that has been discussed in previous workshops. The issues that would need to be addressed are very different than those examined for agricultural drain water, and there is not sufficient analysis to suggest that such a drainage need is required.

   It is also not clear that there is a need, nor any justification, for providing drainage to wetland habitats, through a Valley-wide drain. The San Luis Act, which is the only legislation presently authorizing construction of a drain, contains no provision for such use. **The Water Authority strongly recommends that the references to drainage for municipal, industrial, and wetland management activities be deleted, or at least that the item be re-worded to indicate that such a drain might, but is not required to, convey non-agricultural drainage.**

9. Page 12, Table 4, Item f. The statement of conditions under which the Regional Board would support construction of a Valley-wide drain includes a condition that the discharge be regulated by an NPDES permit. The Regional Board has indicated that an NPDES permit is not applicable for the discharge proposed for the Grassland Bypass Channel Project. The Water Authority strongly recommends that the condition be changed to read... "**The discharge would be governed by specific discharge and receiving water limits in an appropriate permit.**"

10. Page 12, Table 4, Item h. A new sentence has been added indicating that for selenium discharges, actions need to be focused on selenium load reductions. The Consensus Letter indicates that interim actions for selenium reductions need to be focused on loads, but there is no consensus that load regulations are appropriate in the long-term. Continuing to restrict selenium loads in all water year types, even when water quality objectives are achieved, will remove an important tool for achieving salt balance. In fact, it may be possible to maintain water quality objectives in the San Joaquin River with a policy focus on selenium concentrations at selected monitoring sites. This will greatly reduce the economic impacts of water quality objectives, while protecting beneficial uses of water. Signatories to the Consensus Letter have made a commitment to review the appropriateness of load regulations, before accepting this approach as a long-term policy option.

    The Water Authority recommends that a phrase be added at the end of the sentence: "on an interim basis, until objectives are achieved." We also recommend a second sentence for this item: "In the long-term, it may be possible to achieve water quality objectives by focusing on selenium concentrations at selected compliance sites."

11. Page 13, Table 5. Items b and c address the possibility that public or private interests may prevent the construction or use of conveyance facilities for agricultural subsurface drain water. **The Water Authority strongly supports these statements and we agree that the prohibition of the discharge of agricultural subsurface drain water to the water bodies described therein should be reconsidered if public or private interests prevent the construction or use of a separate conveyance facility for agricultural subsurface drain water.**

12. Page 13, Table 5, Item d. This item describes a maximum discharge of 8,000 pounds of selenium per year, for all water year types beginning October 1, 1996. This is in conformance with the Consensus Letter. The intent of the Use Agreement with the USBR was for the load limitations to start when the drainage water first flowed in the drain (Use Agreement, page 15, Item V.A.). It was originally anticipated that the Grassland Bypass project would be in

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operation by October 1, 1995. Due to delays beyond the control of the Water Authority this has not occurred. **The Water Authority supports the wording of Item d in Table 5. However, it should also be noted the 8,000-pound load limit for selenium should apply only during the course of the Use Agreement, or until water quality objectives are achieved.**

13. Page 13, Table 5, Item d. This goal of this statement is to restrict the total selenium load discharged from agricultural drainage systems to no more than 8,000 pounds per year. We would like to clarify that this load limit applies to selenium loads discharged to the San Joaquin River, rather than the total load collected in drainage systems. **The Water Authority recommends that this Item be modified as: "The discharge of selenium from agricultural subsurface drainage systems in the Grassland Watershed to the San Joaquin River is prohibited in amounts exceeding 8,000 pounds per year for all water year types beginning 1 October 1996.**

14. Page 14, Table 6. The issue of agricultural subsurface drain water is extremely complex and its regulation has widespread economic ramifications. **In general, the Water Authority supports the proposed revisions to Table 6, Actions Recommended for Implementation by Other Agencies.**

15. Page 14, Table 6, Item 1. Item 1 is a recommendation that the State Board use its water rights power to prohibit delivery of water to certain lands if water quality objectives are not met. The possibility of withholding irrigation water from agricultural lands should be considered only as a policy of last resort. Exercise of such power would essentially cause a complete devaluation of the land from which the water is removed, even though the particular landowners may be doing everything within their power to use water beneficially and to minimize drain water volume.

    The relationship between irrigation water deliveries and subsurface drain water volume is very complex and is not yet completely understood. Irrigation and drainage on the west side of the San Joaquin Valley are certainly influenced by changes in the San Joaquin River system caused by dams on the east side of the Valley and the exchange of water rights. In addition, scientific information describing the potential impacts of selenium

in the San Joaquin River and its tributaries is very limited and does not support such a drastic measure as withholding water deliveries from the region.

The Water Authority strongly recommends that the final sentence be modified to read... "The Regional Board will request that the State Water Board use its water rights authority to preclude the supplying of water to specific lands, if water quality objectives are not met by the specified compliance dates, no proceedings are pending to modify the objectives or the compliance dates, Regional Board administrative remedies fail to achieve compliance, and the Regional Board has determined that, as a last resort, exercise of such authority is required."

16. Page 14, Table 6, Actions for Implementation by Other Agencies. Item 1 states that entities in the Grasslands watershed need to form a regional drainage management entity. This has been done. Therefore, the amendments should state: **The Grassland Basin Drainage Management Activity Agreement formed within the San Luis and & Delta-Mendota Water Authority is such an entity.**

17. Page 15, Table 6, Other Entities, Item 5. This Item recommends that the San Joaquin Valley Drainage Implementation Program continue to investigate the alternative of a Valley-wide drain. There are serious questions regarding the accomplishments and continued funding of the San Joaquin Valley Drainage Implementation Program. We believe that encouragement of the alternative of the valley-wide drain should not be limited to that program. **The Water Authority recommends that this Item be amended to read... "The San Joaquin Valley Drainage Implementation Program or other appropriate agencies should continue...."**

18. Page 15, Table 6, Actions and Schedule to Achieve Water Quality Objectives, Item 2. This Item states that control actions resulting in load reductions are the most effective for meeting water quality objectives for selenium. As discussed in item 10, above, load reduction targets should be viewed only as

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interim measures for achieving water quality objectives. **The Water Authority recommends adding at the end of Item 2, the following: "Once objectives are achieved, control actions may focus on concentrations."**

19. Page 15, Table 6, Actions and Schedule to Achieve Water Quality Objectives, Original Item 4. This Item, which is proposed to be deleted, states that best management practices are applicable to the control of agricultural subsurface drainage. While best management practices have not been completely effective in achieving water quality objectives, they remain critical tools that can be used in conjunction with load reduction targets described in waste discharge permits. **The Water Authority strongly recommends that the sentence describing best management practices not be omitted.**

20. Page 15, Table 6, Other Entities, Item 6. **The Water Authority supports the proposed wording in Item 6 that apportions responsibility for drainage management in the Grassland basin to other agencies.** There are statewide benefits to be derived by solving local wetland problems. Agriculture has historically provided a water supply for wetland areas, but we are presently working to re-route agricultural drainage water around those areas, to improve water quality in wetland supply channels.

21. Page 16, Table 6, (Table IV-4 of Basin Plan). This table presents the Selenium Water Quality Objectives and Compliance Time Schedule. Regional Board Staff is proposing a 10-year time schedule to achieve the EPA water quality objective for selenium in the San Joaquin River during normal and wet years, and a 15-year time schedule to achieve the selenium objective in dry years. We understand the requirement that the Regional Board must provide a compliance schedule for achieving the EPA water quality objective for selenium. However, the direct and indirect costs of achieving that objective have not been considered sufficiently in selecting the compliance time schedule. **We strongly recommended that at a minimum, the Basin Plan Amendment should state that the compliance time schedule is subject to review and revision, after further consideration of pertinent economic data.**

22. Page 16, Table 6, Item 5. Boron standards are said to be in effect for agricultural purposes. If these are not now being met, there needs to be clarification that a future Basin Plan Amendment will address them. **The Water Authority recommends a footnote in this Item indicating that a compliance schedule for boron will be forthcoming in a future basin plan amendment.**

23. Page 17, Table 6, Item 6b. This Item states that selenium load milestones will be incorporated into waste discharge requirements to ensure that requirements for the implementation of a Total Maximum Daily Load (TMDL) program are satisfied. The Environmental Protection Agency has signed the consensus letter that recommends selenium load targets that are <u>not</u> based strictly on a TMDL program, for use during the interim period. EPA has suggested that a TMDL program may provide a long-term method for achieving water quality objectives, but the signatories to the Consensus Letter did not achieve consensus on that point (Please see Page 4, Item 6 of the Consensus Letter). **The Water Authority supports the current language in this Item, only upon the understanding that the Consensus Letter load targets will satisfy Clean Water Act TMDL requirements for the interim period of the Use Agreement, and that there will be opportunities for further input regarding the use of a TMDL program on a long-term basis.**

24. Page 17, Table 7, Item 7. In the Consensus Letter, the Water Authority agreed that effluent limits should be established in a waste discharge permit to control discharges of selenium in subsurface drain water. It is possible that a first-tier control action of best management practices will be appropriate for other constituents. **The Water Authority recommends that Item 7 be modified to read..."Effluent limits for selenium established in waste discharge requirements...."**

25. Page 18, Table 7. The economic information presented in this Table is not documented clearly and, therefore, we are not able to determine if the estimated costs are accurate. We believe the lower-bound estimate of $3.6 million per year comes from the EDF report, as cited in the Regional Board Staff Report, but we are not able to locate this particular cost, or the per-acre cost equivalent value.

Current estimates of annual irrigation costs (including fixed costs and variable costs) range from $138 per acre when using traditional siphon tubes on alfalfa seed, to $371 per acre when using gated pipe and sprinklers on processing tomatoes (please see our Table 1, below). As shown in the Table, the estimated increase in the annual cost of irrigating cotton rises by $34 per acre when farmers replace traditional siphon tubes (1/2-mile furrow lengths) with improved siphon tubes (1/4-mile furrow lengths for cotton and alfalfa seed; 1/6-mile furrows for melons and tomatoes). Most farmers in the Grassland Basin have already implemented this improvement.

Table 1. Estimated Annual Costs of Irrigating Selected Crops in the Grassland Basin, 1996

	Cotton	Melons	Processing Tomatoes	Alfalfa Seed
Siphon Tubes		(Dollars per Acre)		
Traditional	186	151	176	138
Improved	220	165	210	151
Gated Pipe	288	237	280	209
Sprinklers and Siphon Tubes	263	207	308	190
Sprinklers and Gated Pipe	318	265	371	237
Sprinklers	344	n/a	n/a	n/a

Notes: Estimated costs include amortized capital costs, maintenance costs, and the costs of labor, water, and energy.

It is not feasible to use siphon tubes, alone, for the complete season on melons, tomatoes, or alfalfa seed.

Source: Wichelns, D., L. Houston, D. Cone, Q. Zhu, and J. Wilen, "Labor Costs May Offset Water Savings of Sprinkler Systems," California Agriculture, 50:11-18 (Table 4).

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The estimated incremental cost of using sprinklers, in sequence with improved siphon tubes, ranges from $39 to $43 per acre per year for the four crops shown in Table 1. The estimated cost of using siphon tubes for all irrigation events on cotton is $344 per acre per year, or $124 per acre greater than the cost of using improved siphon tubes. It may be necessary to incur these higher costs to achieve necessary reductions in selenium loads.

We have estimated the investments and expenditures that may be required to achieve water quality objectives for three scenarios representing different combinations of selenium load and concentration objectives that pertain to the Compliance Time Schedule in Table 6 (Page 16) of the Executive Summary. The estimated present value of the sum of expenditures and investments required to achieve the selenium load reductions implied by that Schedule is $211.7 million, or $2,183 per acre. [Please see our December 1995 Comments to the Regional Board for the detailed analysis.] As we noted in those Comments, farmland that is valued at $2,000 per acre cannot support a present value of expenditures and investments of $2,138 per acre. Therefore, it is imperative that we develop an alternative approach to achieving water quality goals in the region, if we are to maintain a viable agricultural community.

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III. Comments on the Staff Report

The Water Authority has reviewed the Staff Report dated March 1996 and offers the following comments and suggestions. There are many items in the Staff Report that we would like to address in greater detail, and many items that are not discussed in this transmittal. Time constraints in preparing specific comments regarding the Basin Plan Amendment for the Regional Board Hearing on May 3 have required us to limit our comments on the Staff Report to several key issues. We would appreciate the opportunity to discuss these and other issues in greater detail, in the near future.

1. Page 76, Comparison of Alternatives. The matrix of scores presented in Table 5 is used to evaluate alternative policies and compliance time schedules. We believe it is more difficult to assign comparative scores to Alternatives 2 and 3 than the procedure described in the Table suggests. For example, Staff has assigned a score of 0 to the "Degree of impairment that would occur during the period of non-compliance" to Alternative 2 and a score of 3 for this criterion in Alternative 3. This implies that there would be "high impairment" if the compliance time schedule is 25 years and moderate impairment if the compliance time schedule is 15 years.

   We are not aware of any evidence that supports the assignment of these scores to these Alternatives. In fact, it is reasonable to assume that with appropriate performance goals in place, the degree of impairment may be very similar in the two scenarios. Furthermore, given the large amount of uncertainty regarding the possible impacts of selenium in the San Joaquin River, and the relatively good information describing the potential costs of imposing severe load restrictions, it may be <u>socially optimal</u> to choose the longer compliance time schedule. Otherwise, the state may impose large and unnecessary economic damages, while not providing any additional protection of beneficial uses.

2. Page 77, Recommended Alternative. The Regional Board Staff is recommending Alternative 3 because it "provides a balance between the economic cost, likelihood of success, and period of non-compliance." The text suggests that Staff has compared the environmental costs of an extended period of non-

compliance with the economic costs of achieving water quality objectives. However, it is not possible, with existing information, to examine the environmental costs of non-compliance because there is no evidence suggesting that current or expected concentrations of selenium are causing any environmental problems in the San Joaquin River.

It may be true that the EPA national water criterion for selenium has not been achieved in the San Joaquin River on a continuous basis. However, it is not possible to quantify the cost of non-compliance, or to determine if the environmental cost of non-compliance with the EPA standard is greater than the cost of implementing measures to achieve that compliance.

Water quality conditions in the San Joaquin River have actually been very close to the objectives described by the Regional Board in its earlier work on this subject, during most months of the recent eight years. In fact, there were only 4 exceedances of the 5-ppb monthly mean selenium concentration objective for selenium in 20 months of Above Normal or Wet Years during 1988 through mid-1995. There were only 17 exceedances of the 8-ppb monthly mean selenium concentration objective during the 72 months of Below Normal, Critical, or Dry Years during the same period. In 15 of those 17 cases, the monthly mean selenium concentration was less than 12 μg/l, and in the remaining two cases of exceedance, the mean monthly mean concentration was less than 14 μg/l. [Please see our December 1995 Comments to the Regional Board, where we present these data in greater detail.]

The Water Authority has prepared and submitted to the Regional Board a substantive analysis of the potential economic costs and damages that will occur if severe selenium load restrictions are imposed in the Grassland Basin. We recommend that the Regional Board place greater weight on those estimates in evaluating policy alternatives and compliance time schedules. In addition, we recommend that the Staff Report reflect the uncertainty regarding the possible impact of selenium in the San Joaquin River, and incorporate that uncertainty in its selection of policy alternatives. This may result in selection of a longer compliance time schedule, in order to minimize unnecessary costs of achieving severe reductions in selenium loads.

3. Page 93, Paragraph 1. This paragraph states that load reductions must occur to achieve the EPA 5 µg/l 4-day average water quality objective for selenium. While some load reductions will be required, it may not be necessary to reduce loads to the levels described by the TMML program. In fact, the TMML program described in the Staff Report is overly conservative and results in water quality parameters that are much better than the EPA 5 µg/l objective in most months of most years. Several state and federal agencies are currently working to develop a Real-Time Monitoring model of the San Joaquin River, for use in achieving water quality objectives. The Staff Report needs to mention the effort of those agencies and give greater consideration to the potential role of Real-Time Monitoring in achieving water quality objectives in the future. **In addition, the Staff Report should acknowledge that if local agencies demonstrate real-time capability that consideration would be given to this approach.**

4. Page 94, Table 7. This table demonstrates the severity of load reductions that would be required in a TMML program. In fact, we do not yet have the technology, nor the financial resources, to achieve the reductions described in Table 7, while still maintaining agricultural production. It may even be the case that Nature would discharge more selenium load into the San Joaquin River, each year, than the loads indicated in Table 7, even if agricultural lands were no longer irrigated. **The Water Authority recommends that two sets of information be included as footnotes with Table 7: 1) The load reductions called for in this table are not achievable with current technology and with available financial resources; and 2) The load reductions called for in this table are not necessary to achieve water quality objectives, but result from a statistical analysis of historical river conditions. These load reductions would not be necessary if a successful Real-Time Monitoring and Management program is implemented.**

5. Page 98, Proposed TMDL Submittal to EPA. The description of the TMML and TMDL programs does not describe sufficiently the conceptual nature of these programs or the likely impacts of imposing such load restrictions in the Grassland Basin. The purpose of a TMDL program is to minimize the probability of exceeding a water quality criterion with a desired level of frequency. Such a program may be appropriate in a river system with

relatively stable flow rates and where the relationship between inputs and outputs is understood by scientists, farmers, and resource managers. However, in the San Joaquin River system, a TMDL program will require severe reductions in selenium load that will often result in nearly pristine water quality conditions. This would be fine, if not for the very high costs of reducing selenium loads to achieve the TMML requirements.

The Staff Report does not describe the possibility of achieving water quality objectives and protecting beneficial uses of water by designing and implementing a successful Real-Time Monitoring and management program. The Water Authority is working with state and federal agencies to develop a successful program. This will enable farmers and district managers to achieve water quality objectives with less impact on agricultural production. As a result, the local and statewide economic impacts of achieving water quality objectives will be much smaller than those that would be imposed by a TMML program.

The Water Authority recommends that the description of the TMDL program be enhanced significantly to communicate the conceptual nature of such a program, the likely economic costs and damages, and the alternatives that may be available for protecting beneficial uses in the San Joaquin River. Some of the wording on Page 98, such as "Table 9 presents the recommended effluent limits required to meet applicable performance goals and water quality objectives..." should be changed to reflect the possibility that a Real-Time Monitoring Program may be successful in achieving water quality objectives, without the need for a TMDL program.

6. Page 99, Table 9. Regional Board Staff has reproduced this table from the Consensus Letter. At the time the Consensus Letter was written, all parties assumed that the Grassland Bypass would be in operation by October 1, 1995. This has not occurred due to circumstances beyond the control of the Water Authority. **Therefore, we believe the time period for compliance should coincide with the beginning of the use of the Grassland Bypass, which is now estimated to occur in May, 1996.**

7. Page 170, Draft Letter of Submittal for the TMDL Program. This letter describes the technical procedure used to develop the TMDL program, but it does not discuss the potential problems of implementing such a program in the Grassland Basin or the potential economic costs and damages. We understand that the Regional Board is required to submit a TMDL program to EPA for the San Joaquin River, because it has been designated as water quality impaired. However, we believe it would be very helpful if the Regional Board would assist us in communicating to EPA and others that there is an important effort underway to develop lower-cost methods for maintaining water quality and protecting beneficial uses. **The Water Authority recommends that the Regional Board expand the discussion of the TMDL program in its submittal letter, to include the concerns we have expressed regarding the appropriateness of that program and its potential economic impact on the region.**

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December 5, 1995

California Regional Water Quality Control Board
Central Valley Region
3443 Routier Road, Suite A
Sacramento, Ca. 95827-3098

RE: Grassland Watershed

Dear Sirs:

Most of California farm land has been in production less than 150 years: so why are they saying production is down when European farms have been producing since the Middle Ages and still produce today. I believe California farmers are either cultivating land that would not grow sagebrush in the 1940's or they are using chemicals that damage their land. If the latter is the case they should stop using damaging chemicals to protect their land and settle for a lower yeild or install tile drainage systems on their own property to dispose of their agricultural residue and not pollute California water ways. NO ONE or NO THING can live without water. If one water district is granted the right to dump residue into our water ways other districts will want equal rights. If they are cultivating bad land, sorry that is their error and the rest of the state should not have to pay for their error. Being a native Californian I've seen alot of land cultivated that wouldn't grow weeds in a wet year in the 30's and 40's.

In resent drought years, municipal water districts along the Delta ran daily water test results in local papers followed by "If you have a health problem do not drink the local water". Like many of my friends I have high blood pressure and my doctor told me not to drink local water. All Californians are entitled to the same quality water from the same source; therefore the ground rules need to be set now. In those rules it needs to be written that the peripherial canal will never be constructed by that name or any other name.

Northern Californians have worked hard to clean up their waterways. So much water has been diverted South that salt water has intruded the Delta to Antioch or above. We do not need toxics shipped into the Delta from other areas compounding our water problems. Government agencies advise people not to eat the fish they catch in the Delta.

Thank you for considering all people of California not just the Central Valley.

Sincerely,

Cecelia Ambach

Cecelia Ambach
1401-D Bel Air Dr.
Concord, Ca. 94521

Received @ 12/7/95 meeting

The Bay Institute of San Francisco

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By fax and mail

October 2, 1995

Karl E. Longley, Chair
Central Valley Regional Water Quality Control Board
3443 Routier Road, Suite A
Sacramento, Ca. 95827-3098

RE: SAN JOAQUIN RIVER BASIN PLAN STAFF REPORT

Dear Mr. Longley,

This letter is submitted as the comments of The Bay Institute of San Francisco on the August 1995 "Staff Report on the Water Quality Objectives and Implementation Plan To Be Used For The Regulation of Agricultural Subsurface Drainage Discharges In The San Joaquin River Basin" (Staff Report).

The Bay Institute supports the Staff Report's recommendation that the Central Valley Regional Water Quality Control Board (Board) adopt regulatory requirements to control the discharge of agricultural subsurface drainage in the San Joaquin River basin. Although the Staff Report proposes a number of revisions to improve the regulation of drainage discharges, however, we find the recommendations regarding specific water quality objectives and implementation plan measures to be deficient in a number of critical areas.

Overview

We support the proposed adoption by the Board of regulatory requirements to control the discharge of agricultural subsurface drainage in the San Joaquin River basin. Such action would not only be welcome but long overdue, considering the ongoing violation of water quality standards in the basin and the failure to achieve implementation of the recommendations of the San Joaquin Valley Drainage Program (SJVDP) 1990 Management Plan on a voluntary basis. The absence of adequate regulatory requirements in the past has impeded the thorough implementation of best management practices to date, and we concur with the Staff Report's recommendation that "a

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more appropriate role for the Regional Board might be to provide the necessary regulatory incentive to ensure water quality goals are met," and that these incentives should be provided as "effluent limitations, in the form of WDRs [Waste Discharge Requirements]" (page C-4). (Support for effluent load limitations is not intended to imply that action to preclude the supplying of water to areas discharging contaminated drainwaters in the basin may not also be an appropriate, necessary, and complementary measure to meet water quality goals.)

We are concerned, however, that the water quality goals and the regulatory incentives to meet them proposed in the Staff Report are deficient in a number of critical areas.

The proposed water quality standards for selenium are not stringent enough to protect beneficial uses in the basin. Concentration-based standards do not adequately account for the bioaccumulative properties of selenium. As the Staff Report notes (page 24),

> Bioaccumulation is of concern...even if the selenium concentration is low. Recent data...shows that selenium bioconcentration can be significant even at selenium concentrations below the existing federal water quality criteria.

Implementation of concentration-based standards for selenium assumes an assimilative capacity in receiving waterbodies that overlooks selenium's bioaccumulative properties and relies on presumed dilution benefits. The Board should require that concentration-based water quality standards for selenium be met exclusively through reductions in mass loading, including effluent load limitations. This is consistent with the State Board's guidance in its Pollution Policy Document for the San Francisco Bay/Delta estuary to reduce pollutant loads where bioconcentration in sediments and biota degrades beneficial uses.

Even if a concentration-based standard for selenium were presumed to be protective in and of itself, the extensive evidence compiled by the U.S. Fish and Wildlife Service, the U.S. Environmental Protection Agency (EPA) and others strongly indicates that adverse effects to beneficial uses occur in the range of 2 to 5 parts per billion (ppb). A 5 ppb standard for Mud Slough and the San Joaquin River will not therefore prevent selenium enrichment of the food web, potentially contaminating waterbirds and other sensitive wildlife species. The Board should adopt 2 ppb as the appropriate water quality goal for selenium throughout the basin.

The schedule for compliance with water quality objectives proposed in the Staff Report is grossly inadequate. Allowing a period of twenty to twenty-five years for compliance violates the federal Clean Water Act by permitting continued and increased degradation of water quality for instream uses in a water body whose ability to support the propagation of fish and wildlife resources is already impaired (the San Joaquin River) and in waters of a federal and state wildlife refuge complex that are also degraded below existing standards (Mud Slough). Even if discharge of selenium is capped at historical average annual loads, as proposed in the Staff Report, degradation will increase as a result of continued long-term discharge because of selenium's bioaccumulative properties and persistence in the environment; in the words of the Staff Report, "the longer organisms are exposed to selenium, the greater the opportunity for bioaccumulation" (page 24). The proposed schedule also overlooks that the fact that

unacceptable water quality conditions resulting in degradation of beneficial uses -- including frequent exceedences of the current water quality standards -- are not recent events but were prevalent before and have prevailed since the adoption by the Board of the previous amendments to the basin plan in 1988 (during which time best management practices have not been thoroughly implemented and irrigated acreage has actually expanded in the draining areas). Instead of establishing a phased schedule that results in timely compliance, consistent with the "Mass Emissions Strategy" approach of the State Board's Pollution Policy Document for the San Francisco Bay/Delta estuary, however, the Staff Report proposes to defer the formulation of a schedule for loading reduction milestones to the issuance and periodic review of WDRs over the 20 to 25 year period for compliance.

We strongly urge the Board to establish in the basin plan a preset, phased, aggressive schedule for achieving selenium load reduction milestones in order to discharge its obligations under the federal Clean Water Act and achieve full compliance with water quality standards for selenium in a timely manner (i.e., a period no longer than five to seven years). There is no excuse for the Board not to seek vigorous compliance with state and federal mandates for water quality protection.

Specific comments

Page 8 - Water Quality Conditions That Could Be Reasonably Achieved

The Staff Report states here that "water quality objectives in the Grassland watershed can only be met by conveying the subsurface drainage in an isolated facility."

Water quality conditions could also be reasonably achieved if drainage discharges as a result of uses of water that constitute waste and unreasonable use were ceased. The Staff Report proposes protection of water quality in the Grassland wetlands and wetland water supply channels as the Board's highest priority. If the Board determines that water quality goals in these high-priority areas cannot be achieved in a timely manner through conveyance of subsurface drainage in an isolated facility because of impacts on water quality conditions in other parts of the basin, then the Board should act to preclude the supplying of water to areas that discharge to Grassland wetlands and wetland water supply channels as a waste and unreasonable use of water. The Board could also prohibit discharge to the Grassland watershed without necessarily identifying an alternative disposal method. Short-term prohibition is likely to have little effect on long-term viability of agricultural production in the draining areas.

Page 10 - Protection Of Aquatic Life Beneficial Uses

We disagree with the Staff Report's statement that EPA's promulgation of its own standard "left the Regional Board without a water quality objective..." While the Regional Board should adopt a new objective consistent with the federal promulgation, EPA's selenium criteria has been and continues to be implementable and enforceable by the Board. We also recommend that the 2 ppb selenium standard for Salt Slough and the Grasslands channels be adopted for the basin as a whole (see general comments on concentration-based standards).

Page 18, Table 6 - Policy B

The Staff Report proposes to revise the language of Policy B from prohibition to discouragement of activities that increase the discharge of poor quality agricultural subsurface drainage. However, the proposed revision is completely contradicted in the discussion of this policy on page 20, in which the Staff Report concludes that "a policy which prohibits any increase is still valid" and should be expanded to include the entire Grassland watershed. Furthermore, as alluded to in the Staff Report on page 20 and in Table B-4, the importation of additional surface water supplies and the expansion of irrigated acreage in the draining areas have allowed the amount of poor quality drainage to increase even while other activities (drought, conservation, etc.) have led to decreases. As a result, activities that increase poor quality drainage have neither been discouraged nor prohibited. We do not support changing the words "are prohibited" to "will be discouraged" in this policy.

Page 18, Table 6 - Policy E

Any linkage between out-of-basin export and protection of beneficial uses of the San Joaquin River must be rejected. Since beneficial uses of the River are impaired by selenium accumulation even when water quality objectives are met (see discussion on page 22), the total load of selenium that is discharged to the River should be reduced to safe levels regardless of the ultimate resolution of the valley's salt disposal problem. This policy should be deleted for this reason and for the reasons discussed below regarding Policy F.

Page 18, Table 6 - Policy F

This policy should be deleted as unnecessary. The SJVDP concluded that the actions recommended in its 1990 Management Plan would provide adequate management of salts and other drainage constituents for fifty years or more, allowing time to develop more permanent solutions, and in any event "would be required as the first phase of any out-of-valley export system" (Management Plan, page 121). The SJVDP was also unable to identify economically or environmentally feasible options for export of salts.

Not only is a valleywide drain unnecessary, it is premised on the export of drainage-related water quality problems to other, perhaps more critical environments. We agree with the Staff Report's finding that discharge of agricultural subsurface drainage to the Bay/Delta estuary would result in its "probable degradation" (page A-2). The estuary is a unique biological resource of global significance, and we strongly oppose any drainage discharge option that increases pollutant loading to the Bay/Delta ecosystem, even if water quality standards are being met. The same concerns are likely to apply to nearshore coastal waters which support ecologically and commercially important biological resources, or other candidate areas.

Page 18, Table 6, Policy G

Policy G "allows for short-term degradation of individual waterbodies, if the overall watershed is enhanced. Long-term protection of individual water bodies is still required under this policy" (page 23). First, this policy appears to generally violate the federal Clean Water Act's anti-degradation requirements. Second, this Staff Report's proposed deferral of compliance over a long-term period (20-25 years) and absence of preset, phased loading

reduction milestones gives us no confidence that the adoption of the proposed policy will result in "long-term" protection of Mud Slough and the San Joaquin River, given selenium's bioaccumulative properties and persistence in the environment. This degradation would be particularly devastating in Mud Slough, which remains an important wildlife habitat area even with current levels of degradation. Even if it were legal under federal law, a policy allowing short-term degradation could only be justified by accompanying requirements that degradation will be reversed in a timely and vigorous manner. The application of Policy G in the Staff Report fails the test in every way. This policy should be deleted unless the anti-degradation concerns raised here can be resolved.

Page 24 - Selenium Load Reductions

We agree with the emphasis here on the need for selenium load reductions. The conclusion that "it is critical to minimize the total amount of selenium to which...organisms are exposed" and that "the longer organisms are exposed to selenium, the greater the opportunity for bioaccumulation" is essential to successfully designing a protective drainage control strategy. These findings explain why the Staff Report's assumptions elsewhere regarding the "assimilative capacity" of the San Joaquin River (i.e., pages 37 and D-1) and the use of a historical load maximum to prevent degradation (pages 32-33) and justify a long-term period of noncompliance with water quality standards are erroneous.

Page 25, Table 7 - CVRWQCB, #5

We strongly support the use of WDRs containing effluent load limits as a mandatory control action for agricultural subsurface drainage.

Page 26, Table 7 - CVRWQCB, #6

This potential control action is grossly inadequate and should be replaced with a schedule to achieve timely compliance (i.e., no longer than a period of five to seven years) with water quality standards using predetermined, phased selenium load reduction milestones. See comments on short-term degradation (page 18), selenium load reductions (page 24), general comments, and elsewhere.

Page 27, Table 7 - SWRCB, #1

This potential control action should be stated more strongly, i.e.:

> If water quality goals are not met in a timely manner through the use of WDRs to control drainage discharges from certain lands, or it is determined that these goals cannot be met other than through the cessation of discharge from certain lands, then the State Water Board should use its water rights authority to preclude the supplying of water to those lands.

Page 28, Table 7 - Others, #4

The impact on water quality of relocating the existing discharge point for contaminated drainwater is less only if an assimilative capacity of receiving waterbodies is assumed and the bioaccumulative properties and persistence of selenium overlooked. Water quality protection should be

accomplished by reducing pollutant loads. This potential control action should be deleted.

Page 28, Table 8 - Prohibition A

This prohibition should be retained. We are concerned, however, that the Board does not appear to be interested in enforcing it. Importation of additional surface water supplies and expansion of irrigated acreage in the draining areas have increased the discharge of contaminated drainwater even as other activities have decreased it.

Page 28, Table 8 - Prohibition B

The second sentence concerning the waiver should be deleted. Since the Staff Report identifies protection of Grassland wetland water supplies and water supply channels as the highest priority, this prohibition should be enforced regardless of whether the bypass channel project is implemented.

Page 29, Table 8 - Prohibition D

The prohibition of selenium discharge from the Grassland watershed in excess of the average annual historical maximum will not prevent further degradation of beneficial uses, because of selenium's bioaccumulative properties and persistence in the environment. A prohibition on selenium discharge based on an aggressive schedule to achieve timely compliance with water quality standards through phased selenium load reductions should be substituted.

Pages 32-37 - Aquatic Life Protection In The San Joaquin River Downstream Of The Merced River Inflow

See our comments on Prohibition D, above.

The major reductions in selenium loading essential to protect water quality in the River amd its tributaries must not only be initiated now to prevent further degradation of beneficial uses, but they are also achievable now using a combination of institutional, technological and economic tools (for examples of reduction strategies, see Environmental Defense Fund, "Plowing New Ground," July 1994; Natural Heritage Institute, "Legal And Institutional Structures For Managing Agricultural Drainage In The San Joaquin Valley," September 1990). Where dischargers are unwilling or unable to use these tools to meet a timely schedule of load reduction milestones, discharge should be prohibited and/or the supplying of water precluded.

Pages 37-38 - Aquatic Life Protection In Effluent Dominated Natural Channels Of The Grassland Watershed And The San Joaquin River Upstream Of The Merced River Inflow

Relocating the existing discharge point for contaminated drainwater to the River to increase compliance with water quality objectives assumes an assimilative capacity in the River that overlooks selenium's bioaccumulative properties and persistence in the environment. Beneficial use protection of the River and its tributaries must be achieved by reducing pollutant loads to minimize exposure of organisms, regardless of the point of discharge and the potential for dilution.

Page A-2 - Table A-2

The Staff Report eliminated prohibition of discharge from further consideration as a control option. We believe that prohibition continues to be an option where dischargers cannot or will not meet water quality requirements in a timely manner. In addition, short-term prohibition of discharge does not necessarily result in long-term loss of viability. Westlands Water District, which ceased discharge in 1986, continues to be economically viable, to say the least.

Page B-9 - Table B-4

Despite the existing prohibition on activities that increase the discharge of "poor quality drainage," the historical perspective demonstrates that the expansion of irrigated acreage in the draining areas, in conjunction with the importation of additional surface water supplies, has allowed the amount of contaminated drainwater to increase. Because other activities (drought, conservation, recycling, etc.) have led to decreases in the generation of drainage discharge per acre, the result is an state of equilibrium in selenium loading levels. In addition, the major reduction in drainage volume has come from tailwater, not tilewater, probably reflecting recycling of tailwater rather than reduction in deep percolation. These facts should be taken into account when adopting policies, control actions, and prohibitions.

Page D-1 - Appendix D

Appendix D's discussion of "two basic ways of limiting the selenium load to meet the water quality objective" is premised on the assumption that the San Joaquin River has an assimilative capacity to absorb selenium up to the maximum legal concentration. As we have seen, however, assumptions concerning the assimilative capacity of receiving waterbodies do not account for selenium's bioaccumulative properties and persistence in the environment, and the Staff Report acknowledges this fact at numerous points elsewhere in the text (i.e., pages 22, 24, 25). Unfortunately, this understanding is not reflected in the discussion of effluent load limits in Appendix D.

It is of primary importance that the total load of selenium in discharge to the River and its tributaries be reduced, in order to reduce the exposure of organisms to bioconcentration. Therefore, it is clear that static effluent limits are vastly more protective than dynamic effluent limits, because "progress toward compliance is based on whether effluent loads are being reduced, rather than on whether the receiving water happens to provide enough dilution water" (page D-1). We encourage the inclusion of static effluent load limits in WDRs as an action required in the basin plan to control the discharge of subsurface drainage.

Thank you for your consideration of these comments. We look forward to working with the Board to improve the regulation of agricultural subsurface drainage discharges in the San Joaquin River Basin.

Sincerely,

Gary Bobker
Policy Analyst

THE BAY INSTITUTE OF SAN FRANCISCO

ENVIRONMENTAL DEFENSE FUND

NATURAL RESOURCES DEFENSE COUNCIL

July 6, 1995

BY FAX AND BY MAIL

Karl E. Longley, Chair
Central Valley Regional Water Quality Control Board
3443 Routier Road, Suite A
Sacramento, Ca. 95827-3098

Re: Beneficial Uses and Water Quality Criteria for the Regulation of Agricultural Subsurface Drainage Discharges in the San Joaquin Basin

Dear Mr. Longley,

This letter is submitted as the comments of The Bay Institute of San Francisco (TBI), the Environmental Defense Fund (EDF), and the Natural Resources Defense Council (NRDC) concerning the June 1995 staff report of the Central Valley Regional Water Quality Control Board (Regional Board) on beneficial uses designation and water quality criteria to be used in a basin plan amendment for regulation of subsurface agricultural drainage discharges in the San Joaquin Basin.

We appreciate the Regional Board's intention to revise portions of the San Joaquin Basin Plan pertaining to the Grasslands watershed. Although promulgation of more stringent criteria by the U.S. Environmental Protection Agency in 1992 remedied some of the defects of the current Plan, the continuing failure to achieve existing water quality objectives in the Basin, uncertainty as to the Regional Board's intention to enforce these objectives, and concerns as to the adequacy of existing objectives, contribute to a situation clearly requiring further action by the Board.

TBI, EDF and NRDC have a long-standing interest in resolution of this issue. TBI has co-sponsored four symposia on selenium and agricultural drainage, published several reports on contamination of wildlife and water supplies by drainwaters, and commented on numerous matters affecting the regulation of drainage. EDF was represented on the public advisory committee to the State Water Resources Control Board's 85-1 Technical Committee; developed detailed recommendations for innovative management of subsurface agricultural drainage, contained in the 1994 report, "Plowing New Ground"; and has commented on previous Basin Plan amendments. NRDC has testified before the State and Regional Water Boards and congressional committees concerning agricultural drainage issues on numerous occasions; submitted comments on related federal and state water quality standards; and has been involved federal and state litigation on drainage matters since the mid-1980s.

Rec'd 7/10/95

These comments discuss additional beneficial uses appropriate for designation in the Grassland watershed, and expand on the discussion of selenium criteria contained in the staff report.

I. Beneficial uses

Preservation of Biological Habitats of Special Significance (BIOL)

The staff report proposes designation of BIOL for Salt Slough but not for Mud Slough (north), because the latter does not supply wildlife refuges or management areas in the form of water supply deliveries. However, under higher flow conditions Mud Slough, which traverses Kesterson National Wildlife Refuge and China Island State Park, can inundate significant portions of these protected areas. Therefore, we recommend that the Regional Board designate BIOL for Mud Slough (north).

Preservation of Rare and Endangered Species (RARE)

The staff report does not propose designation of RARE for any areas within the Grassland watershed. In contrast, the 1987 State Board technical report on beneficial uses found that all listed sections of the San Joaquin River and its tributaries -- including Mud Slough (north) and Salt Slough -- serve as habitat for threatened and endangered plant and wildlife species. These species include the Aleutian Canada goose, listed as threatened under the federal Endangered Species Act, which winters primarily in the western Grasslands.

Cold Freshwater Habitat (COLD), Migration of Aquatic Organisms (MIGR), and Spawning, Reproduction and/or Early Development (SPWN -- cold)

In recommending against designation of COLD, MIGR and SPWN (cold) for Mud Slough (north) and Salt Slough, the staff report states that although chinook salmon stray into Salt Slough, "this is an aberration due to lack of appropriate habitat and environment for egg development (pre-spawning), spawning, juvenile development, and migration of smolts" (page 17). According to the California Department of Fish and Game (CDFG) and the U.S. Fish and Wildlife Service (USFWS), however, "when water flows are sufficient salmon...frequently enter Salt and (probably) north Mud Slough" (State Water Resources Control Board [SWRCB], 1987, Regulation of Agricultural Drainage to the San Joaquin River: SWRCB Order No. WQ 85-1 Technical Committee Report; Appendix B). The 1987 State Board technical report appendix on beneficial uses observed that although "it is unlikely that spawning by cold-water fish can ever take place in Salt and north Mud Slough" (under current conditions), nevertheless "yearly salmon migrations occur regularly" (SWRCB, 1987).

The staff report also notes that maximum temperatures for the salmon migration period are exceeded in the sloughs. The 1987 State Board technical report concluded, however, that "an absence of cold water within a channel does not necessarily preclude its use (as a transportation artery) by migratory species which normally occupy coldwater habitat" (SWRCB, 1987).

The current unsuitability of sloughs in the Grassland watershed as spawning habitat for coldwater species may not be indicative of their use by such species during wet water year conditions in the past. While finding that "successful spawning by coldwater species is currently unlikely within the lower San Joaquin River reaches due to warm water temperatures or unsuitable substrate," the 1987 State Board technical report also observed that "were cold water flows from Friant Dam to increase, spawning by coldwater species might take place."

Because of the potential use under high flow conditions of Mud Slough (north) and Salt Slough as habitat for chinook salmon, as well as the possibility that flow releases from Friant Dam will be increased and other measures undertaken in the future to help restore anadromous fisheries to the San Joaquin River, we recommend that COLD, MIGR and SPWN (cold) be proposed as potential beneficial uses of Mud Slough (north) and Salt Slough.

Warm Freshwater Habitat (WARM)

The staff report states (page 16) that "it is not known...if removal of agricultural discharges would result in an enhancement" of beneficial uses of Mud Slough (north) and Salt Slough by warmwater species, because of consequent reduction in flow. We note, however, that the beneficial uses of these sloughs by warmwater species preceded their current discharge-dominated condition. Moreover, reductions in selenium loading from agricultural discharges to the sloughs (whether from removal of these discharges or from attainment of adequate water quality criteria) would be expected to enhance the beneficial uses. For instance, elevated levels of selenium can adversely affect reproduction in typical warm water species historically found in the sloughs, such as bluegill sunfish and largemouth bass.

We support the designation of WARM and the other beneficial uses identified in the staff report. We also believe that further investigation may be necessary in order to identify if additional beneficial uses should be designated for Mud Slough (north) and Salt Slough, in order to restore water quality conditions and environmental values of these areas which existed prior to their current status as effluent-dominated waterbodies.

II. Water quality criteria

The existing federal ambient water quality criterion for selenium (5 parts per billion [ppb]) is clearly not sufficient to protect beneficial uses in the Grassland watershed. This criterion does not adequately account for the bioaccumulative properties of selenium, nor was it designed to protect fish and wildlife uses of selenium-enriched environments. The available scientific literature, including those sources surveyed in the staff report, strongly indicates that selenium concentrations in water at levels greater than 2 to 5 ppb are likely to bioaccumulate to levels in the food chain that adversely affect reproduction and other processes in fish and wildlife.

Given that protective criteria should be set well below the demonstrated adverse effect level, therefore, even the Regional Board's 2 ppb monthly

mean selenium objective for wetland waters may not be sufficient to adequately protect wildlife beneficial uses in the Grassland watershed. Accordingly, we recommend that ambient water quality criteria for selenium be proposed for the Grassland watershed below the demonstrated adverse effect level of 2 to 5 ppb.

Thank you for the opportunity to comment on the staff report.

Sincerely,

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The Bay Institute of San Francisco

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December 7, 1995

Karl E. Longley, Chair
Central Valley Regional Water Quality Control Board
3443 Routier Road, Suite A
Sacramento, Ca. 95827-3098

RE: COMPLIANCE TIME SCHEDULE FOR REGULATING SAN JOAQUIN RIVER BASIN AGRICULTURAL SUBSURFACE DRAINAGE DISCHARGES

Dear Mr. Longley,

This letter is submitted as the comments of The Bay Institute of San Francisco, the Environmental Defense Fund (EDF) and the Natural Resources Defense Council (NRDC) on the November 1995 "Staff Report On The Compliance Schedule To Be Used For The Regulation of Agricultural Subsurface Drainage Discharges In The San Joaquin River Basin" (Staff Report).

The Bay Institute, EDF and NRDC have previously commented on the broad range of issues involving the adoption of water quality standards and an implementation plan to control the discharge of agricultural subsurface drainage in the San Joaquin River Basin by the Central Valley Regional Water Quality Control Board (Board). We continue to support proposed amendments to the Basin Plan that represent a coherent strategy for managing drainage discharges, including the adoption of Waste Discharge Requirements which establish enforceable effluent load limits; the formation of a regional entity with authority and responsibility for drainwater management; and the use of economic incentives to reduce drainwater pollutant loads. Our additional comments here are limited to issues involving the compliance time schedule discussed in the Staff Report.

The Staff Report proposes revisions to the time schedule for achieving compliance with water quality standards which was proposed by Board staff in August 1995. We support several of these proposed revisions, specifically:

o the deletion of the proposed 20 - 25 year period for compliance with water quality standards in the San Joaquin River and Mud Slough (north); and

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o the use of effluent load limits as implementation milestones toward full compliance with water quality standards.

Despite these improvements to the proposed Basin Plan amendments, we find the revised compliance time schedule deficient in a number of areas:

o compliance with water quality standards for selenium in the San Joaquin River and Mud Slough (north) in a shorter timeframe than the proposed 10 - 15 year period is both legally necessary and technologically feasible;

o selenium wasteload allocations (load caps) are more appropriate interim implementation measures than scientifically unjustified interim water quality performance goals, and should be adopted as performance requirements during the interim period; and

o the use of selenium load caps as implementation measures toward full compliance with water quality standards should include enforceable monthly as well as annual wasteload allocations.

<u>Compliance time schedule</u>

Compliance with water quality standards for selenium in the San Joaquin River and Mud Slough (north) should be achieved in a shorter timeframe than the proposed 10 - 15 year period in order to fully discharge the requirements of federal and state law. More timely compliance is also feasible using currently available technologies and management strategies.

It is unjustifiable and without precedent to defer compliance with water quality standards for a period of 10 to 15 years. The requirements of the federal and state Clean Water Acts are intended to achieve immediate compliance with water quality criteria. Certainly, it is not the intention of these statutes that serious water quality degradation be permitted to occur for extended periods (in this case, equivalent to 3 - 5 triennial reviews or waste discharge requirement reevaluations). Nor should compliance with discharge permit conditions in order to meet water quality criteria be unduly constrained by uncertainties regarding technological feasibility. Rather, it is the adoption of clear regulatory requirements which forces the development of new technologies and management strategies to control pollutant levels in discharges.

In this case, moreover, we believe that currently available technologies and management strategies allow for more timely compliance with the proposed water quality standards. According to the August 1995 Staff Report (Table B-1), combining improved irrigation on 37,000 acres with land retirement on 3,000 acres can limit selenium loads to 4,760 pounds annually. Both of these options are implementable *immediately*. More aggressive implementation of both options can decrease loading even further.

It should also be noted that a substantial amount of time has elapsed during which efforts to progress toward achieving compliance with water quality protections for the Basin's waters and reducing selenium loads have not been undertaken by the Grasslands Area drainers. Nor has remedial action been pursued by the Board. Although adverse impacts to beneficial uses of the Basin's waters from agricultural subsurface drainage discharges began to be identified from 1983 on, new water quality objectives were not

issued by the Board until 1988. Neither significant, sustained decreases in selenium loading nor compliance with state and federal water quality criteria for selenium have been subsequently achieved. Furthermore, this state of affairs will continue for many years, since the Report proposes to allow continued loading at historical maxima, up to an annual selenium load cap of 8,000 pounds, until 1 October 2002. Even the agreement between the U.S. Bureau of Reclamation and the Grasslands Area drainers on interim use of the San Luis Drain contemplates only two years (1996-7) at status quo loading levels and three years (1998-2000) with phased reductions in allowable selenium loading. At the very least, the Board should require additional reductions in selenium loads through more stringent load caps at the close of the five year period of interim use of the San Luis Drain.

Interim performance goals and requirements

During the interim period leading to full compliance with the 5 ppb, 4-day average water quality standard for selenium, the Report proposes to use different selenium concentrations as performance goals to measure progress toward compliance. If these performance goals are not achieved, annual wasteload allocations (selenium load caps) will apply.

The 5 ppb monthly mean (for wet years) and 8 ppb monthly mean (for dry years) objectives, previously adopted by the Regional Board, are not adequate to protect beneficial uses of the Basin's waters. The U.S. Environmental Protection Agency disapproved the 8 ppb objective in 1989 and replaced the 5 ppb monthly mean objective with a 5 ppb, 4-day average standard in 1992. Because there is no adequate scientific or regulatory basis for continuing to use these objectives, the Board has no justification for adopting them as performance goals.

The selenium wasteload allocations (load caps) function as the appropriate performance *requirement* during the interim period leading to full compliance with water quality standards. It is the failure to achieve the 5 ppb, 4-day average water quality standard during the interim period, not any alternative and unjustified objectives, which necessitates the imposition of these load caps. Furthermore, load caps, and not any alternative water quality objective, represent the most important gauge of progress toward achieving full compliance, since "control actions which result in selenium load reduction are most effective in meeting water quality objectives" (Table 2(7)2). Requiring the imposition of load caps as an implementation measure during the interim period is also consistent with the proposed application of the initial 8,000 pound annual load cap "regardless of compliance with performance goals or water quality objectives" (page 2). We recommend that the Board adopt load caps as enforceable performance requirements, not selenium concentrations as performance goals, during the interim period leading to full compliance with water quality standards.

We continue to be concerned that even the proposed 5 ppb, 4-day average, water quality standard for selenium is not fully protective of beneficial uses of the Basin's waters. As the August 1995 Staff Report noted (page 24),

> Bioaccumulation is of concern...even if the selenium concentration is low. Recent data...shows that selenium bioconcentration can be

> significant even at selenium concentrations below the existing federal water quality criteria.

Because of selenium's bioaccumulative properties, the Board should adopt concentration-based standards below the 2 to 5 ppb threshold for adverse impacts to fish and wildlife species, and only in combination with mass emission reduction strategies which do not rely primarily on dilution benefits from the presumed assimilative capacity of receiving waterbodies.

Monthly wasteload allocations

Enforceable monthly as well as annual wasteload allocations (selenium load caps) should be used as implementation measures toward full compliance with water quality standards. During the interim period leading up to full compliance with water quality standards, a monthly wasteload allocation for selenium loading represents the only ecologically protective requirement for regulation of agricultural subsurface drainage. Compliance only with annual wasteload allocations (proposed as selenium load caps in Table 3(8)e of the Report) will not prevent toxic effects to fish and wildlife species from load pulses in drainage discharges to Mud Slough and the San Joaquin River.

The monthly waste load allocations contained in Table 5A (Dry Year) and Table 5B (Wet Year) should be adopted as part of its amendments to the Basin Plan by the Board as enforceable selenium load caps under the Table 3(8)e prohibitions. Adoption of monthly allocations need not and should not be deferred because of potential future changes in flow patterns, as suggested in the Report (page 15), since both interim and final effluent load limits will be subject to periodic review by the Board. The time schedule for compliance with both monthly and annual wasteload allocations should also be revised to allow for more timely implementation, as discussed above.

Thank you for your consideration of these comments. We look forward to the Board's adoption of timely measures to reduce and eliminate the adverse impacts to beneficial uses of the San Joaquin River Basin which result from agricultural subsurface drainage discharges.

Sincerely,

Gary Bobker
The Bay Institute of San Francisco

GB/fr
Terry F. Young, Ph.D.
Environmental Defense Fund

GB/fr
Hal Candee
Natural Resources Defense Council

BROADVIEW WATER DISTRICT

September 26, 1995

Paul E. Jepperson
Supervising Engineer
Calif. Regional Water Quality Control Board
3443 Routier Road, Suite A
Sacramento, CA 95827-3098

Subject: Comments relating to the Water Quality Objectives and the Implementation Plan to be Used in a Basin Plan Amendment for Regulation of Agricultural Subsurface Drainage in the Grassland Area

Dear Mr. Jepperson:

As you know, Broadview Water District has been very active in irrigation and drainage water management. Our farmers have made significant improvements in irrigation water management which has also reduced the production and discharge of drainage water. While it is obvious that we have not "solved" our drainage problem, we have learned that a significant portion of drain water production is out of our control.

The Staff Report identifies that the Grassland Basin Drainers are attempting to use the San Luis Drain to bypass Grassland and other wildlife areas. As part of the agreement with the Bureau of Reclamation, we have tentatively agreed to certain drainage discharge targets concerning selenium loads. While we have committed to try to meet these targets, from experience, I know of only two ways to meet them. They are: 1) reuse of subsurface drainage water and 2) turning off tile drainage sump pumps. These actions will improve water quality but they will also cause land to eventually go out of production due to increasing soil and water salinity levels. It is only a matter of time. Because of the low selenium load discharge targets and the general lack of water supply, the salt can not be leached from the soil, as purported in the staff report. Under the proposed targets, the assimilative capacity of the San Joaquin River during high flows can not be used for leaching.

The question must come to your mind, "If we believe this is true, why are we agreeing to the selenium load targets." The answer is, "We have no other option since the RWQCB is setting the selenium level for Grassland channels at 2 ppb which will terminate the discharge of subsurface drainage water."

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Basically, the Staff Report identifies (page 5) 4 actions that will be required in the waste discharge requirements to reduce selenium loads by 60-70% in order to meet water quality objectives. They are:

1. irrigation improvements.
2. treatment.
3. land retirement.
4. reuse.

We have made significant improvements in irrigation water use and management. Additional improvements are possible and appropriate but they will have diminishing returns.

Treatment is questionable at best. To date, a cost effective treatment process has not been identified.

Land retirement sounds like a good idea but it is rather simplistic. Which land is the drainage problem: the land with the tile system or land upslope? We have some tile systems that discharge significant quantities of drainage water even when they are not farmed. Do we retire 50% of the land to reduce 60-70% of the selenium load? Doesn't sound very cost effective.

We submitted a land fallowing proposal to the Bureau of Reclamation last year to help determine what land will yield the greatest drainage reduction when it is fallowed. This was part of a District water supply project. Apparently they were not interested in answering this question.

Reuse of drainage water is extensively covered in the Staff Report. Broadview has the capability to reuse all drainage water and not discharge it to the San Joaquin River. From past experience, we know that the reuse of drainage water required to attain the 60-70% reduction in selenium load will cause land to go out of production. The statement on page 21, "...the reuse must be done in a manner that does not aggravate an existing toxic trace element problem or create a long-term problem." Because leaching of accumulated salts can not occur under the 8,000 lbs/year selenium objective and the proposed target levels, it is my opinion that the long-term prognosis is terminal.

Specific comments concerning the Staff Report are as follows:

Page 10 - Economic Considerations: How do you go to higher value crops when soil salinity is increasing?
- Need to Develop and Use Recycled Water: The SJVDP Final Plan recommendations were only temporary measures to help manage the drainage problem, not solutions.

Page 18 - Table 6 Policies, item f: The use of the word "feels" is inappropriate. Use the word "believes."

Page 22 - item 6, 2nd paragraph: The use of the word "feels" is inappropriate. Use the word "believes."

Page 28 - Table 8 Prohibitions, item a: What are the activities that increase the discharge of poor quality agricultural subsurface drainage?

Page 32 - item b: It is inappropriate to use an estimate for the years 1975-1985. What is the basis of that estimate? Do you have any selenium levels for that period?

In closing, the economic impacts to Broadview Water District in order to comply with the target levels established to use the San Luis Drain and to comply with the water quality objectives will be significant. In my opinion, based on working with the drainage problem for over 8 years, there will be significant impacts on soil salinity in the short-term and for the long-term, the future looks rather hopeless under a requirement to reduce selenium discharges by 60-70%.

Sincerely,

David G. Cone
Manager

RWQCB995.WPS

BROADVIEW WATER DISTRICT

December 8, 1995

Dennis W. Westcot
Environmental Program Manager
California Regional Water Quality Control Board
Central Valley Region
3443 Routier Road, Suite A
Sacramento, CA 95827-3098

Subject: Compliance Schedule for the Grassland Watershed
Staff Report November 1995
December 7, 1995

Dear Mr. Westcot:

When the CRWQCB adopted Resolution Number 88-195 in 1988, Broadview Water District took the decision seriously and began an aggressive water management program for source control of subsurface drain water. The program has been successful in encouraging our water users to improve irrigation efficiency and effectiveness. As a result, subsurface drain water has been reduced significantly but we have not "solved" our drainage problem.

I, along with Dennis Wichelns, have made many presentations concerning our water management and drainage reduction program. Broadview is never individually criticized as a drainer. When people refer to the Grassland Drainers, they say that the draining districts have done nothing to reduce drain water discharges. The hearing on December 7, 1995, is a good example. When I have approached these people on this generalization, they respond by saying that they were not referring to Broadview.

At the Workshop, the Board discussed the tradable permit program described in EDF's proposal "Plowing New Ground". While the concept is workable and appropriate in some situations, its application in the Grassland Basin is questionable.

I have done some analysis of the selenium load caps we have agreed to in the Consensus Letter. The Drainers will be allocating the total load among districts. Since we have not yet negotiated the load allocation, I have calculated Best Case and Worst Case Scenarios. Even with Broadview's reductions in subsurface drain water (and selenium load), there is no room for any trading, even under my Best Case Scenario. In addition, all discharges and trading of load must always be in the context of maintaining salt balance. I have attached a graph illustrating my point.

Several people at the Workshop suggested that technology is available to solve the drainage problem. They never identify the technology or verify that it is economically feasible. To the best of our knowledge, an affordable technological solution is not yet available.

It is unfortunate that most of the persons commenting about drain water reduction have no field knowledge concerning subsurface drain water. They have never taken the time to learn about drainage from the field perspective. Such knowledge, would not solve the drainage problem, it would add some credibility to their criticism.

In summary, I believe that the selenium loads we have agreed to will cause us significant economic impacts. However, Broadview Water District is committed to reducing selenium loads under the Consensus Letter and we recommend the approval of the revised compliance schedule. While we have made significant improvements in drain water reduction at significant costs to our landowners and water users, we will continue to implement meaningful water management and drain water reduction projects.

Finally, there seems to be significant concern about pesticides in the drain water from the tile sumps and in tail water from the Grassland Basin. It is my understanding from your staff that pesticides in the San Joaquin River are not from the Grassland Basin. In addition, the level of selenium concentrations in the lower San Joaquin River are near or at natural background levels. These data need to be specifically addressed in the final staff report.

I look forward to the final adoption of a reasonable time schedule so we can spend our time and energy working on the problem. I wish to thank you and your staff for the efforts you have put into understanding this problem and trying to protect the water quality of the San Joaquin River and its tributaries while recognizing the economic impacts. Please call me if you would like clarification on any of my comments.

Sincerely,

David G. Cone
Manager

Attachment

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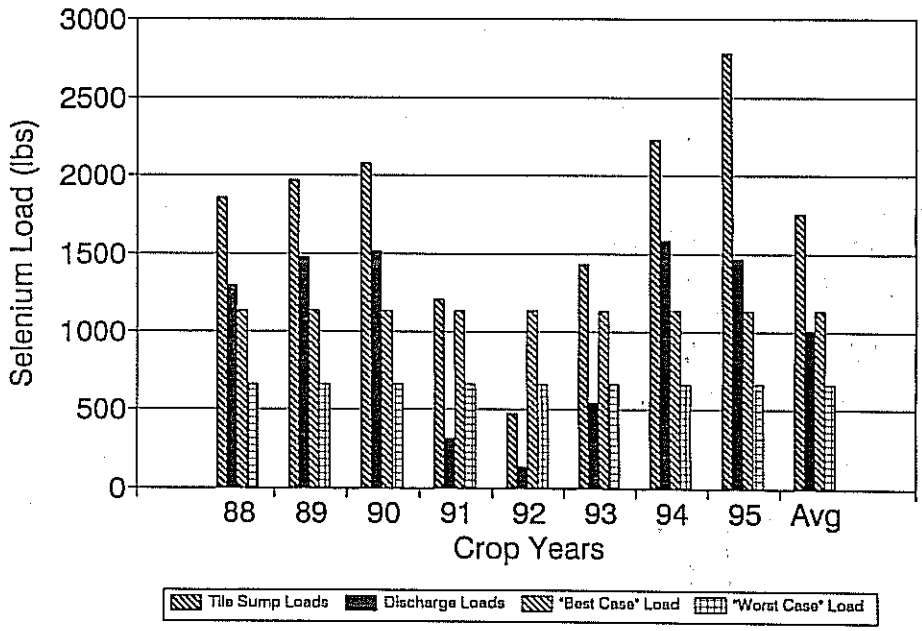
Broadview Water District
Selenium Loads



California Farm Bureau Federation
1601 Exposition Boulevard • Sacramento, CA 95815 • Telephone (916) 924-4000

July 6, 1995

Mr. Paul E. Jepperson
Supervising Engineer
Central Valley Regional
Water Quality Control Board
3443 Routier Road, Suite A
Sacramento, California 95827-3098

Re: Proposal to Amend Basin Plan for Regulation of Agricultural Subsurface Drainage In the Grasslands Area

Dear Mr. Jepperson:

Thank you for the opportunity to provide input on the Regional Board's above-mentioned proposal. The California Farm Bureau Federation ("Farm Bureau") has concerns not only with the specific proposal for the Grasslands area, but also with the precedent that may eventually affect other areas of the state with similar circumstances. Our comments on behalf of our over 70,000 member families are intended to be constructive in nature and will hopefully prove useful to the Regional Board.

First, we question the advisability of designating either Salt or Mud Sloughs for wildlife habitat if, as your June 95 staff report states, on page 18, suitability depends on elimination of subsurface drainage discharges to the sloughs. The report does not propose another alternative method of discharge. The same problem is incurred when WILD and BIOL are proposed for Grasslands wetland channels (page 24). A solution might be to condition the designation as having a priority below the use of the channels for subsurface agricultural drainage discharge.

Additionally, subsequent discussion in the staff report indicates that the most sensitive designated beneficial use would govern the limits of selenium concentration permitted in the waterways. This factor would make future use of the channels questionable for discharge of subsurface agricultural drainage.

At the workshop held June 23, testimony was given by B.J. Miller et al., which indicated that present selenium standards for this particular area may not be based on the best scientific evidence available, due to differences in the toxic effects of selenium being different depending on the background levels of sulfur. Because of that testimony, and concerns for lack of presently available alternative methods of root zone salt disposal from irrigated lands, we

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recommend that when the Regional Board adopts beneficial use designations for the Grasslands area, requirements for meeting the regulations not be imposed on the discharge of subsurface drainage until practical alternative means of discharge are available.

We recognize the impracticality of imposing regulations which would be intended to convert Salt Slough and Mud Slough (north) into habitat for coldwater fish. We agree that removal of subsurface drainage as a water supply for these sloughs would decrease the water supply, probably decreasing the habitat value for warm water species and not achieving the objective of developing additional habitat for cold water dependent species. In addition, such designation as cold water habitat would exacerbate an already hazardous situation regarding disposal of subsurface agricultural drainage water.

It is obvious to us that the public does not understand the absolute necessity for salt removal from crop root zones. This creates a political problem of great proportion, but would not justify the economic and social cost of denying irrigated agriculture its access to the San Joaquin River for salt disposal until a better means of transport is available.

Finally, exclusion of subsurface drainage would likely result in higher temperatures in the summer, because summer subsurface drain water is colder than surface runoff generally. Part of the purpose of the exclusion would therefore be frustrated.

Thank you for the opportunity to provide our comments. If you have any questions, please feel free to call me at (916) 446-4647.

Sincerely,

for

William I. DuBois
Consultant
Natural Resources

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CENTRAL DELTA WATER AGENCY

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September 29, 1995

Paul E. Jepperson
Supervising Engineer
California Regional Water
Quality Control Board
Central Valley Region
3443 Routier Road, Suite A
Sacramento, California 95827-3098

Re: Water Quality Objectives and the Implementation Plan to be Used in a Basin Plan Amendment For Regulation of Agricultural Subsurface Drainage in the Grassland Area

Dear Sir:

The Central Delta Water Agency urges that a salinity objective be established for the San Joaquin River upstream of Vernalis. A measuring point above the confluence with the Merced River but below Mud Slough would appear appropriate. The objective at such location should be a maximum salinity of 500 ppm TDS year around. Without such a measuring point and objective the burden for dilution of the salts entering the San Joaquin River from the west side of the San Joaquin Valley unfairly and unlawfully falls upon the downstream tributaries. Without construction of the "Valley Drain" which was intended by Congress to be a pre-requisite to contracting CVP water from the San Luis Unit, the CVP water exported from the Delta will continue to be evaporated upon and leach salts from the west side lands thereby adding to the salt load of the San Joaquin River. The impact of the CVP salt loading to the river has been aggravated by the replacement of the natural upper San Joaquin River flow with water exported from the Delta. If CVP exports from the Delta for delivery into the portion of the San Joaquin Valley which drains to the San Joaquin River are to continue, then it is appropriate that the burden for dilution and/or reducing such added salt load should fall upon the CVP exports. Our proposed salinity objective upstream of the Merced is essential to assure that the burden is not unfairly placed upon others. Dilution of San Joaquin River salts with water from San Luis or Friant rather than with water from New Melones or other downstream tributary sources would better conform to the legal principles established in the Delta Protection Act (Water Code 12200 et seq.), Watershed Protection Act (Water Code 11460, et seq.) and San Joaquin River Protection Act (Water Code 12300 et seq.). Land fallowing and/or

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dilution are appropriate measures to reduce the adverse impacts of added salt loading pending completion of the "Valley Drain" or other salt removal facilities.

Placing the burden of the salt loading to the San Joaquin River from the CVP service areas squarely upon the CVP exports with a timetable for measured improvement is long overdue. There is no justification for further delay and no justification in transferring the burden to others.

Yours very truly,

DANTE JOHN NOMELLINI
Manager and Co-Counsel

DJN:ju
cc: CDWA Directors
CDWA Advisory Committee
Thomas M. Zuckerman
Alex Hildebrand
Karna Harrigfeld
John Pulver
Ed Steffani
Jeanne Zolezzi
John Herrick
Reid Roberts
Morris Allen
Virginia Cahill

(510) 779-7050

December 11, 1995

Re: Grasslands Bypass
Monitoring Schedule
for Selenium

Mr. William Crooks,
Executive Officer
Central Valley Region
Water Quality Control Board
3443 Routier Road, Suite A
Sacramento, CA 95827

Dear Mr. Crooks:

This letter is a follow up to the workshop held December 7, 1995, regarding the compliance schedule for achieving selenium water quality objectives in the San Joaquin River associated with agricultural subsurface drainage discharges in the grassland watershed.

The City of Antioch, serving drinking water to a population of approximately 75,000 people, is very concerned about the reopening of a portion of the San Luis Drain to benefit a few farmers and the grasslands wildlife at our expense.

The drain has been sitting for about ten years, and the new flow will wash selenium laden sediments out into Mud Slough and in turn to the San Joaquin River. Has this initial volume of selenium been included in the proposed 15 percent farm reduction of selenium drainage to be disposed of annually?

Does anyone know the actual measured volume of selenium now being disposed of into the grassland so that we can actually determine a 15 percent reduction?

Based on what I heard at the December 7th meeting, the monitoring plan is based on assumed numbers rather than factual measured quantities, and that the Regional Board has neither the staff nor the budget to get better numbers. I think you can see how this would make us very skeptical of Regional Board ability to monitor the proposed plan and provide the information necessary to control the farm area discharge or terminate the drain use after 2, 5, or even 10 years.

The San Francisco Bay Regional Board is controlling selenium discharge from industry at great expense to the industry, with substantial fines for violations. Why can't the Central Valley Board invoke the same standards for river discharge requirements with the same penalties for the farming industry?

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People don't drink the Bay water, but people do drink Delta water. Which water quality is more in need of protection now, not 2, 5, or 10 years in the future? We obviously don't understand the State's priorities.

I believe the citizens of the Delta want zero selenium discharge even if that means no irrigated crops in the problem areas, and any solution other than zero discharge is unacceptable no matter how it is or is not monitored.

Thank you for the opportunity to provide our comments.

Very truly yours,

STANFORD E. DAVIS, P.E.
Director of Public Works

SED/sml
cc: David D. Rowlands, City Manager
William R. Galstan, City Attorney

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CITY OF GUSTINE

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Mark D. Melville
City Manager

December 6, 1995

Mr. Dennis Westcot
Environmental Program Manager
Regional Water Quality Control Board -
Central Valley Region
3443 Routier Road, Suite A
Sacramento, CA 95827-3098

Subject: Comments on November 1995 Staff Report re. Regulation of Subsurface Drainage Discharges in the San Joaquin River Basin

Dear Mr. Westcot:

The City of Gustine would like to take this opportunity to provide comments on the subject staff report. We provide these comments because the proposed control actions included in this report will have a major detrimental impact on the City's efforts to comply with its wastewater NPDES permit. Specifically, the City is proposing to construct a year-round wastewater reclamation project with winter discharge of subsurface drainage. Such a discharge would not be allowed under the RWQCB proposed program (see Table 3 Prohibitions) to regulate agricultural subsurface drainage discharges. If this program is approved as proposed, the City would be obligated to select another wastewater treatment and disposal alternative at higher cost and less environmentally compatible than the reclamation project. With this in mind, the City respectively request that the Board modify its proposed program to allow the discharge of subsurface drainage from wastewater reclamation projects in the Gustine area.

We believe there are a number of issues that need to be taken into consideration as the Board addresses the proposed control actions. First, is the apparent conflict between the Board's policy to encourage wastewater reclamation and the regulation of agricultural subsurface drainage. For our situation, the City is proposing to reuse its wastewater but, in doing so, the City will need to install tile drains to preclude the long-term build-up of salts in the soils. To accommodate the concern of salt loads to the San Joaquin River, the tile drains would be operated to discharge in the winter months when there is higher flow in the receiving waters.

Gustine has spent considerable amount of resources to carefully evaluate various wastewater management alternatives before selecting the reclamation project. This effort was initiated in 1990 and has just recently culminated in an approved Wastewater Treatment Facilities Master Plan. A draft Environmental Assessment has been prepared and is presently being finalized. The proposed project has already received approval from EPA and SWRCB for grant funding through a modification/replacement grant. In selecting the reclamation alternative, the City addressed many issues including environmental, engineering, social, economics, and regulatory. Regarding the regulatory issue, the City considered the Board's policy supporting wastewater reuse. The

other regulatory issue that the City considered was the likelihood that water quality criteria similar to those proposed in the Inland Surface Waters Plan would eventually be applied to the City's discharge. For small communities in the Central Valley, the most logical and cost effective wastewater management alternative that addresses such criteria is land treatment (i.e. reclamation). Gustine in anticipation of more stringent regulatory requirements opted to eliminate its discharge to receiving waters. The Board's proposed action, unless modified, would effectively require the City to throw out all of its planning work and approvals and go back to the drawing board.

Another issue that we would like the Board to consider is that the proposed actions are directed at the control of selenium loadings in the entire Grassland watershed. However, in our situation, selenium levels in the groundwater and water supply in the Gustine area have been determined not to be a concern (see RWQCB's "Beneficial Use Assessment per State Water Resources Control Board Order WQ 87-3", January, 1998). Thus, we have a situation in which the proposed prohibitions to reduce selenium loadings are applied to an area that has no documented problem with selenium.

A similar and parallel issue regarding subsurface drainage is the discharge of salts. As noted previously, we are proposing to remove salts that build-up in the soils from extended application of wastewater through the use of tile drains. However, it should be noted that for a given design flow, the total quantity of salts discharged to the San Joaquin River is the same with either the City's present surface water discharges or the proposed subsurface drainage. The difference between the two discharges is that one is accomplished during the winter (and high river flow conditions) and one year-round (during both low and high river flow conditions).

In closing, we ask that the Board modify its proposed control actions for selenium in the San Joaquin River basin. Specifically, we ask that discharges from subsurface drainage associated with the reclamation projects used for wastewater treatment be excluded from the prohibitions listed in Table 3 of the staff report. We believe such an exclusion is consistent with the Board's stated policy regarding wastewater reuse and will not lead to net difference in selenium or salt loadings to the San Joaquin River. While we support this exclusion, we do realize that the City will need to comply with Waste Discharge Requirements associated with the proposed subsurface drainage. We thank you for your consideration in this matter.

Yours truly,

Mark D. Melville
City Manager

cc: Jose Angel, RWQCB (Fresno)
Darrin Polhemus, SWRCB
Elizabeth Borowiec, EPA
Malcolm Walker, Larry Walker Associates

Community
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Phone:
(510) 646-4194

Contra
Costa
County

Harvey E. Bragdon
Director of Community Development

October 4, 1995

Mr. Karl Longley
California Regional Water Quality Control Board
Central Valley Region
3443 Routier Road, Suite A
Sacramento, CA 95827-3098

Dear Mr. Longley:

We are writing to you today regarding the Central Valley Regional Water Quality Control Board's Staff Report on the Water Quality Objectives and Implementation Plan to be used for the Regulation of Agricultural Subsurface Drainage Discharges in the San Joaquin River Basin. Contra Costa County has a vested interest in the management of agricultural wastes from the San Joaquin Basin as county residents depend on the San Joaquin River and Delta, the receiving waters for valley discharge, for drinking water, recreation, and tourism. We have a number of concerns with your staff report as it relates to the maintenance of downstream water quality, and we are pleased to have this opportunity to address our comments to you.

While this report contains many innovative and valuable recommendations, we believe that it could be improved by incorporating the following suggestions:

- eliminate policy statements which endorse a valley-wide drain to the Delta
- accelerate compliance with water quality objectives
- strengthen implementation measures to guarantee water quality improvements

These suggestions are explained in greater detail below.

Valley-wide Drain: Contra Costa County fundamentally opposes construction of an isolated drain to the Delta and we are disturbed by statements in your report advocating such a facility. Policy (f) on page 18 specifically endorses a valley-wide drain as "the best technical solution to the water quality problems of the San Joaquin River and Tulare Lake Basins." We strongly disagree. Constructing a valley-wide drain does not solve a water quality problem, it simply transfers that problem somewhere else. Since the Delta remains the only plausible site for a drain terminus, and since Delta waters are pollution-impacted, ecologically fragile, and relied upon by large portions of the state for drinking water, we believe that policy (f) advocates a particularly ill-advised means of dealing with the agricultural drainage problems of the San Joaquin Basin.

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Further justification for challenging the Regional Board's policy on a valley-wide drain can be found within the staff report itself. Table A-2 in Appendix A lists "Discharge to the San Joaquin Delta" as an option for the Grasslands watershed which was eliminated from further consideration because of low acceptability, high cost, and "probable degradation of the delta." Likewise, the calculations presented in Appendix B demonstrate that source control measures, passive water table management, and land retirement can reduce selenium discharge loads to levels below what is required to meet water quality objectives in the San Joaquin River and thus would make a drain unnecessary. We also believe that endorsement of a valley-wide drain contradicts policy (g) on page 18 which states that "the optimization of beneficial uses on a watershed basis will guide the development of actions to regulate agricultural subsurface drainage discharges." We are not satisfied that water quality concerns in the Delta portion of the San Joaquin watershed were given adequate consideration in the decision to advocate a valley-wide drain and do not believe that discharging wastes from the Tulare Lake Basins to the Delta would be consistent with a watershed approach to drainage management. Finally, if the effluent from the proposed drain had the reduced level of toxicants mandated by policy (f), then we believe there is no justification for building a drain at all.

Compliance with Water Quality Objectives: While we are pleased that your staff report recommends tightening many of the numerical standards for selenium in the San Joaquin Basin, we believe that postponing mandated compliance with the standards for the San Joaquin River (which are only marginally different from the standards that should have been enforced in 1991) 20 or 25 years will not generate the swift improvements in water which are both possible and necessary. We believe that Potential Control Action 6 on page 26 should be rewritten with much earlier compliance dates that reflect the San Joaquin River's history of poor water quality as well as the current availability of drainage management strategies which could generate rapid improvements. An assessment of drainage strategies in Appendix B predicts that drainage effluent from the Grasslands watershed could be reduced to levels below those necessary to meet water quality objectives if a system of improved irrigation, passive water table management, and land retirement were implemented. The calculations presented there indicate that only 12% of the total tile-drained lands in the watershed would be retired or dedicated to water table management--an amount that is slightly less than the amount of land within the entire watershed (drained or not) which is fallowed during a drought.

We also recommend adjusting the 8,000 lbs./year limit for selenium form the Grasslands (Prohibition (d), page 29) to match the 7,096 lbs./year limit which the draining parties have agreed to in their plan to use a portion of the San Luis Drain.

Implementation Measures: We welcome the adoption of the Waste Discharge Requirement as well as many of the other proposed changes to the implementation element of the Basin Plan, but we do have a number of specific concerns. We believe that the implementation plan must address the provision of Policy (e) on page 18 which states that "the San Joaquin River may continue to be used to remove these salts from the basin so long as water quality objectives are being met." Water quality objectives in the river are not being met at the present and the proposed load reductions assigned by Waste Discharge Permits will not achieve compliance with water quality objectives for 20 or 25 years. The implementation plan must address this violation of Basin Plan policy.

Additionally, we feel that 5 year review schedule for Waste Discharge Requirements described in Potential Control Action 10 is too long. We believe that a yearly review of the WDR would be more appropriate considering that some management strategies are experimental and that the current poor quality of water in the San Joaquin River demands immediate progress towards the water quality objectives.

Finally, we believe that the implementation plan must make the penalties for exceeding the load reduction schedules in the Waste Discharge Requirements explicit. Likewise, we would like the Regional Board to describe the specific circumstances under which it would request the withholding of irrigation water, as per Potential Control Action 1 on page 27.

Thank you for providing us with this opportunity to respond to the provisions of this staff report. If you have any questions regarding our comments, please call John Kopchik at (510) 646-4194.

Sincerely,

Charles A. Jahn (Assistant Director)
For
Harvey E. Bragdon
Director of Community Development

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October 4, 1995

Mr. Karl Longley
California Regional Water Quality Control Board
Central Valley Region
3443 Routier Road, Suite A
Sacramento, CA 95827-3098

Subject: Water Quality Objectives and Implementation Plan

Dear Mr. Longley:

The Contra Costa Water District ("District") appreciates the opportunity to submit comments on the "Water Quality Objectives and Implementation Plan to be Used for the Regulation of Agricultural Subsurface Drainage Discharges in the San Joaquin River Basin" as outlined in the August 1995 staff report. I attended your September 22, 1995 workshop in Sacramento but had to leave before having a chance to present oral comments.

The District supplies water pumped from the Delta to approximately 400,000 people in central and eastern Contra Costa County, and has a vital interest in protecting the quality and reliability of its water supply. The District has historically opposed any drain that would convey valley drainage to the Delta and contaminate our water supply. The District recently joined with the Natural Resources Defense Council, the San Francisco Bay Institute, Contra Costa County Water Agency and Contra Costa County in intervening in the Sumner Peck Ranch, Inc. versus Bureau of Reclamation and Firebaugh Canal Company and Central California Irrigation District versus United States lawsuits to protect the interests of the Contra Costa Water District.

Regional Board Policy Statements

The District has major concerns about the proposed changes to the Board policies outlined in the August 1995 staff report (Table 6 on page 18 of the staff report). Our concerns are with policies (e) and (f), namely:

e. *Export out of the basin of accumulated salts due to agricultural irrigation and wetlands management is the favored disposal option. The San Joaquin River may continue to be used to remove these salts from the basin so long as water quality objectives are met.*

f. *A valley-wide drain to carry salts out of the valley remains the best technical solution to the water quality problems of the San Joaquin River and Tulare Lake Basins. The drain would carry wastewater high in salt and unfit for reuse that is generated by municipal, industrial, agricultural and wetland management activities.*

The Regional Board, at this time, feels that a valley-wide drain will be the only feasible, long-range solution for achieving a salt balance in the Central Valley. The Regional Board favors the construction of a valley-wide drain under the following conditions:

- *All toxicants would be reduced to a level which would not harm beneficial uses of receiving waters.*
- *The discharge would be governed by specific discharge and receiving water limits in an NPDES permit.*
- *Long-term, continuous biological monitoring would be required.*

The District strongly opposes the concept of exporting drainage problems from their source to another location. Pollution must be curtailed at its source not exported to other areas, particularly when the receiving water is the already environmentally sensitive Delta. It is inconsistent for the Regional Board to be advocating export of contaminants from the valley and supporting a valley-wide drain when real efforts are being made to implement source control measures for agricultural drainage.

It is also inconsistent for the Regional Board to state there is a need to exporting drainage from the valley when the same policy requires that the toxicants in this water be reduced to a level that is harmless to the beneficial uses of the receiving waters. One of those beneficial uses is the drinking water that the Contra Costa Water District diverts at its Mallard Slough intake under License #10514 (dated August 12, 1975) and Permit #19856 (dated July 3, 1986) and its Rock Slough under its water supply contract with the Bureau of Reclamation. In addition, the District will soon be diverting water for municipal and industrial uses at its new Old River intake near Highway 4. If the water to be put into this valley-wide drain is of a quality good enough to protect the District's beneficial uses of Delta water (in other words, substantial source control programs have been successfully implemented), then this good quality water should be discharged into the San Joaquin as far upstream as possible to provide much needed fish flows. If, as policy (f) suggests, these water quality conditions will be met, it would be difficult to justify building a valley-wide drain.

There is a long history of violations of water quality objectives in the San Joaquin River and its tributary sloughs. The policies of the Regional Board should focus on source control to reduce the discharge of salts, selenium, and other contaminants and on strictly enforcing Federally-approved water quality standards.

The District recommends that policies (e) and (f) be deleted completely from the revised list of Regional Board policies (Table 6 on page 18 of the staff report).

Grassland Bypass Channel Proposal

At the September 22, 1995 Regional Board workshop, Regional Board and U.S. Environmental Protection Agency staff described the proposed use of a 28-mile section of an already existing portion of the San Luis Drain for conveying Grassland Basin drainage. The District is in the process of deciding whether or not to oppose this Grassland Bypass Channel proposal. As outlined in our September 29, 1995 letter to Ms. Penny Howard of the Bureau of Reclamation, our ultimate decision will depend on a number of factors including assurances that this Field Experiment will produce significant and permanent water quality improvements in Mud and Salt Slough and the San Joaquin River, and that the Field Experiment will not be extended beyond five years unless the Grassland Basin Drainers agree to comply with Federally-approved concentration limits. The District also recommends that the Drainage Incentive Fees proposed by the Bureau of Reclamation and other interested parties on September 14, 1995 be at least doubled to provide a real incentive to comply with the specified annual and monthly selenium load targets. The District is also concerned that we have not been provided with any details regarding the detailed monitoring plan that is an integral part of the Grassland Bypass Channel proposal.

The District recognizes this proposal to use the Grassland Bypass Channel for a Field Experiment has a number of potentially important benefits such as improved water quality in the Federal and State wildlife refuge areas and private wetlands, and a real-time monitoring program to allow detailed assessment of the reductions in pollutant loadings that will result from the planned source control measures. Collecting the drainage into a single conveyance system, instead of allowing it to flow through the many wetland area channels will allow better management of the drainage. The proposal sets an important precedent for regulation of agricultural drainage through Waste Discharge Requirements and associated compliance goals and fines.

If the District chooses not to oppose this Grasslands Bypass Channel proposal, this in no way diminishes the District's historical, long-held and unwavering opposition to any attempt to move forward with any extension of the San Luis Drain. The District wants assurances that this Field Experiment will not set a precedent for long term use of the Drain or extension of the existing San Luis Drain.

Extension of the Existing Drain Beyond the Confluence of the Merced River

As discussed above, the District has historically strongly opposed any extension of the existing San Luis Drain. The District is, therefore, concerned that any use of the Drain, interim or otherwise, might lead to future requests to extend the Drain, either to the San Joaquin River beyond the confluence of the Merced River, or to the Delta. The District is, therefore, particularly concerned that Regional Board staff, at the September 22, 1995 workshop, recommended that Phase II of the interim use of the San Luis Drain be an extension of the San Luis Drain beyond the confluence of the Merced and San Joaquin Rivers. The aim of this Field Experiment is to monitor drainage, study the effect of different source control and drainage management methods, and develop methods for permanent reduction of selenium loads to the San Joaquin River. The Grassland Basin Drainers are committing to a good faith effort to control drainage at its source and eventually reduce selenium loads to the San Joaquin River. If this Field Experiment is successful, it will establish that it is possible to use source control to meet the Federal water quality standard of 5 ppb selenium in the northern 6 miles of Mud Slough. If the Field Experiment fails, it will be because the Drainers have failed to adopt sufficient source control programs. Neither case, success or failure of the Experiment, would justify any extension of the existing San Luis Drain.

As discussed above, the District will oppose this Field Experiment if this Grassland Bypass Channel proposal sets a precedent for long term use of the Drain or extension of the San Luis Drain.

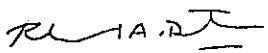
Selenium Water Quality Objectives and Compliance Time Schedule

Table 11 on page 39 of the August 1995 staff report lists selenium water quality concentration objectives consistent with Federal standards. However, the compliance dates for these objectives are up to 25 years into the future. The Regional Board needs to take a leadership position in solving the problems of agricultural drainage in the valley. There have been enough studies and reports on methods for source control and drainage managements; it is now time to require that these methods be implemented. The District recommends that all the selenium concentration limits in Table 11 be enforced and complied with as of October 1, 2000. This coincides with the end of the proposed 5-year Field Experiment.

The Grassland Bypass Proposal calls for selenium load reductions of 15% over the final three years of the Use Agreement. The enforceable selenium load target in the final year is 5661 lbs/year. The Drainage Problem Area target in Table 11 on page 39 should be reduced from 8,000 lbs/year to a value of 5,000 lbs or less to reflect the need to meet Federal standards.

I would appreciate your serious consideration of our concerns. If you have any questions, please contact me at (510) 674-8187.

Sincerely,



Richard A. Denton
Acting Water Resources Manager

cc: Roger Patterson (USBR)
Dan Nelson (San Luis Delta-Mendota Water Authority)
Roberta Goulart (Contra Costa County Water Agency)

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December 7, 1995

Mr. Karl Longley
California Regional Water Quality Control Board
Central Valley Region
3443 Routier Road, Suite A
Sacramento, CA 95827-3098

Subject: Compliance Time Schedule for Agricultural Subsurface Drainage

Dear Mr. Longley:

The Contra Costa Water District ("District") appreciates the opportunity to submit written comments on the "The Compliance Schedule to be used for the Regulation of Agricultural Subsurface Drainage Discharges in the San Joaquin River Basin" as outlined in the November 1995 staff report.

On October 4, 1995, the District submitted written comments to the Regional Board on the August 1995 staff report on "Water Quality Objectives and Implementation Plan to be Used for the Regulation of Agricultural Subsurface Drainage Discharges in the San Joaquin River Basin." These comments noted the District's historical opposition to any drain that would convey valley drainage to the Delta and contaminate our water supply. The comments also noted that the District has intervened in the Sumner Peck Ranch, Inc. versus Bureau of Reclamation and Firebaugh Canal Company and Central California Irrigation District versus United States lawsuits and is appealing Judge Wanger's decision requiring the U.S. Bureau of Reclamation to pursue completion of the San Luis Drain.

There has been a long history of violations of water quality objectives in the San Joaquin River and its tributary sloughs. The Regional Board should focus on source control to reduce the discharge of salinity, selenium, boron, molybdenum and other contaminants and on strictly enforcing Federally-approved water quality standards.

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Compliance Time Schedule for Selenium Objectives

The District appreciates that the Regional Board staff have been responsive to comments on the April 1995 staff report and have reduced the compliance time schedule by as much as ten years. However, the new proposed compliance schedule date to bring the

San Joaquin River above the Merced River confluence and Mud Slough (north) into compliance with Federal standards is still 15 years. This is too long. According to Alydda Mangelsdorf (U.S. EPA)'s presentation at the Regional Board workshop of December 7, 1995, EPA has never approved a compliance schedule longer than 10 years.

As noted in the District's October 4, 1995 comment letter, the District believes that there have already been enough studies and reports on methods for source control and drainage management. The Field Experiment using the Grassland Bypass Channel, if successful, will provide up to five more years of valuable data. The District is still in the process of deciding whether or not to oppose the use of an existing section of the San Luis Drain for this Field Experiment. Our ultimate decision will depend in part on whether this Field Experiment will result in significant and permanent water quality improvements in Mud and Salt Slough and the San Joaquin River and fulfill a number of potentially important benefits such as improved water quality in the Federal and State wildlife refuge areas and private wetlands.

The District requests that the Regional Board reduce the selenium water quality objective compliance periods in Table 1A of the November 1995 staff report even further to ensure compliance in the shortest possible time.

Regional Board staff apparently developed the schedule in Table 1A by extending the selenium load reductions in the Grassland Bypass Use Agreement beyond 1 October 2000. The District believes that the 15% reduction over last three years of the Use Agreement is not sufficient, and the Regional Board should require a much higher rate of load reduction once the Field Experiment ends.

The Regional Board should at least shorten the compliance period to require compliance with the objectives for the San Joaquin River below the Merced River by 1 October 2002, and compliance with the objectives for the San Joaquin River above the Merced River and Mud Slough (north) by 1 October 2005. This shorter compliance schedule (shown below as a revision of Table 1A) would allow some additional time to implement techniques in source control and drainage management learned from the Grassland Bypass Channel Field Experiment, but not unnecessarily prolong the exposure of beneficial users of the San Joaquin River and the Delta to unacceptable concentrations of selenium.

The District also recommends that the Regional Board use selenium load limits rather than interim performance goals to drive performance toward meeting the concentration performance goals. These interim selenium load limits should be based on monthly as well as annual targets in a manner similar to that outlined in the Grassland Bypass Channel Use Agreement.

Revised Table 1A SUMMARY OF SELENIUM WATER QUALITY OBJECTIVES AND COMPLIANCE SCHEDULE

Selenium Water Quality Objectives (in bold) and Interim Selenium Load Limits (in italics)

Water Body/Year Type	1 October 1996	1 October 2002	1 October 2005
Salt Slough and Wetland Water Supply Channels	**2 µg/L monthly mean**		
San Joaquin River below the Merced River; Above Normal and Wet Water Year types	*Selenium load limits*	**5 µg/L 4-day avg.**	
San Joaquin River below the Merced River; Critical, Dry, and Below Normal Water Year types	*Selenium load limits*	**5 µg/L 4-day avg.**	
San Joaquin River above the Merced River and Mud Slough (north)		*Selenium load limits*	**5 µg/L 4-day avg.**

Extension of the Existing Drain Beyond the Confluence of the Merced River

As discussed in the District's October 4, 1995 comments, the District has historically expressed strong opposition to any extension of the San Luis Drain. The District is, therefore, concerned the November 1995 staff report on page 18 continues to advocate extension of the existing San Luis Drain beyond the confluence of the San Joaquin and Merced Rivers. As noted in the November 1995 staff report, success in accomplishing the load reduction goals and protection of the northern section of Mud Slough will depend on the aggressive development and implementation of cost effective load reduction technologies. The District believes that these goals must be achieved to protect both the beneficial uses of Mud Slough and downstream users such as the 400,000 raw water and treated water customers of the Contra Costa Water District. Because these goals must be achieved there is no justification for extending the existing San Luis Drain.

Water Quality Objectives for Salinity, Boron, and other Contaminants

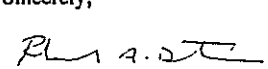
The Regional Board at this time appears to be focussing its efforts on first regulating selenium. The District is concerned that this has resulted in a delay in the Regional Board's efforts in seeking the reduction in other contaminants such as salinity and boron. As part of the California State Water Resources Control Board's Bay-Delta process, the District and many others have highlighted the need to reduce the salt load to the Delta from the San Joaquin Valley. The District also requests that the Regional Board increase its efforts to regulate pesticides such as diazanon which have been found in the Delta in concentrations that cause 100% mortality to fish. The District encourages the Regional Board to assist the State Board in meeting its goals of improving water quality and fisheries habitat in the Delta by requiring significant reduction in these other contaminants.

Prohibition of New Subsurface Drainage to the San Joaquin River or Tributaries

The District supports proposed action (a) on page 10 of the November 1995 staff report that prohibits discharge of new subsurface drainage to the San Joaquin River or tributaries from any tile or open drainage system. The staff report defines new drainage as drainage begun after 1 January, 1996. As was shown in Table B-5 of the August 1995 staff report, the total cropped area increased from 72,084 acres in 1986 to 82,604 acres in 1994 and the area in production similarly increased during this period. To meet the proposed selenium water quality objectives will require an aggressive program of load reduction, drainage management and source control by the draining parties. Any further increase in irrigated acreage or additional discharges would be counterproductive toward meeting the water quality goals.

I would appreciate your serious consideration of our concerns. If you have any questions, please contact me at (510) 688-8187.

Sincerely,



Richard A. Denton
Water Resources Manager

cc: Roger Patterson (USBR)
Dan Nelson (San Luis Delta-Mendota Water Authority)
Roberta Goulart (Contra Costa County Water Agency)

ENVIRONMENTAL
DEFENSE FUND

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October 4, 1995

Via Fax and Mail

Mr. Karl Longley, Chair
California Regional Water Quality Control Board
Central Valley Region
3443 Routier Road, Suite A
Sacramento, CA 95827-3098

Dear Chairman Longley:

Please find enclosed the comments of the Environmental Defense Fund in the matter of Water Quality Objectives and the Implementation Plan to be Used In a Basin Plan Amendment for Regulation of Agricultural Subsurface Drainage in the Grassland Area.

Sincerely,

Terry F. Young, Ph.D.
Senior Consulting Scientist

TFY/pf

cc: Ms. Felicia Marcus, EPA
Mr. Roger Patterson, USBR
Mr. John Caffrey, SWRCB
Mr. Bill Crooks, RWQCB, Central Valley Region

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COMMENTS OF THE ENVIRONMENTAL DEFENSE FUND

ON

THE WATER QUALITY OBJECTIVES AND IMPLEMENTATION PLAN TO BE USED FOR THE REGULATION OF AGRICULTURAL SUBSURFACE DRAINAGE DISCHARGES IN THE SAN JOAQUIN RIVER BASIN

OCTOBER 4, 1995

The proposal currently before the Regional Water Quality Control Board, Central Valley Region (the "Board") has a long history. As early as 1987, the State Water Resources Control Board accepted the recommendation of its "85-1 Technical Committee" that a pollution control program should be initiated for the Grasslands region in order to reduce the levels of subsurface drainage discharges. At the same time, water quality objectives (including an objective of 5 ug/l selenium as a monthly average) were recommended for adoption for the San Joaquin River.

The Board adopted these objectives for all but critically dry years in 1988, with an implementation date of October, 1991. Since that time, the selenium objective has been violated routinely, as has been pointed out in numerous staff reports over the years. The more stringent standard subsequently adopted by the Environmental Protection Agency (which is currently in force) also has been routinely violated.

Because the implementation approach initially chosen by the Board, consistent with the state's Nonpoint Source Management Plan, did not appear likely to achieve water quality objectives, the Environmental Defense Fund (EDF) undertook a study of other implementation options. Specifically, EDF investigated the feasibility of using economic incentives to control agricultural pollution in the region. The results, presented in detail in EDF's Plowing New Ground,[1] demonstrate that using economic incentives to achieve the drainage reduction required to meet water quality objectives is not only feasible, but advisable. Specifically, we propose the use of tradable discharge permits among water districts and tiered water pricing (combined with limited drainage recirculation) within water districts. To initiate this program, the Board would be required to issue and enforce a regional effluent load limit, which would then be subdivided among water districts by the Board (or a regional drainage district, if formed). If implemented, this program would both meet effluent load limits set by the Board and provide flexibility to farmers to choose

[1] EDF has already provided copies of Plowing New Ground to Board staff. Copies of the Executive Summary are attached for the Board's convenience.

their own methods of drainage reduction. It also would achieve region-wide effluent limits (regardless of the specific limits chosen) at the lowest cost of any of the alternatives investigated.[2]

It is from this perspective that we offer the following comments on the Board's proposed program. In a nutshell: we agree with the need to set specific limits on the discharge of selenium, but strongly recommend that these limits be incorporated as enforceable effluent limits in a Waste Discharge Permit; we agree that the Board staff's "Total Maximum Monthly Load" calculation is the best method to use to derive these effluent limits; and we support the Board's attempts to encourage the formation of a regional drainage district. Each of these components is not only consistent with the program proposed in Plowing New Ground, but also consistent with the obvious need to make farmers and districts in the region specifically accountable for their pollution discharges.

Creating this accountability also requires, however, the adoption of the selenium objective (of 5 ug/l as a four-day average not to be exceeded more than once every three years) effective immediately and not, as proposed by staff, with a compliance date of 2015 -- twenty-four years after the compliance date first set by the Board for the monthly average standard. The approach proposed by staff is incompatible with the Environmental Protection Agency's requirements. It would also effectively reward noncompliance. The record does not indicate that dischargers in the region have been moving aggressively to attempt to comply with even the old objective. Selenium loads from the region during the past two years are comparable to the load discharged in 1989, just after the Board first adopted its earlier implementation program, despite a preponderance of expert opinion that drainage reduction is both achievable and effective at reducing selenium discharges. Accordingly, we recommend that the Board choose a compliance date concurrent with the adoption of the standard, and issue a compliance schedule that requires the achievement of the monthly drainage loads calculated by Board staff's Total Maximum Monthly Load for a one-in-five-month exceedance rate within five years.

EDF offers these recommendations based on the belief that they can form the foundation for an environmentally protective and cost-effective program. It is also from this perspective that we encourage the Board to refrain from promoting a valley-wide drain as the ultimate solution to this problem. Reliance on the future promise of some "magic bullet" to solve problems currently caused by the toxic trace elements in drainage discharges simply diverts attention from the progress that is achievable today. Similarly, the Board should make it clear that no new evaporation ponds will be allowed to receive drainwater whose selenium concentrations exceed 2 ug/l. And last, we point out that the control action that proposes to place responsibility on a host of state and federal agencies for the implementation of a "wetlands bypass" is misplaced -- the recipients of pollution discharges should not be required to provide pollution management.

EDF has provided the Board with numerous other comments on this issue, that we include as attachments to these comments and incorporate by reference. These include, in addition to Plowing New Ground:

EDF's Presentation to the Board dated September 22, 1995;
EDF's letter of December 8, 1994 regarding the previous Basin Plan Amendment; and
Letter from EDF and others to Mr. Carlos Madrid dated September 14, 1995.

[2] If implemented as proposed, moreover, the program would include refunds of the water districts' net proceeds from tiered water prices to the farmers on a per-acre basis. This system would potentially provide a financial benefit to those farmers who are most efficient and defray the costs of irrigation efficiency improvements.

ENVIRONMENTAL DEFENSE FUND

Presentation to the Central Valley Regional Water Quality Control Board
Regarding Water Quality Objectives and Implementation Plans for the Grassland Area
22 September, 1995

** EDF supports the Regional Board's proposal to assign a Waste Discharge Requirement with specific effluent limits to the draining entities while allowing the dischargers flexibility to determine the most effective method of compliance.

** The Waste Discharge Requirement should contain enforceable, numeric effluent limits.

** We recommend that the Regional Board encourage the dischargers to use economic incentive programs to assure compliance. Regional and district programs should reward farmers who are most successful at reducing drainage.

** The results of EDF's analysis in Plowing New Ground indicate that this approach will result in the most cost-effective, flexible, and environmentally protective program.

** EDF supports the Regional Board's focus on selenium load reductions as a mechanism both to secure compliance with concentration-based water quality objectives and to protect aquatic life and wildlife against the adverse effects of bioaccumulation.

** The Regional Board's TMML is the best tool currently available to implement this approach because it maximizes allowable discharges while still protecting water quality.

** The proposed compliance period (20 years) is unjustifiable.

** The Basin Plan should clearly state that the proposed water quality objective for selenium in the San Joaquin River (below the Merced) is effective immediately. The dischargers have been out of compliance for six years . It is not in the interest of the Regional Board or the environment to reward the lack of progress demonstrated thus far.

** Even the analysis of the Regional Board staff shows that the loads associated with a "1-in-5-month" exceedance rate are achievable with current technology. Additional load reductions can be achieved using additional, currently available technology not included in the analysis. Costs can be defrayed by aggressive use of water marketing.

** EDF supports the Regional Board's proposal to encourage the formation of a regional entity that has the authority to control drainage flows.

ENVIRONMENTAL
DEFENSE FUND

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December 8, 1994

Mr. Karl E. Longley, Chair
California Regional Water Quality Control Board
Central Valley Region
3443 Routier Road, Suite A
Sacramento, CA 95827-3098

Dear Chairman Longley:

Thank you for this opportunity to comment on the Regional Water Quality Control Board's (Regional Board's) proposed Amendment to update the Water Quality Control Plan for the Sacramento River (5A), Sacramento-San Joaquin Delta (5B), and San Joaquin River (5C) Basins. In this letter, we focus on the proposed water quality objectives for the San Joaquin River and its tributaries and the associated implementation plan for controlling agricultural drainage discharge.

In brief, we urge the Regional Board to adopt, rather than simply reference, the currently-applicable water quality standards (promulgated by the Environmental Protection Agency[1]) for the San Joaquin River and its tributaries (including, but not limited to, Salt Slough and Mud Slough). Delaying the inclusion of these standards in the Basin Plan creates unnecessary conflict with both the Environmental Protection Agency and the Bureau of Reclamation, and it invites further delay in the negotiation of terms for use of the San Luis Drain and timely implementation of drainage reduction programs.

We would also urge the Regional Board to set a firm date for action on the drainage control requirements necessary to implement these objectives.

[1] Environmental Protection Agency, Rulemaking; Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants; States' Compliance; Final Rule. 57 Fed. Reg. 60848. December 22, 1992.

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Background. In 1985, the State Water Resources Control Board (State Board) acknowledged the seriousness of the selenium contamination of the San Joaquin River and nearby wetlands and convened a Technical Advisory Committee to recommend appropriate water quality objectives and an associated implementation plan. The recommendations of the Technical Advisory Committee[2], which were accepted by the State Board in 1987,[3] were partially incorporated into the Regional Board's Basin Plan in 1989.[4]

The provisions of this Basin Plan Amendment included a 5 ug/l (monthly mean) selenium objective for the San Joaquin River; the compliance date for this objective was October, 1991. The Basin Plan Amendment, consistent with the State Board's Nonpoint Source Management Plan, envisioned a program of voluntary compliance, to be supplemented with Waste Discharge Requirements if water quality objectives were met. The Basin Plan Amendment also included more lenient water quality objectives, along with a longer compliance period (October 1993) for Salt Slough, Mud Slough and the San Joaquin River segment north of the Merced.

Several elements of the 1989 Basin Plan Amendments were disapproved by the Environmental Protection Agency, including the water quality objectives listed above. In a subsequent action, the Environmental Protection Agency promulgated water quality criteria for the San Joaquin River, Mud Slough and Salt Slough (including a criterion of 5 ug/l selenium as four-day average). These standards are referenced, but not adopted, in the currently-proposed Amendment. Notably, the State Board's Inland Surface Water Plan, which was intended to supersede the Basin Plan, also adopted the 5 ug/l, four-day average selenium standard for the San Joaquin River (from the mouth of the Merced River to Venalis).

Neither the standards in the current Basin Plan, nor the legally-applicable (and slightly more stringent) standards promulgated by the Environmental Protection Agency have been met in any year since 1989. San Joaquin River objectives have been consistently violated since the Basin

[2] see SWRCB Order No. W.Q. 85-1; Technical Committee Report, "Regulation of Agricultural Drainage to the San Joaquin River," August 1987.

[3] Resolution No. 87-78.

[4] Regional Board Resolution No. 88-195, adopted December 8, 1988.

Plan's compliance date in 1991 and since the effective date of the federal standards. The same is true of Salt Slough and Mud Slough. Moreover, continued violation of the standards has been accompanied by increases in selenium loads during the past two years. During this time, the Regional Board has taken no formal compliance action of which we are aware.

Recommendations Regarding the Proposed Amendment. In the face of clear direction from both the State Board and the Federal government that the water quality objectives should be made more stringent, the proposed Amendment does not do so; the proposed changes[3] instead indicate that the Regional Board is unwilling to take the steps necessary to comply with state and federal law and policy. In the absence of adequate state standards, the EPA-promulgated standards are in effect and must be implemented by the Regional Board. See 33 U.S.C. Section 1313(a)(3)(c); 40 CFR Section 131.21 (EPA-promulgated standard supersedes state standard).

In addition to acting on the federally-promulgated standards, the Regional Board must respond more aggressively to the continuing violations of water quality standards. The proposed Amendment states that "the Regional Water Board is currently in the process of updating and revising the implementation plan to control agricultural subsurface drainage." EDF applauds the apparent intent to take action, but suggests that a specific hearing schedule be noticed as part of this proceeding.

It is our strong belief that implementation of a reasonable and practical program for controlling drainage can begin immediately. A detailed plan for implementing such a program was recently published by EDF[4]; "Plowing New Ground" incorporates the Total Maximum Monthly Load model produced by the Regional Board staff and analyzes the most cost-effective program for implementing the discharge goals defined by the model.

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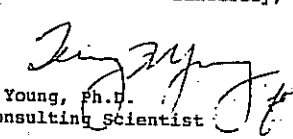
[3] See Table III-1. The proposed Amendment deletes the current objectives for Mud Slough, Salt Slough and the San Joaquin River segments above the Merced, but does not replace them with a specific objective. While the federal standards are listed, they are not adopted as part of this proceeding for any of the stream reaches.

[4] Several copies of the report, "Plowing New Ground", have been provided to the Regional Board.

Water quality violations are continuing; pollution discharge to the River is increasing; both the technology and a practical program for implementing the standards are available. We urge the Regional Board expeditiously to begin the process of enforcing these standards.

Sincerely,



Terry F. Young, Ph.D.
Senior Consulting Scientist

John Krautkraemer
Senior Attorney

cc: Mr. Bill Crooks
Ms. Felicia Marcus
Mr. Roger Patterson
Mr. Roger James
Mr. Gary Bobker

Grassland Water District

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October 4, 1995

Via Facsimile
(916) 255-3015

Mr. William H. Crooks, Executive Officer
California Regional Water Quality Control Board
Central Valley Region
3443 Routier Road, Suite A
Sacramento, CA 95827-3098

Subject: Comments on the Staff Report on the Water Quality Objectives and the Implementation Plan to be Used in a Basin Plan Amendment for Regulation of Agricultural Subsurface Drainage in the Grassland Area

Dear Mr. Crooks:

The Grassland Water District (GWD) appreciates the opportunity to comment and provide input to the Regional Board's Basin Plan Amendment process.

The comments offered herein — as were the comments we made at the September 22, 1995 workshop — are limited to the proposed objectives for the Grassland wetland water supply channels.

These channels, as is stated in the staff report, currently serve a dual role in that they are used to convey wetland water supplies and, at alternate times, agricultural drain water containing elevated levels of selenium.

As the report also states, since the enactment of the Central Valley Project Improvement Act of 1992 the private and public wetlands within the Grasslands have received increased supplies of Central Valley Project water. Because of the increased demand on the system the presence of drainwater puts these supplies at risk from contamination. At the very least the presence of drainwater has periodically caused critical delays in the delivery of water to Grasslands and the refuges.

We therefore concur with the staff recommendation as presented in the report and urge the adoption of the 2 ppb selenium objective for the Grassland wetland water supply channels as defined in Tables 2 and 4 of the June, 1995 staff report on Beneficial Use Designations.

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We also agree that, at least at the present time, it is not possible for the upslope draining entities to meet the 2 ppb selenium objective without implementing the wetland bypass project incorporating the use of the San Luis Drain. The GWD actively supports this project and urges the Regional Board to do so as well.

With this in mind we must take strong exception to the position taken in Table 8 paragraph b of the report, which states:

> "The discharge of agricultural subsurface drainage water to wetland water supplies and wetland water supply channels within the Grassland watershed is prohibited after 1 October 1996 unless water quality objectives are being met. This prohibition may be waived (emphasis added) if third party interests prevent the implementation of the wetland bypass."

Although we believe the bypass project as presently proposed can and will be successfully implemented it seems disingenuous to set out to protect the beneficial uses of the wetland channels as vigorously as the staff report does and then waive that protection if a single action, or project, fails to be implemented without identifying an alternative implementation plan (or plans) and an alternative compliance schedule. Moreover, if the bypass plan fails to be implemented we cannot assume that the status quo will be maintained, i.e. that wetland water supplies will be at least nominally protected by continuing to alternate drainage and wetland water flows in the Grassland system.

In actuality there is a strong possibility that wetland water supplies will be immediately impacted if the Drain project is not allowed to proceed. This is because in addition to the aforementioned alternating of flows in the South Grasslands, the protection of the Grassland wetlands has depended upon an existing bypass channel - the Santa Fe Canal/Mud Slough Bypass - which currently diverts agricultural drainwater around the North Grassland water supply channels.

Initiated as a 5 year interim project in 1985, the operation of this facility has been allowed to continue for twice that length of time based on the on-going assumption that the more comprehensive bypass project, i.e. the use of the San Luis Drain, would soon be implemented thus eliminating the need for the Santa Fe Canal/Mud Slough Bypass. If the San Luis Drain project is not implemented and there is no backup implementation plan and compliance schedule for removing the contaminated drain water from the GWD system on the horizon there is a very real possibility those entities affected by the operation of the Santa Fe Canal/Mud Slough Bypass, specifically the San Luis Canal Company and the Department of Fish and Game, will be forced to foreclose on it's continued use thereby immediately contaminating the water supply and adversely affecting the beneficial uses of approximately 23,000 acres of public and private wetlands in the North Grasslands.

We therefore urge the Regional Board to remove the language providing for a waiver of the proposed 2 ppb selenium objective in the absence of the wetland bypass project. In it's stead we request that alternative implementation plans and compliance schedules be identified. To leave the issue open-ended and unanswered will do nothing to address the protection of beneficial uses within the Grassland wetlands and could, in fact, lead to a counteractive degradation of those beneficial uses.

Sincerely,

Don Marciochi, General Manager
Grassland Water District

DM:mc

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Statement of Congressman George Miller
before the
California Regional Water Quality Control Board
Central Valley Region

December 7, 1995

I thank the Regional Water Quality Control Board for providing this opportunity for public input on the compliance schedule for selenium water quality standards in the San Joaquin River and its tributaries. The public deserves every opportunity to provide input on the importance of these water quality standards for human and environmental health. However, I would urge the board not to use this workshop or this process as an excuse for further delay in the imposition of water quality standards.

The serious downstream problems resulting from irrigation drainage from the San Joaquin Valley have been recognized for decades. Even before the San Luis Unit was authorized, critics raised vigorous concerns about the drainage problem. At that time, no decision was made to make significant efforts to control the production of drainage wastes. Instead, irrigators planned a master drain to transport the contaminated wastes away from their land and to dump it into one of the most fragile and economic significant estuaries in the world: the Sacramento-San Joaquin Delta and San Francisco Bay.

The consequences of that decision continue to haunt us today, decades later, with the specter of the Kesterson disaster hanging over everyone who attempts to brush off this problem.

Throughout the decade since the Kesterson Reservoir was closed, proposals and initiatives to resolve the drainage problem have yielded little but studies, studies and more studies. The plan for reducing irrigation drainage from the San Joaquin Valley has never been fully implemented, and seleniferous drainage continues to flow into the San Joaquin River after first contaminating other lands, including refuges. Throughout this decade of delay, other polluters in the Central Valley and Delta have worked to clean up their discharges and meet water quality standards, while selenium flows unabated from the Drainers.

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The farmers and irrigation districts who produce selenium-laden drainage have offered no long-term solutions to solve this water quality crisis, except to export their wastes to the Delta or the Pacific Ocean. They have hired the best attorneys and lobbyists money can buy to ensure that they will never have to pay for the past costs of cleaning up their mess of drainage water and agricultural waste. They have fought long and hard against new government laws or policies that would require them to fix their agricultural drainage problems. And they have sued the federal government to force transport of drain water to the Delta.

It is time for that irresponsible behavior to stop. It is time to impose tough standards on those who generate the drainage discharge, and it is time for them to realize that the solution to their problem is not to dump their wastes into our backyards.

I opposed the Bureau of Reclamation's agreement for interim use of the San Luis Drain, and I continue to believe it was the wrong decision; those who produce pollution must be held responsible for cleaning it up.

The agreement signed by the Bureau does contain several provisions that, properly enforced, could give us the first real hope for reductions in the selenium loads entering the San Joaquin River. This will be the first time that the Bureau of Reclamation has conditioned its approval of drainage discharges based on many significant environmental commitments, including actions by this Regional Water Quality Control Board.

1. The Board must adopt and implement a basin plan for water quality that considers the impacts of drainage.

2. The Board must issue meaningful Waste Discharge Requirements for the Drain, including enforceable selenium effluent limitations

3. Monitoring of discharges and possible environmental impacts will be a conducted in an aggressive and scientifically defensible manner.

4. The Drainers and the federal and state agencies will work in a cooperative manner with downstream water users, including Contra Costa Water District, to coordinate discharges from the Drain.

5. Drainage incentive fees will provide additional incentive for reductions in selenium loads. These provisions are significant because, for the first time, the Board may impose penalties for violations of water quality limits. The requirements also link the recommendations of the San Joaquin Valley Drainage Study Program to real-time performance in reducing drainage contributions.

6. Creation of a regional drainage entity and planning for long-term drainage management by the Drainers are also required.

The draft Use Agreement specifies that the agreement will be terminated if selenium discharges exceed certain limits. Specific, numerical limits on selenium discharges need to be set by this Board. If the Board does not act on the limits stated in the Use Agreement and the proposed letter to the Board (Appendix 4), then all this work will be wasted and the right to use Drain will be voided.

This Board must now exercise a leadership role in establishing compliance schedules for water quality improvements and eventual compliance with water quality standards. A schedule for enforcement of water quality objectives and performance goals must be adopted. I believe the interim stages of enforcement in this plan are too lenient. The schedule waits until the year 2010 before water quality objectives in the San Joaquin River and Mud Slough will be met. This additional fifteen years of delay fails to recognize the past 6 years during which the Drainers have been on notice that their selenium loads must be reduced, and is inconsistent with the arguments and commitments of the Drainers themselves in entering the Interim Use Agreement with the Bureau.

The Drainers have argued that they need to use the San Luis Drain in order to get a complete picture of the amount and concentration of selenium contained in their drain water. They then argue that they will be able to improve drainage management. The Interim Use Agreement takes this purpose into account by requiring no drainage reductions for two years, but then requiring annual reductions in selenium loads, until the agreement terminates in 2000.

The Board's selenium standards should track these commitments. Annual selenium reduction should begin in 1997. At the very least, load reductions should be imposed by 2000, rather than waiting for 2002. In addition, it is hard to understand what the Board anticipates will happen between termination of the agreement in 2000 and final selenium reductions in 2010. There is no justification for granting the Drainers an additional 10 years to meet water quality objectives when they have no definite prospect for use of the Drain. It appears that the Drainers will simply obtain the right to pollute our rivers and our Delta for another decade.

I urge the Board to reconsider this schedule and impose more stringent requirements for reducing selenium loads in the San Joaquin River and Mud Slough. As history shows us, every time we postpone dealing with this poisonous irrigation drainage, the irrigators take the opportunity to find further loopholes and opportunities for delay.

Thank you for your consideration of these comments.

FAX:
916 255 3015

4 PAGES

patagonia

October 4, 1995

Mr. Karl Longley, Chairman
California Regional Water Quality Control Board
Central Valley Region
3443 Routier Road suite A
Sacramento, CA 95827
FAX (916(255 3015

Dear Mr. Longely:

In regard to the Regional Board Staff Report on Water Quality Objectives and Implementation Plan to be used for the Regulation of Subsurface Agricultural Drainage Discharges in the San Joaquin River Basin: Thank you for the opportunity to comment on the proposal. However, I must protest. The proposal to build a valley-wide drain as the "best technical solution to the water quality problems of the san Joaquin River and the Tulare, Lake Basin" is unacceptable. Clearly, the best technical, financial and environmental solution is to CURTAIL THE SOURCES OF POLLUTION. It is a totally unreasonable solution to propose instead to export the toxic problems to other environmentally sensitive areas. Unfortunately, for the last 9 years, your Regional Board has failed in its duty to enforce water quality standards protecting the beneficial uses of the San Joaquin River. This was and is an obligation required by law.

As for the proposed reopening of a portion of the San Luis Drain by the Delta Mendota Water Authority and the Bureau of Reclamation, I enclose a copy of my comments on that proposal for your information. I am opposing the project, unless there can be assurances that 1. Prior to any new discharge, the existing sediments will be cleaned out of the 28 mile segment of the San Luis Drain proposed for use. 2. Immediate waste load reductions by the drainers to protect the San Joaquin River from the additional "lost" load (estimated to be as much as 25%) formerly absorbed by the Grasslands. 3. Immediately have USGS develop a credible monitoring program. 4. The Regional Board to give assurances that they will enforce the load limit standards of 8,000 down to the Federal target of 5,000, over the 5 years of the program.

Sincerely yours,

Carla Bard, former Ch. Past the SWRCB

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To: Penny Howard, Environmental Officer
US Bureau of Reclamation
Mid-Pacific Region
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Sacramento, CA 95025
FAX (916) 979 2139

October 3, 1995

RE: PROPOSAL TO REOPEN THE SAN LUIS DRAIN
Revised Comments

My name is Carla Bard. I am the former Chairwoman of the State Water Resources Control Board and I am representing Patagonia Inc., headquartered in Ventura, California. I am here to strongly oppose the Bureau of Reclamation plan to reopen the San Luis Drain. The plan was conceived, contrary to law, in secret meetings between the regulators and the regulated - San Luis / Delta Mendota drainers of toxic wastewater, the Environmental Protection Agency, the Regional Water Quality Control Board, an environmental organization and the Bureau. The plan was announced in haste. The Environmental Assessment issued by the Bureau indicates serious, unmitigated, environmental damage will occur. Yet the time allotted for written comment and independent scientific review is ridiculously short and the so-called public meetings were clearly formatted to prevent adequate public participation. The whole process is a disgrace.

In 1985, the San Luis Drain and the Kesterson Wildlife Refuge were ordered closed by the State Water Resources Control Board because of documented and devastating environmental damage from selenium laced, toxic drainwater coming from the Westside of the San Joaquin Valley. Both the Drain and the Refuge are known to contain enormous amounts of selenium and other contaminants. The Drain has never been cleaned up. In the nine years since the Drain was closed, toxic drainage has continued to flow unchecked, now dumping into the San Joaquin River. In that same 9 year period, neither the Regional Board nor the State Board have acted to obey the law and enforce the protection of the San Joaquin River. They have allowed what was once one of California's finest rivers to deteriorate into a state of degradation unparalleled in a modern, developed nation.

Irrigation of lands for agricultural crop production in many areas on the west side of the San Joaquin Valley is an unsustainable practice and directly causes water quality degradation and fish and wildlife contamination in the San Joaquin River. The law requires the attainment of full water quality protection for fish and wildlife resources in the San Joaquin River. The proposal by the Bureau to reopen the drain allows the devastation to the San Joaquin River to continue and worsen. Contrary to the Bureau's claims that the proposed reopening will improve the environment by removing the

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drainwater from the Grasslands, the shocking fact is that the Bureau's own Environmental Assessment shows, on Pages 25 - 32, that along with the current 8,044 lbs. of selenium per annum presently entering the San Joaquin River, there will be an ADDITIONAL 15,000 LBS. OF SELENIUM during the next six years. As written, the Bureau's plan is a prescription for disaster and should be frightening to any agency with responsibility to protect the public and its resources.

In addition to damage to the San Joaquin River and its habitat, the proposed plan will allow continuing major impacts on the Bay/Delta region because the San Joaquin River runs north. It will also allow continuing danger to Southern California drinking water customers of the Metropolitan Water District. Reopening the drain will divert toxic drain water, formerly run across the Grasslands and Salt Slough, straight through Mud Slough to the San Joaquin River. Most people don't know that during the summer months - by the State Water Board's own testimony - ALL of the San Joaquin River flows consist of San Joaquin Valley toxic drainwater. Some of this drainwater is pumped south in the State Aqueduct to the Metropolitan Water District, stored in Pyramid Lake and distributed to MWD's customers. Some is reused in the Central Valley. The rest goes to the Bay/Delta.

In 1985, the Stockton Record called the San Joaquin River " The State's lower colon". That article also said: "The polite call it a drain and the direct call it a flowing cesspool". One might ask: Why are Southern Californians drinking agricultural sewage from the Central Valley? Following this revelation, MWD completely revamped its water monitoring program but never sampled fish or bottom sediments and biota in Pyramid lake for selenium which bioaccumulates. Many low income people fish in Pyramid Lake.

A Fresno Bee article revealed serious contamination of fish tissues in Aqueduct samples taken by the California Department of Water Resources. Following the story, DWR quietly dropped the sediment and fish tissue monitoring, went back to "grab" water samples and thereby avoided the whole problem. Many low income people fish along the California Aqueduct.

The remaining salmon of the San Joaquin River will not escape the impacts of the proposed reopening of the drain. Under the plan, toxic drainage flows to the San Joaquin River will not be reduced for at least 2 years - perhaps 5 years. If the waste flows are not reduced - and soon - the last remnant salmon, far from being restored, may well be totally destroyed by the time the so-called "test" reopening is completed. There will be toxic "slugs" of drainwater entering the San Joaquin River. The Bureau's Draft Environmental Assessment admits this on page 41. It then suggests that upstream San Joaquin River water users be advised not to use the water when such "slugs" come their way. The Bureau does not suggest a way to inform the fish and wildlife that new toxic "slugs" are coming their way

There may need to be an interim drainage program, using the San Luis Drain, while we work towards waste load reduction and land retirement - the adopted, long term solutions called for in the Central Valley Improvement Act and the San Joaquin Valley Drainage Report. We may need to temporarily reopen a 28 mile segment of the San Luis Drain with a 2 year test of discharge. However, we must protect the public trust resources, which belong to all the citizens of California. That protection requires AT LEAST the following assurances prior to the first discharge.

1. Clean out and properly dispose of the sediments that are already in the San Luis Drain to provide a relatively clean playing field for monitoring future discharges.

2. Include assurances of enforceable, reduced waste discharge loads, starting immediately and continuing on a phased basis.

3. Develop a credible monitoring and enforcement program . Credibility is critical. Sadly, the Regional Board does not have a record of credible monitoring or enforcement. The United States Geological Survey has an unblemished monitoring record and is willing to monitor. Enforcement must be guaranteed by the Regional and State Boards, backed up by the EPA.

4. Hold properly noticed, widely advertised public hearings, giving real opportunity for citizen participation and scientific peer review. The Environmental Assessment document and the FONSI were issued September 14, 1995. They were made available Friday, September 15 and were not received by interested parties until at least Monday, the 18th. The documents are inadequate under NEPA. While I have not had an opportunity to review it, it is my understanding that a CEQA Negative Declaration was issued by the Delta Mendota Water Authority. This would be in error. Under California law, a project of this magnitude clearly requires an EIR. To date, there has been almost no publicity about the proposal. While the Bureau has mailed out a number of notices, it is also the obligation of the Bureau to seek more publicity. There has clearly not adequate public notification on an issue of such vital public importance as the reopening of the San Luis Drain.

Finally, we must be prepared to pursue whatever litigation is required to obtain these assurances. This may include actions under CEQA, NEPA, Waste and Unreasonable Use and Public Nuisance.

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To KARL E. LONGLEY - CH MEMBERS OF THE BD	From CARLA BARD	
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Fax # 916 225 3015	Fax # 805 643 1648	

patagonia

December 5, 1995

Karl E. Longley, Chair
Members of the Board
Central Valley Regional Water Quality Control Board
3443 Routier Road, Suite A
Sacramento, CA 95827-3098
FAX # (916) 255 3015

RE: Compliance Time Schedule San Joaquin River Basin Staff Report

Dear Mr. Longley and Members of the Board:

Thank you for the opportunity to comment on the amended November 1995 staff report on the compliance time schedule for the San Joaquin River Basin.

GENERAL COMMENTS

Staff is to be commended for reducing the time frame of salt loading/selenium compliance to 15 years instead of 25, however, the implementation plan is still grossly inadequate. After the 10 years 10 years of flagrant water quality violations permitted by your Board, in no way does the current plan result in timely, acceptable conditions in the San Joaquin River Basin. Those members of the public (citizens of Stockton, rate payers of the Contra Costa Water District and the Metropolitan Water District, for instance) who derive all or part of their drinking water from the San Joaquin River and who depend on your Board to provide assurance of immediate, acceptable water quality standards in the San Joaquin River have been betrayed again. The valleywide drain continues to be your staff's recommendation as the favored solution to the problem of toxic agricultural drainage. Contrary to NEPA and CEQA, your staff continues to recommend this draconian project without the analysis required by law. Nor does staff present any serious discussion of land retirement or precluding water delivery to areas discharging contaminated drainwaters. For your Board to recommend the transfer of a San Joaquin Valley pollution problem to another environmentally sensitive area is clearly not consistent with your obligations under Porter Cologne or the federal Clean Water Act.

What purports to be a report on a "compliance time schedule" actually moves away from real water quality standards or regulation towards goals and voluntarism and . There are now "goals" instead of "water quality objectives" and enforcement appears to be largely voluntary. Having served as Chairwoman of both the Los Angeles/Ventura County Water Quality Control Board and the State Water Resources Control Board, I am as well aware as your Board, that "goals" are in no way a

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"compliance schedule". The so-called "Compliance Time Schedule for the San Joaquin River Basin" is in essence a two year permit for unabated toxic drainage into the San Joaquin River, followed by a period of 13 years of continuing water pollution with at best a 15% maximum improvement during that whole 15 year period. After 10 years of egregious toxic pollution of the San Joaquin River, sanctioned by the inaction of your Board, this is not acceptable.

SPECIFIC COMMENTS

Despite a great deal of respondent comment on the subject of selenium bioaccumulation, the bioaccumulative properties of selenium are still not taken into account in the assimilative capacity in receiving waters.

The language of your Staff's comments on the last paragraph of page 17 and page 18 is totally unclear and makes it impossible to determine what action, if any, your Board intends to take should full compliance not be in place by the year 2010 in Mud Slough north and the San Joaquin River downstream of Mud Slough, north to the Merced River. As for costs, the report refers to a bypass extension at a cost of $16M to $18M dollars, presumably taxpayer dollars. I also quote the last sentence on page 18, "Depending on the cost of load reduction technologies, an extension of the wetlands bypass may require financing from sources outside of the drainage problem area". Taxpayer costs again. This mention the need for outside funding as a contingency of compliance could easily be interpreted as an escape clause for full compliance after 2010. It is pertinent to note that statements on the need for outside funding directly contradict the assurances, made with emphasis by the Penny Howard of the U.S.Bureau of Reclamation when she chaired the Bureau meetings held to discuss the reopening of the San Luis Drain in September and again in November 1995. She said *"You can rest assured that the drainers are going to pay all the costs of this project"*. Either she did not know or your Board failed to tell her that the drainers had already applied for and received endorsements for two enormous grants of EPA money funneled through the State Board and your Regional Board. Now, your staff presents the possibility that even more public funds will probably be needed in the future. This is unconscionable.

The Use Agreement between the Delta Mendota Water Authority and the U.S. Bureau of Reclamation clearly calls for a maximum total selenium load of 6,000 pounds with the option of a 20% increase should certain circumstances apply. This would allow over 8000 lbs of selenium to be dumped into the San Joaquin River. Your compliance schedule does not note the 6,000 lbs., only (page 2) 8,000 lbs. for all water years. Since your Board staff was actively involved in all the secret negotiations leading to the agreement to reopen the San Luis Drain, this discrepancy should have been but is not yet resolved.

I respectfully urge your Board to direct staff to make the substantive changes required to make it compliance schedule an environmentally acceptable document - one that protects water quality in the San Joaquin River Basin, not just to suit agribusiness but for all Californians who depend on you.

Sincerely yours,

Carla Bard

PATRICK J. PORGANS
Government Regulatory Specialist

P.O. Box 60940, Sacramento, CA 95860 Telephone (916) 972-0654 FAX (916) 972-0313

Tuesday, October 3, 1995

Karl Longley, Chairperson
California Regional Water Quality Control Board
Central Valley Region
3443 Routier Road, Suite A
Sacramento, CA 95827-3098

Fax Number (916) 322-3015

RE: Comments on the Basin Plan Amendment and the Reopening of the San Luis Drain, AKA Grassland Bypass -- Item 3: Central Valley Regional Water Quality Control Board, September 22, 1995, Workshop on the Water Quality Objectives and Implementation Plan to be Used for the Regulation of Agricultural Subsurface Drainage Discharges in the Grassland Area, Merced County, California

PLEASE READ BEFORE INCOPORATING MY COMMENTS

Members of the Board:

This letter contains my written comments and are supplemental to the oral comments I made before the Board at its September 22, 1995, Workshop, which it held in the State Capitol. To begin, I will reiterate my absolute opposition to the so-called amendment for the "regulation of agricultural subsurface drainage discharge in the Grassland area and submit these comments as a means to exhaust the administrative remedy.

In addition, for the record, I want to state my objections to the manner in which the Board conducted the workshop. Although the public notice for the workshop did not expressly state that the Board intended to devote most of the time on the pending Grassland Bypass agreement, which was predominately orchestrated by the drainers in conjunction with the other "stakeholders," that is precisely what transpired. I took strong exception to how well orchestrated the line up for the speakers was set up at the workshop on the Basin Plan amendment, which allowed for all of the stakeholders to make their pitch for the Grassland Bypass, with little or no emphasis on the actual amendment other than how it played a role in facilitating the bypass agreement. As soon as the stakeholders made their pitch then the Board's executive officer Mr. Crooks asked that the Board confine all further testimony from workshop participants to the Basin Plan and not allow additional testimony on the Grassland Bypass agreement. The Board's action was absurd and Mr. Crooks request amounted to a gag order.

Comments:

The staff report on "the Water Quality Objectives and Implementation Plan to be Used for the Regulation of Agricultural Subsurface Drainage Discharges in the San Joaquin River Basin" is composed and written in the typical Crooks' Team fashion. It is vague, fragmented and misleading, and is premised upon half-truths, distortion of facts, and biased in favor of the polluters. It does

not provide the public with any "real" assurances that its waters and or public trust resources will be protected. There are so many flaws in the plan/report that it would be virtually impossible for me to addressed all of them in this forum.

This report (Basin Plan amendment) amounts to just another stall tactic by the Crooks' Team and the Board to placate the drainage issue and to allow business (pollution and destruction of the waters of the state) as usual; however, with one apparent fundamental difference in the Board's customary modus operandi. That is to say, in the past the Crooks' Team and the Board substituted more research in lieu of regulatory action as the primary stalling tactic, now the new stalling strategy is much more deceptive and damaging because the Board is giving the public the illusion that it is embarking on a regulatory enforcement action program, when in fact it is not. The Board is simply setting an ambiguous compliance schedule that is essentially a moving target. It is similar to the compliance schedule that was contained in the S.F. Regional Water Quality Control Board's Order No. 91-026 for selenium for Shell Oil Company, Union Oil Company of California, and Exxon Company, U.S.A. The original compliance date of July 12, 1993, was ordered on February 20, 1991. A revised compliance schedule of July 31, 1998, was adopted by the S.F. Board in November 1993, only a month before the original compliance date was supposed to go into effect. Furthermore, if July 31, 1998, rolls around and it is determined by the S.F. Board that the oil companies have demonstrated a good faith effort to comply, but have nonetheless failed to comply, then another extension of the final compliance date will be considered. I believe that it is safe to conclude that based on the S.F. Board's track record an additional extension undoubtedly would be approved.

A similar compliance schedule was a product of the State Water Resources Control Board's (SWRCB) WQ 85-1 for the regulation of subsurface drainage, which included selenium, for the San Joaquin River; final compliance date stated in that order was 1993.

Here again, the Board is trying to deceive the public by obfuscation of the real intent for amending the Basin Plan, which amounts to nothing less than pseudo regulatory compliance; AKA endless moving target. According to Mr. Joe Karkoski of your staff, the Board can not issue waste discharge requirements (WDRs), which would include load reductions, for the drainers in the Grassland areas until the Basin Plan amendment is approved. Approval of the plan could happen within nine months to a year. Once the plan is approved then the Board could go forward with issuing the waste discharge requirements and that could take another year or so. Full compliance with water quality objectives has been tentatively scheduled for the year 2015; however, there are provisions for extensions and additional delays if they are warranted. I should remind the Board that it took almost five years to approve the waste discharge requirements for the evaporation pond operators in Tulare Lake Basin, which I and other have under appeal before the SWRCB, because they are grossly inadequate. While all of these delays are being sanctioned the waters of the state will continued to be degraded and water quality violations will continue. It is for the aforementioned and following reasons that it has become obvious that the amendment to the plan and the Grassland Bypass are ineffectual in protecting the waters of the state. It is also important to note that your staff recommended WDRs in the 1988 Basin Plan as an alternative for Grassland; however, the Board requested that staff look at other alternatives; subsequently, the 1988 Basin Plan did not include WDRs.

According to Dennis Westcott, another member of your staff, the current amendment to the Basin Plan will help to lay out policy and actions for the Board to deal with nonpoint source and water quality objectives as a procedural step. The water quality objectives that the Board adopted in its December 1988 Basin Plan have been superseded by the water quality standards that the U.S.

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Environmental Protection Agency promulgated. Essentially, the Board would have to recognized EPA's standards or adopt its own standards. Although the Board could issue WDRs for Grassland area drainers, it does not have a current water quality standard adopted for the drainers to meet.

It is equally important that we not lose sight of the fact that in the Board's 1988 Basin Plan selenium reduction was given the highest priority. However, the record shows that selenium loads are equal to historical levels, despite selenium's priority status and the different management practices that were employed, including, but not limited to, maximization of irrigation efficiency and best management practices (BMPs) to regulate selenium. The Board's records show that selenium violations between 1988 and 1992 were at about 82 percent, and in 1993 and 1994 have increased to greater than 90%, (eleven out of twelve months the standards were violated). The Board's initial attempt to "regulate selenium" was a failure, and I could have told you that back then. Now I am going to provide you with advanced notification of the Board's next failure-in-the-making -- The Crooks' Team et al Grassland Bypass Plan and the Basin Plan amendment, which I adamantly oppose.

Based on my experience, it is difficult for me to place any degree of faith in the Board and "its" plan or its ability to enforce the provision of a waste discharge requirement. Regrettably, I have to take everything the Crooks' Team and the Board says with a "grain of salt." In the case of the drainage dilemma in the San Joaquin Valley, I should say with a ton of salt, in keeping with the relative order of magnitude. In an attempt to simplify my comments I will focus on three issues or phases of the Board's so-called progress leading up to the impending plan.

Phase I: Planning the Basin Plan Failure

The premise upon which the plan is based is fundamentally flawed. The "over-ly(lie)ing theme" in the plan implies that it will provide a better water quality by certain revisions of water quality objectives and implementation program to meet water quality objectives; i.e. load reduction, drainage management plans, and some regional designated entity to manage the situation. In turn it would not only meet water quality objectives it would also provide usable water for wetlands and wildlife.

And I quote: (CVRWQCB's Summary Statement, page 2, paragraph 2.)

> "The program goal is to optimize beneficial use on a watershed basis with regulatory action focused on consolidation of drainage flows (Grassland Bypass) and sediment load reduction."

However, the Board also stated in the report on page 42, under the "Studies" section, paragraph 2:

> "In 1985, little was known about the location and concentrations of selenium, molybdenum and other trace elements and toxics that occur in subsurface agricultural drainage water. In a short period of ten years, we have gained a great deal of insight. Our knowledge, however, does not allow us to feel confident that a system of load reductions by water conservation or other best management practices (BMP) will meet water quality objectives."

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Furthermore, the report also states on page 4:

> "To meet water quality objectives, staff estimate that a 60-70 % reduction in annual selenium load will be needed along with adjustments in the timing of discharge. Actions which lead to extensive load reductions and timing changes will need to go beyond relying solely on irrigation management which has been the focus over the last 6 years. Other actions, including treatment, reuse and land retirement may be needed to meet water quality objectives on a consistent basis."

The approach also allows for additional "flexibility" and further allows the dischargers to "design their own methods of compliance and to apportion this load among themselves." Past experience proves unequivocally that the drainers have failed to effectively provide adequate solutions to meet water quality requirements.

Earlier staff reports also stated that "load reduction" does not lead to water quality improvement due to the fact that irrigation efficiency has been maximized. In fact, failure may be due to the fact that more agricultural land is in production now leading to increased loads and thus increased violation in the San Joaquin River.

It is also important to point out that the staff has not published any public report defining the accuracy to which existing loading and or load reduction can be measured, and whether this is within the limits of the proposed interim load limits proposed for the use of the San Luis Drain to meet water quality objectives. The historical load levels can have a margin of error up to 30 percent.

Furthermore, the elevated "unnatural background" levels due to build up of drainage (salts, selenium and boron) since drainage management options have not been regionally implemented, may affect primary and secondary wetland supply channels to the extent that these waters, in the absence of discharged drainage loads, could exceed 2 ppb selenium. This "unnatural seepage" has been inadequately defined by the Board. Increased leaching of those "unnatural background" levels at various unregulated times of the year may lead to exceedences of aquatic criteria in wetland supply channels, even if the Basin Plan amendment is adopted and the Grassland's Bypass is authorized.

The Missing Selenium:

In addition, U.S. Bureau of Reclamation (USBR) and CVRWQCB data apparently showed "load attenuation" in Grassland -- 3000 pounds of selenium "lost" because of uptake of selenium in the biota and unlined wetland channels. The USBR did conduct further studies in the Grasslands, which left one with the impression that the channels and biota were not showing a large uptake of selenium, indicating that there were NO BENEFITS to wetlands and the project became a drainage management only project. However, the U.S. Fish and Wildlife Service (USFWS) released data showing 77% of fish samples from Mud Sough to have selenium levels in the level of concern range (4-12 ppm) and 85% of fish samples from Salt Slough in the level of concern. Then the USBR said it had data to show uptake and load attenuation in Grassland. Notwithstanding, the General Manger, Don Marciochi for Grasslands recently told the Fresno Bee that the drainage in Grassland canals doesn't appear to hurt the wetlands but his system would simply work better if

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the used irrigation water went through part of the San Luis Drain.[1] These conflicting statements/findings by government agencies raise serious doubts about the "benefits" and "real motives" of the reopening of the San Luis Drain (SLD), AKA, Grassland Bypass.

Phase II: Beyond Sound Science

Recent events indicate that the Board is beyond the scientific research phase. It has apparently ceased funding any future objective and/or unbiased scientific studies, which, in the past, although expensive and extremely costly to the taxpayers, bought the Board and its constituents valuable time to stall; however, the general public did recieve some further scienticific understanking.

Discrediting Existing Research Based on Scientific Fact:

When it seems profitable for the Board and the Crook's Team to promote the "status quo" agenda, it will selectively discredit scientific studies when these studies fail to suite the Board needs. This component of the planning process seems to have been effectively replaced with objectives and conclusion determined by "political science" that is dictated by the vested interests and facilitated by the Crooks' Team and the Board.

Phase III: Now The Board Is In the Pseudo Regulatory Mode

This phase is unquestionably the most intriguing phase of all, because it appears that the Board is "finally" going to undertake some regulatory action to protect the waters of the state, but in reality it has only set a compliance schedule, with the understanding that the date is so far in the future that may it out dates the youngest living person on the planet. Phase III essentially leave the drainage issue open ended, and eliminates the need for the Board to search for new solutions other than the Valley Wide Drain.

Water Rights -- Beneficial Use -- Impaired: Public Trust Violation

If the Board is interested in protecting other beneficial uses and users of water, than I respectfully suggest that it take the necessary regulatory actions toprotect the waters of the state. This Board, in conjunction with the USBR, Department of Water Resources (DWR) and the drainers are responsible for the impairment of other senior water rights holders. For example: The U.S. Fish and Wildlife Service (USFWS) has senior appropriate water rights on Salt Slough that permits it to divert up to 19,910 acre-feet of water, if and when it is available, onto the San Luis National Wildlife Refuge (NWR) during any given year. However, according to the USFWS officials[2] the Service has not been able to exercise its water right under SWRCB License 10120 (Permit 72632) and License 10741 (Permit 7252) because of agricultural drainage contamination, and has duly notified the State Water Resources Control Board (SWRCB).

[1] *Closed canal at San Luis may reopen, Hearings expected on using 28-mile portion of drain in Merced County*, The Fresno Bee, reporter Marc Grossi, Tuesday, September 12, 1995, pp. 1 and A10.

[2] Patrick Porgans' Telephone Conversations with Gary Zahm, Refuge Manager, San Luis NWR Complex, (209) 826-3508 and Steve Moore, USFWS's Portland Office, (503) 231-6177, Monday, September 18, 1995.

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> *The U.S. Fish & Wildlife Service decided to discontinue using Salt Slough water in 1985 due to selenium contamination greater than 2 ppb. When clean water is available again in Salt Slough, the Service would use its full allotment. In 1988, 1989, & 1990, San Luis used 14,835; 13,620, and 15,022 acre-feet of water respectively which was delivered by the San Luis Canal Company.[3] See attached letter for details.[4]*

Furthermore, under the provisions of both the DWR and USBR water right permits, and as is stated in the State Water Resources Control Board's (SWRCB) Water Right Decision D-1485, no water is to be exported by these entities until all of the reasonable needs of the Delta are met. Conversely, these agencies have and continue to export water from the Delta in violations of the terms and conditions of their respective water right permits and in conflict with the provisions of the Watershed Protection Act and the County and Area of Origin requirements. In addition, water deliveries from the State Water Project (SWP) and the federal Central Valley Project (CVP) have and continue to irrigate lands that have know drainage problems that have and continue to degrade and impair the waters of the state, and are deleterious to other beneficial uses and/or uses in the Delta proper, which can be construed as an unreasonable use of water. The failure of your Board and the SWRCB to take corrective actions to abate the aforementioned violations, and your support of the Grassland Bypass have essentially sanctioned these injustices.

In conclusion, it is extremely difficult to comprehend how this amendment/plan/project benefits wildlife species or why there should be a partnership between U.S. Environmental Protection Agency (EPA), USFWS, and the USBR to push for the Grassland Bypass. The only species that will benefit from this plan/program is the corporate species. In the absence of sound science and common sense I am left with no alternative but to oppose both the Basin Plan amendment and/or the Grassland Bypass. I will consider filing an appeal with the SWRCB should you approve the plan and or Grassland Bypass proposal.

Respectfully,

Patrick Porgans

Patrick Porgans
PP:sp FN: C-I/WP5/SLD.DRA

cc: Interested Parties

[3] *Report of License For* 1988, 1989 and 1990, submitted to the State Water Resources Control Board, by Gary Zahm, Refuge Manager, San Luis NWR, USFWS, January 28, 1991.

[4] U.S. Fish and Wildlife Memorandum, To: Regional Director (AWR RF/CA) Portland, Or., From: Gary Zahm, Project Leader, San Luis NWR Complex, Las Banos, CA., Subject: ***A Contaminated Salt Slough and Associated Ramifications***, Date: 5/29/85.

PATRICK J. PORGANS
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Friday, December 8, 1995

Karl Longley, Chairperson
California Regional Water Quality Control Board
Central Valley Region
3443 Routier Road, Suite A
Sacramento, CA 95827-3098

HAND-DELIVERED

RE: Written Comments Pertaining to the Board's December 7, 1995, Workshop on the Compliance Time Schedule to be used for the regulation of Agricultural Subsurface Drainage Discharges into the San Joaquin River and Grassland Areas, Merced County.

To All Members of the Board:

Please be advised that I am submitting the following comments on my own behalf, and at the request of my clients, H.F. Brennan and Associates, Marine Surveyors.

Background Data:

Historically, the introduction of irrigated agriculture to arid areas has presented drainage problems. The California Department of Water Resources noted in 1974 that:

> *"The salt management problem in the San Joaquin Valley is not a unique one; the problem has plagued irrigated agriculture in all arid and semi-arid areas of the world since the beginning of recorded history. Many flourishing civilizations fell principally because of an inability to understand and cope with salt balance and drainage problems. The Tigris and Euphrates river valleys in ancient Mesopotamia became mostly desert because of the accumulation of salts in the surface soil layers. Relics of abandoned irrigation systems, alkali areas, and salt accumulation extending from the Sahara Desert through ancient Persia show that a lack of proper drainage eventually resulted in the physical and economic ruin of vast agriculturally productive areas."* (DWR, Bulletin 127-74.)[1]

There is an as old saying which read "Those who do not understand the past are doomed to repeat it." To wit, I respectfully submit that this board, in conjunction with the California Department of Water Resources (DWR), the U.S. Bureau of Reclamation (USBR), and the agricultural drainers are promoting the "Mesopotamian syndrome" at the taxpayers expense and to the degradation and impairment of other water rights holders in the areas of origin and to the destruction and demise of public trust resources, in its attempt to justify subsidized unsustainable agriculture production on certain lands which government reports indicate should not have been irrigated.

[1] Excerpt taken from the State Water Resources Control Board Order No. 95-1.

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RE: Written Comments Pertaining to the Board's December 7, 1995, Workshop on the Compliance Time Schedule to be used for the regulation of Agricultural Subsurface Drainage Discharges into the San Joaquin River and Grassland Areas, Merced County.

On numerous occasions, since the 1970s, I have appeared before the Central Valley Regional Water Quality Control Board (CVRWQCB) and the State Water Resources Control Board to express my concerns over their collective failure to deal with the agricultural drainage problems. The record will show that I have been actively involved in participating in the CVRWQCB's "updated" draft Water Quality Control Plan (WQCP) for the Sacramento-San Joaquin Valley Region. I submitted written comments in October 1994, and made an oral presentation before the CVRWQCB at its December 1994 hearing on the adoption of the draft WQCP. I made an oral presentation before the SWRCB at its December 1994 hearing on the adoption of the draft WQCP for both the San Francisco Region and the San Diego Region. In addition, I provided oral and written comments before the SWRCB at its January 1995 hearing when it adopted the CVRWQCB's amended Basin Plan. Furthermore, I made a presentation before the CVRWQCB at its January 1995, hearing on the adoption of staff reports which contained data that documented the high loads of agricultural drainage from the Grasslands that have and continue to adversely impact the San Joaquin River, water right holders, and public trust resources. I testified at that meeting and expressed my concerns to the board regarding its apparent failure to include the accumulative impacts of drainage on the San Joaquin River and Bay/Delta Estuary from other agricultural drainers, such as the Westland Water District. The accumulative load, or "total loading" is a critical issue that the board needs to assess, because it could have a significant impact on the viability of the Grassland Bypass Project and the selenium target loads contained in the Bypass Plan.

The staff reports, presented at the January meeting, also proved that the toxic drainage loads in the San Joaquin River had actually increased in the last two years, and that the plan to reduce toxic loads by better agricultural irrigation practices failed to meet its intended goal to reduce toxic loads.

The record will also reveal that I have appeared before this board and the SWRCB expressing my concerns, orally and in writing, on numerous issues relative to agricultural drainage, water quality, protection of public trust resources and the reasonable use of the public's water resources, i.e., the Bay Delta Water Quality Control Plan, SWRCB Resolution 68-16 "maintaining high quality water in California"; SWRCB Resolution 92-49 "policies and procedures for investigation and cleanup and abatement water quality limited segment zones"; Federal anti-degradation policy 40 CFR 131.12; I petitioned both the CVRWQCB and the SWRCB on agricultural drainage problems associated with the Tulare Lake Basin evaporation ponds (that petition is still pending a decision before the SWRCB), and I participated in the Kesterson hearings before the SWRCB, and the list goes on. (Please refer to Exhibit 1.)

I mentioned my involvement for the record, and I will consider my past comments pertinent to this agricultural drainage issue appended to the board's workshop record. On October 3, 1995, I submitted written comments to this board on the matter before it today, which I will briefly reiterate for the record:

The *Staff Report on the Water Quality Objectives and Implementation Plan to be Used for the Regulation of Agricultural Subsurface Drainage Discharges in the San Joaquin River Basin* is written in typical "Crooks'-team" fashion. It is vague, fragmented, and misleading. Key statements and numbers in the report are premised on half-truths, distortion of facts, and calculated guestimates. In addition, certain portions of the report are more reflective of science fiction, as opposed to sound science. In addition, the board has failed to provide the public with any "real" assurances in any of the relevant reports, that the respective amendment will improve the water quality in the San Joaquin River or significantly reduce the destruction of public trust resources dependent on this river system. There are so many flaws in the planned amendments and related reports that it would be extremely difficult to address them all, given the time constraints imposed by the board, I am forced to keep my comments brief.

To begin with, the only alternative we can support in the proposed amendment is Alternative 1:

> *1) an immediate prohibition of discharge of agricultural drainage from the drainage problem area,* [2]

We are opposed to Alternative 2 and 3 because they do not address the impending impacts of agricultural drainage water on downstream water users and public trust resources in a reasonable time period. Furthermore, Alternatives 2 and/or 3 assures the continued demise of the San Joaquin River and sanctions water quality violations well into the twenty-first century, essentially allowing the violator another 10- to 25- year grace period to comply, when they already spent 20 years to delay taking responsibility for their drainage problem. This extension of time will be primarily at the expense of taxpayers and to the demise of public trust resources and downstream water right users.

We are also opposed to "constructing a separate conveyance system downstream of Merced River confluence ($16-$28 million)" as stated on page 1:6 of the aforementioned report.

Moreover, my clients and I are adamantly opposed to the proposed Grassland Bypass Plan, the reopening and or use of the San Luis Drain. This opposition was stated in two letters to Roger Patterson, Regional Director, U.S. Bureau of Reclamation. Those letters are attached as Exhibit 2, please include them in the record.

[2] CVRWQCB's Nov. 1995. *Staff Report on the Compliance Time Schedule to be Used for the Regulation of Agricultural Subsurface Drainage Discharges in the San Joaquin River Basin*, Appendix I: 1-1.

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RE: Written Comments Pertaining to the Board's December 7, 1995, Workshop on the Compliance Time Schedule to be used for the regulation of Agricultural Subsurface Drainage Discharges into the San Joaquin River and Grassland Areas, Merced County.

A great deal of emphasis has been placed on the need to provide suitable water quality to the wetlands in the grassland area. Meeting the 2 ppb selenium is key to both the Basin Plan amendment and the recently consummated Use Agreement between the USBR and the San Luis & Delta Mendota Water Authority (WA) as is the proposed selenium target loads and related load reductions.

To that end, I have asked all of the government agencies involved in the bypass scheme to provide me with specific scientific data that qualifies and quantifies the assertion that 2 ppb will be attainable and that the actual and projected target loads contained in government reports are scientifically defendable. To date, I have not been furnished that data by my government, which leaves me with no alternative, at this time, but to acknowledge that such data may not exist.

Please be advised that I found the information in Appendix B and Table B-4 (Historical Perspective) to be highly suspect, difficult to interpret and somewhat misleading. It is with all due respect to Mr. Karkoski that I make the following comments: My initial assessment of the numbers contained in Table B-4 is that they are based on limited monitoring data, numerous assumptions, questionable calculations, and guestimates.

More important, as stated at the workshop, the "Concentration of Se in Tail Water = 2 ug/L" (2 ppb) in the text of Table B-4, according to Mr. Joe Karkoski, a staff engineer for the board, it is not a measured value. Furthermore, when asked, Mr. Karkoski admitted that the 2 ppb selenium was representative of "supply" water and "not" tail water. As you may recall, when Mr. Karkoski confirmed my suspicions about the source of the 2 ppb, and as I reiterated to the board during my presentation, that number was not representative of tail water and it was a bogus number.

Mr. Karkoski stated to me that the data contained in Table B-4 represents a "screening level analysis" and he conceded that they are based on limited data and that additional data would be required to make more accurate calculations.

I was so perplexed by some of the numbers and assumptions contained in the board's November staff report; in particular, Table B-4, page 9: (Exhibit 3) which appears to be a key component, if not the linchpin of meeting the plans load requirements and the success of the USBR/WA Use Agreement for the San Luis Drain - aka Grassland Bypass that I took the liberty to request the U.S. Geological Survey (USGS) to conduct an initial assessment of the board's numbers, to determine if the numbers and the assumptions which they are based on could be defendable from a scientific perspective.

You will find a copy of the letter that I sent to USGS in Exhibit 4. It may interest this board to know that USGS essentially agreed with my initial finding and concerns, pertinent to the data contained in Table B-4. In its initial assessment, USGS stated:

> We are unable to assess the validity of the calculations in the report because

documentation is inadequate for assumptions concerning 1) flow quantities (acre-feet and acre-feet/acre) and 2) selenium concentrations in tail water (2 ppb) and tile drain water (120 ppb or 150 ppb). As stated in the assumptions, present estimates of flow and concentrations in tile drainage and tail water appear not to have been recently updated to reflect varying conditions. For example, the CVRWQCB's measured mean selenium concentration for sumps in the Grasslands drainage area is given as 211 ppb, with a median of 134 ppb; no measured value is given for tail water. However, a base case set of assumptions (120 ppb Se in tile drainage and 2 ppb Se in tail water) are used throughout the time period 1986 to 1994 for all load reductions calculations with brief justification.

Inadequate documentation of data and calculations also make it difficult to assess the validity of the methodology used to make the calculations. .... The information given in Appendix B does not comprehensibly encompass the natural and man-made changes that the San Joaquin Valley has undergone since the drainage problem "surfaced" and management of drainage was study by the San Joaquin Valley Drainage Program.

The need for comprehensive study of selenium distribution and mean concentration is further demonstrated by your question regarding the concentration of selenium in Westlands drainage relative to that in Grasslands drainage. (End of USGS comments.)

What Table B-4 (Exhibit 4) does imply is that the drainers:

- Increased acreage in the problem drainage area;
- No agricultural lands have been retired because of drainage problems;
- Have nearly maxed-out on tile drain construction;
- Have reduced the amount of water they need to use, saving money, increasing profits; and
- Increased the concentration of selenium in drainage water, thus created the potential for increasing the water quality problems to downstream water users and cost for treating water for domestic consumption.

Table B-4 does not provide specific data on actual percentage of salts - selenium in tail water or tile water or the residual salts-selenium in the soils, which could increase total salt - selenium concentrations over time.

I can calculate the total drainage ppb -- 51 through 81 ppb etc; however, I have serious questions about the validity and accuracy of assumptions upon which these numbers are based and find it extremely difficult to accept that tile water has been 120 ppb during the time period 1986-1994 and tail water has been 2 ppb during the same time period.

Undoubtedly, one could proportion the pounds of selenium based on those numbers for tile and tail water and get the column named total drainage ppb selenium, but the question is what do those numbers really mean?

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There are no actual measured water quality data for the tail water coming off the fields to validate the 2 ppb selenium purported in Table B-4; rather as pointed out by Mr. Karkoski, the 2 ppb selenium represents water supplied and applied to the land.

B-4 does not appear to account for the amount of tile water recirculation and blended with tail water, which in Firebuagh Canal WD is estimated to be 30-40%, (Calpoly 1994, final report, Exec. Sum: 1-7).

All of the Firebuagh Canal Water District lift pumps take tail water and tile water (blended) and discharge it back to the distribution system (recycled water). The main problem for growers just north of the lift sumps discharging into the 2 lift canal (d-5 through d-9) these sumps have the potential to significantly increase the EC of the delivered water supply especially at low flows.

The 120 ppb in tile water is an "estimate" based on assumptions, which is based on limited data. Therefore, it is reasonable to assume that the calculations contain an inherent margin of error, and that margin of error is multiplied as more and more calculations are made. Accordingly, the accuracy of the data in B-4 is in question, as is the validity of some of the key numbers.

In view of the aforementioned statements, and the serious questions pertaining to the validity of the selenium numbers and target loads, I respectfully request that the board not take any action on the proposed amendment to the WQCP until it has a "round table" workshop to further explore the source and or accuracy of the selenium numbers contained in its staff report and those contained in the USBR Use Agreement. The board has an obligation and a duty to provide the public with accurate information and data that are based upon scientific fact. A failure on the board to provide such information could be construed as a breach of its duties and public trust responsibilities.

Please advise me if the board will honor my request for such a workshop as soon as possible. Furthermore, please be advised that we have every intention of exhausting the administrative remedy,either by petition or appeal, if the board fails to address the issues we raised. Thank you for your time and interest.

Respectfully,

Patrick Porgans

Patrick Porgans
PP:sp FN: C/1 WP5/BASINP7

cc: H.F. Brennan and Associates
Contra Costa Board of Supervisors
Senator John Nejedly
State Water Resources Control Board
CNN - San Francisco News Bureau
No California Love Canal - Citizens fu. Safe Drinking Water

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MICHELLE DECASTRO

JOHN CARLETON GRAY, 1872-1913
CARLETON GRAY, 1893-1944
PAUL JACKSON MINASIAN, 1933-1961
DAVID H. MINASIAN, RET. 1989

October 2, 1995

Mr. Paul E. Jepperson, Supervising Engineer
California Regional Water Quality Board
Central Valley Region
3443 Routier Road, Suite A
Sacramento, CA 95827-3798

Re: Comments of the San Joaquin River Exchange Contractors In the Matter of Water Quality Objectives and Implementation Plan To Be Used in a Basin Plan Amendment for Regulation of Agricultural Subsurface Drainage in the Grassland Area

Dear Mr. Jepperson:

These comments are submitted on behalf of the San Joaquin River Exchange Contractors (Exchange Contractors). The Exchange Contractors consist of Central California Irrigation District, San Luis Canal Company, Firebaugh Canal Water District and Columbia Canal Company. For purposes of dealing with water quality objectives and regulation of agricultural subsurface drainage in the Grasslands area, these comments are particularly focused on Firebaugh Canal Water District and 6,000 acres of CCID, referred to as Camp 13.

As the Board is aware, the Exchange Contractors hold pre-1914 and riparian water rights on the San Joaquin River. These water rights go back to Miller & Lux and form the basis of an Exchange Contract with the United States Bureau of Reclamation pursuant to which the Exchange Contractors agree not to exercise their rights to take water from the San Joaquin River so long as the Bureau of Reclamation provides them with substitute water from the Central Valley Project.

Valley Wide Drain:

The Exchange Contractors commend the Board staff's gutsy position which continues to recommend a valley wide drain as necessary to solve the drainage problems which exist in the San Joaquin Valley. We note that staff's recommendation does not specify a drain to the Delta as some commentators argue to you. We urge the Board to put aside unhelpful and meaningless rhetoric involved with revisiting Kesterson issues. We urge the Board to

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work with the Water Resources Control Board and the Bureau of Reclamation to establish waste discharge requirements and policies necessary to implement a valley wide drain.

The Board is undoubtedly aware of the recent federal district court order in which the court ruled that the Bureau of Reclamation has an obligation to provide drainage to the San Luis Unit of the Central Valley Project and can provide such drainage to adjacent lands affected by irrigation practices within the San Luis Unit. We urge the Board to take a leadership role in assisting the Bureau of Reclamation and the Water Resources Control Board move forward to conduct such hearings, perform necessary studies and adopt waste discharge requirements necessary to clear the way for construction of a valley wide drain while protecting public trust resources.

Regional Control of Subsurface Drainage:

The Exchange Contractors also commend the Board staff for its recognition that control of subsurface drainage must be taken regionally and not in a piecemeal fashion. We agree that drainage dischargers are not the same entities as those actually generating drainage. We urge the Board to work with the Bureau of Reclamation to identify those federal water service contracting entities that are causing or adding to drainage discharged by Firebaugh Canal Water District and Camp 13 area of CCID.

San Luis Drain Use Agreement:

The Board has been briefed on the status of the use by Grassland draining entities of a portion of the San Luis Drain. Firebaugh Canal Water District and the Camp 13 area of CCID account for approximately 28,000 acres of the 93,000 acre drainage area which will be discharging into the wetland bypass and San Luis Drain. Of those entities discharging into the drain pursuant to the Use Agreement with the Bureau of Reclamation, only Firebaugh and Camp 13 are water right holders with historic drainage rights through the area which is now the Grassland Water District. Consequently, we must disagree with the comments of Mr. Don Marchioci regarding the prohibition of subsurface discharge into the wetland supply channel on October 1, 1996 as provided in the draft water quality plan. We believe that this prohibition is a terminal sanction which is inappropriate vis a vis water right holders with historic drainage rights unless such a sanction is tied to specific identification and control of those upslope entities which cause or add to drainage as contrasted with the downslope entities which, due to their location, are those which are the ultimate dischargers into the sloughs and river.

The Exchange Contractors fully support the position of the drainers in regards to embarking on a study to determine the appropriateness of the 5 ppb selenium standard promulgated by the EPA. As we have stated to you in previous hearings, we believe that recent findings demonstrate that the 5 ppb selenium standard is inappropriate for the waters in the San Joaquin Valley and the standard should be increased to a higher number which is representative of the area. The exact number will have to be determined through further studies in which the drainers would co-participate with the RWQCB and EPA.

The Exchange Contractors disagree with the notion of using "loads" as a basis which the RWQCB would use to meet the 5 ppb selenium standard at Crows Landing. One of the reasons is that the water which Exchange Contractors receive from the Delta-Mendota Canal often exceeds 5 ppb selenium. If the Exchange Contractors are "allocated" a certain load that they can discharge in any particular month and their receiving water has a "load" that matches or exceeds that load, then we set ourselves up for automatic failure. Unless the RWQCB can adequately and fairly address the effects of receiving water loading and upslope loading, we must recommend that selenium load allocation is an improper method to use to achieve selenium standards in the San Joaquin River.

Thank you for the opportunity to provide these comments. If the Board or its staff has any questions, please do not hesitate to contact either Steve Chedester, Executive Director, San Joaquin River Exchange Contractors, P.O. Box 2115, Los Banos, CA 93635, Telephone: (209) 827-8616, or the undersigned.

Very truly yours,

MINASIAN, MINASIAN, MINASIAN,
SPRUANCE, BABER, MEITH & SOARES

BY Michael V. Sexton
MICHAEL V. SEXTON

MVS:dr

cc: Steve Chedester/Exchange Contractors

July 6, 1995

William H. Crooks, Executive Officer
California Regional Water Quality Control Board
Central Valley Region
3443 Routier Road, Suite A
Sacramento, CA 95827-3098

Subject: Comments Regarding Beneficial Uses and Water Quality Criteria to be Used in the Basin Plan for Regulation of Agricultural Subsurface Drains in the Grassland Area, Merced County

Dear Bill:

We are hereby transmitting written comments on the above subject as requested in the Notice for the June 23, 1995 workshop. As you are aware, we gave verbal comments at the meeting and these written comments are intended to present in more detail those comments. We have attached four specific items:

1. Comments regarding beneficial uses.
2. Comments on the applicability of EPA's 5 ppb national water quality criteria for selenium to the San Joaquin River.
3. Comments regarding economic impacts of the proposed beneficial uses and water quality criteria.
4. Copy of our preliminary draft (May 8, 1995) of the Regional Management Plan for Maintaining Water Quality in the San Joaquin River.

Items 1 through 3 stand on their own. Item 4, the Regional Management Plan, is our initial draft of taking local control and responsibility for management of the drainage water. The Regional Management Plan has two phases. Phase One would be the formation of the regional drainage entity (which has been previously requested by the Regional Board) under the umbrella of the San Luis & Delta-Mendota Water Authority. All of those drainage entities which discharge subsurface drainage water would be a member of this regional entity.

Phase One also would include the appointment of a regional drainage coordinator which would be the person responsible for and oversee this local drainage management program and a real time monitoring system.

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Also a part of Phase One would be a wetlands bypass project that would remove drainage water from conveyance canals within the Grasslands area and provide substantial beneficial improvements. Part of this project would be to utilize a portion of the San Luis Drain for conveyance of the drainage waters. Phase One would provide the management tools that would complement and are needed in order for Phase Two to proceed.

Phase Two would be implementation of drainage control measures to reduce drainage amounts to meet adopted water quality standards. It should be noted that this is a draft document and the local entities are in the process of providing more detailed guidance between Phase One and Phase Two.

We appreciate the opportunity to comment on a coordinated basis from the Grassland basin drainers on this first workshop regarding the Basin Plan Amendments. We also stated at the meeting that we are willing to work together during this process with the Regional Board and the Environmental Protection Agency to develop an implementation program that is both locally acceptable and meets the requirements of federal and state law. We are willing participants in such a process.

We would also like the opportunity to have access to Regional Board staff to keep our member agencies up to date on what is happening. In the past, your staff has been available for such meetings and briefings, and we assume this will continue.

Very truly yours,

Daniel G. Nelson
Executive Director

Enclosures

DGN/mv

July 4, 1995, GRASLAND\BENUSE.795

Comments regarding Beneficial Uses
June 23, 1995, Workshop on Beneficial Uses and Water Quality Criteria
Grassland Area, Merced, County

1. It was indicated that the Board may hear comments on the need to consider beneficial use designations on a watershed basis rather than on an individual water body basis. This method may be appropriate because the grassland watershed has been completely altered by land use practices and activities within the watershed. The channels in the grassland basin are effluent dominated water bodies, without the presence of ag drainage could dry up at times during the year and were often constructed for specific purposes that may be in conflict with the proposed beneficial uses. The proposed beneficial uses may not be consistent with appropriative use in the watershed.

2. It was also indicated that the Board may hear comments on the need for alternate approaches to beneficial use designation that recognize the differences in the level of beneficial use that can be attained when these channels are ephemeral, constructed for a specific purpose or are effluent-dominated water bodies. The conventional method of beneficial uses, water quality objectives and implementation not applicable in this situation. An alternate approach may be needed for beneficial use designation because of the altered nature of the channels within the watershed. Beneficial uses are dependent on land use and activities in the watershed. If land uses change then beneficial uses could also change.

3. There are currently no beneficial natural flows in the watershed. There are natural flows that reach and pass through the watershed. A case in point is the recent March storm events. High flows from the westside foothills created flooding problems and also discharge high selenium concentrated waters into the watershed. It should be noted that agricultural users with subsurface tile systems cannot control these flows.

4. The watershed approach is being investigated in other forums also such as the recent Inland Surface Water Plan technical committees.

5. One option in implementation in a watershed basis could be the issuing of variances in cases where beneficial uses cannot be met.

6. Should designate Mud Slough and Salt Slough as having the current use of Subsurface Ag Drainage like the channels within the Grassland Wetlands.

7. It may not be possible to meet a high level of expectations for the beneficial uses in these channels. Beneficial uses and subsequent water quality criteria should not be locked in at this time but should be flexible for future considerations.

8. Clean Water Act language talks about Use Attainability Analysis but it is not clear how this in done to the approval of EPA.

9. Comments on specific proposed beneficial uses.

Limited AGR for Mud Slough (North) does not seem appropriate because the entire length of Mud Slough is now adjoined by State and/or Federal refuges.

WARM for Salt Slough and Mud Slough (North) should be modified to include only limited uses as included for the Grassland Channels.

SPWN should also be modified to include limited wording as in the wording for the Grassland Channels.

WILD for both sloughs should be modified to include limited uses. Current uses include conveyance of ag drainage which precludes their use for this beneficial use.

BIOL for both sloughs should be modified to include limited uses as above for WILD.

COMMENTS ON THE APPLICABILITY OF EPA'S 5 ppb NATIONAL WATER QUALITY CRITERION FOR SELENIUM TO THE SAN JOAQUIN RIVER

MONGAN/MILLER
June 27, 1995

SUMMARY

I. Application of EPA's 5 ppb National Water Quality Criterion (NWQC) for selenium to the San Joaquin River is not scientifically justified. EPA essentially established the NWQC for selenium based on a site-specific situation at Belews Lake, North Carolina. The resulting 5 ppb criterion does not account for lower selenium uptake by organisms in high-sulfate environments like the San Joaquin Valley.

In 1988, the SWRCB presented data on bioaccumulation of selenium by San Joaquin Valley fish. These data are consistent with more recent experimental data on lower uptake of selenium by other organisms in high sulfate waters characteristic of the San Joaquin system. The SWRCB analysis indicates that a site specific objective of 10 ppb, as a long term geometric mean, will prevent bioaccumulation of selenium in fish to levels above 1 ppm in the San Joaquin Valley. This will keep selenium concentrations below levels needed to protect aquatic life and below the DHS maximum allowable level.

II. Site-specific water quality objectives above 5 ppb in the San Joaquin Valley are appropriate, because harmful effects of selenium at levels currently found in Valley streams have not been identified.

In addition, information presented by Williams et al (1994) indicates that selenium levels around 10 ppb in San Joaquin Valley streams are not likely to harm birds:

1. Selenomethionine (the essential amino acid methionine with sulfur replaced by selenium) causes the selenium-associated reproductive impairment observed in birds and fish;
2. The threshold for reproductive impairment in birds occurs when the average selenomethionine content of food is 4-8 ppm.
3. Birds, and invertebrate or vertebrate food organisms, cannot make selenomethionine.
4. Selenomethionine is created in algae and enters the food chain when algae are consumed by vertebrates and invertebrates.
5. Selenomethionine levels in birds, or food organisms, are likely to be less than or equal to selenomethionine levels in algae;
6. At the same water concentration of selenium, selenomethionine content of algae is lower in higher sulfate waters.
7. At sulfate levels of only 33 mg/L (lower than observed in San Joaquin Valley streams), selenomethionine levels in algae at the base of the food chain have fallen to 4 ppm, below the dietary threshold of selenomethionine for reproductive impairment in birds.

III. EPA's suggested methods for establishing site-specific water quality objectives are not applicable to substances like selenium that cause harm by bioaccumulating through the food chain.

EPA's suggested methods for establishing site-specific water quality objectives relate to directly toxic contaminants. New methods must be developed to identify site-specific objectives for contaminants like selenium that cause harm by bioaccumulating through the food chain. These methods must recognize that background levels used to develop site-specific objectives must be site-specific background levels in the west side of the San Joaquin Valley, and not national or global background levels.

INTRODUCTION

The Central Valley Regional Water Quality Control Board (CVRWQCB) is reconsidering their Water Quality Objective for selenium in the San Joaquin River. The CVRWQCB objective states that monthly average selenium concentrations must not exceed 5 ppb in the San Joaquin River downstream of the confluence with the Merced River, or 10 ppb in Mud and Salt Sloughs and the San Joaquin River above the confluence with the Merced. The CVRWQCB objective was disapproved by the U.S. Environmental Protection Agency (EPA) because it conflicts with EPA's National Water Quality Criterion (NWQC). The EPA NWQC for selenium states that the four-day average concentration of selenium should not exceed 5.0 ug/L (5 ppb) more than once every three years on the average (USEPA, 1987).

Selenium standards in the San Joaquin River have an important effect on farms served by the San Luis & Delta-Mendota Water Authority (SLDMWA). Therefore, SLDMWA reviewed EPA's NWQC to see if its application to the San Joaquin River is scientifically justified.

COMMENTS

I. Application of EPA's 5 ppb National Water Quality Criterion (NWQC) for selenium to the San Joaquin River is not scientifically justified. EPA essentially established the NWQC for selenium based on a site-specific situation at Belews Lake, North Carolina. The resulting 5 ppb criterion does not account for lower selenium uptake by organisms in high-sulfate environments like the San Joaquin Valley.

The State Water Resources Control Board (SWRCB, 1988) presented data collected by Saiki (1986) on bioaccumulation of selenium by San Joaquin Valley fish. These data are consistent with more recent experimental data, discussed below, on lower uptake of selenium by organisms in high sulfate waters characteristic of the San Joaquin system. SWRCB's regression analysis of the site-specific data from the San Joaquin Valley yields the following equation describing bioaccumulation of selenium by Central Valley fish:

$$x = 10^{0.996 + 1.49 \log y}$$

where x = selenium concentration in water in parts per billion (ppb), and
y = selenium concentration in fish tissue (wet weight) in parts per million (ppm).

This equation suggests a site-specific water quality objective for selenium in San Joaquin Valley waters of about 10 ppb as a long term geometric mean (SWRCB, 1988), based on either:

- SWRCB's estimate of the levels necessary to protect aquatic life (1.1 ppm no effect concentration in fish tissue), or
- the California Department of Health Services maximum allowable residue level of 1 ppm in fish.

In other words, based on the SWRCB analysis, a site specific objective of 10 ppb will prevent bioaccumulation of selenium in fish to levels above 1 ppm in the San Joaquin Valley.

Using site-specific bioaccumulation data, a Technical Committee composed of State Water Resources Control Board and Central Valley Regional Water Quality Control Board staff members recommended a monthly average selenium objective of 10 ppb for Mud and Salt Sloughs (SWRCB, 1987, pg. VIII-12). In contrast, EPA's NWQC for selenium is based primarily on the observation that selenium concentrations of 10 ppb in Belews Lake, North Carolina, severely depressed the fish population, whereas the portion of the lake with less than 5 ppb selenium had a healthy fish population (Stephan, 1994). Belews Lake is a reservoir that received selenium-contaminated fly ash effluent from a coal-fired power plant.

Basically, EPA inappropriately established a national standard based on a site-specific situation at Belews Lake. In particular, EPA's 5 ppb NWQC for selenium does not take account of the long known (USEPA, 1987; Shrift, 1954), and experimentally documented (Williams et al, 1994; Hansen et al, 1993; Knight, 1995, personal communication), lower uptake of selenium by organisms in high-sulfate environments. Belews Lake is in a low sulfate environment in the piedmont region of North Carolina that contrasts sharply with the high concentrations of sulfates in San Joaquin Valley waters. 50th percentile sulfate concentrations in the Roanoke Basin downstream from Belews Lake are 8 mg/L, while 50th percentile sulfate concentrations in the nearby Yadkin and Cape Fear Basins are 5 and 6 mg/L, respectively (L. Ausley, 1995, personal communication). For comparison, the minimum sulfate concentration measured in the San Joaquin River at Crows Landing Road (11 miles downstream from the mouth of the Merced River) during 1992-1994 was 74 mg/L. At Airport Way near Vernalis, the minimum sulfate concentration measured in the San Joaquin River during 1992-1994 was 54 mg/L (CVRWQCB, 1995).

It is clearly unreasonable to assume that environmental effects of low levels of selenium will be the same in the low sulfate environment of Belews Lake and in high sulfate environments like the San Joaquin Valley. Aquatic ecosystems with low ambient sulfate

levels (e.g. Belews Lake) "may be particularly susceptible to selenium contamination," with toxicity occurring at selenium levels lower than for systems with higher sulfate levels, such as the San Joaquin Valley (Williams et al, 1994). However, EPA did not consider the effects of sulfate concentration on selenium uptake when establishing their National Water Quality Standard, even though the first page of the Criterion document explicitly recognizes that sulfate can affect the toxicity of selenium.

Scientific studies of the effects of sulfate levels on selenium uptake have focused on food chain organisms because "bioaccumulation through the food chain is the primary cause of observed impacts" of selenium on aquatic ecosystems (Maier and Knight, 1994). Accordingly, Williams et al (1994) demonstrated that selenate uptake by the green alga *Selenastrum capricornutum* is considerably reduced by increased sulfate concentration. Uptake from water with 10 ppb Se and 33 mg/L sulfate was about 1/4 of the uptake from water with 10 ppb Se and 3.3 mg/L sulfate. Uptake from water with 100 ppb Se and 33 mg/L sulfate was about 1/14 of the uptake from water with 100 ppb Se and 3.3 mg/L sulfate.

Hansen et al (1993) demonstrated that "Increasing sulfate concentrations significantly reduced the accumulation of" selenium by important San Joaquin Valley food chain organisms, the midge *Chironomus decorus* and the cladoceran *Daphnia magna*. The test waters had high concentrations of selenium, ranging from .7 ppm to 6 ppm. Maier and Knight (1993) note that "The midge *C. decorus* is a benthic invertebrate common in the Central Valley of California where it is a major component of aquatic food chains." Midges are the most numerous of the larger insects in wetlands throughout the world (Horne and Roth, 1989), and Alaimo et al (1994) reference Connelly and Chesmore (1980) and Ivey (1987) to state that "Chironomid (midge) larvae have been reported as the most important animal food item in San Joaquin Valley American coot and northern pintail diets."

Appropriate selenium water quality objectives for a region must take into consideration natural background levels of selenium in the region, and natural background levels of selenium frequently exceed EPA's 5 ppb NWQC in ephemeral streams draining into the west side of the San Joaquin Valley. CVRWQCB (1991) studied 1191 square miles of drainages in the Coast Range west of the San Joaquin Valley and north of the Panoche Creek drainage. Streams draining 14% of this area had 75th percentile selenium concentrations in excess of the 5 ppb EPA NWQC (i.e., ¼ of the measurements were above 5 ppb). This represents natural background in the streams, because there was no irrigated agriculture in the drainage basins upstream from the sampling points. The 75th percentile selenium level was also 5 ppb in Panoche Creek, but this may have resulted from agriculture in Panoche Valley. Later, the California Department of Water Resources studied floodwater inflows to the California Aqueduct (San Luis Canal) that runs down the west side of the San Joaquin Valley (DWR, 1995). The median selenium concentration of floodwater inflows to the Aqueduct between milepost 50 and milepost 170 was 6 ppb, in excess of the EPA 5 ppb NWQC.

A scientifically appropriate water quality objective for selenium must take account of sulfate levels and natural background selenium levels in the affected ecosystem.

2. **Site-specific water quality objectives above 5 ppb in the San Joaquin Valley are appropriate, because harmful effects of selenium at levels currently found in these water have not been identified.**

No studies indicating harmful effects resulting from selenium levels presently occurring in Mud and Salt Sloughs and the San Joaquin River were located, although 50th percentile selenium concentrations in Mud and Salt Sloughs in water years 1985 through 1994 ranged from 1 to 20 ppb (CVRWQCB, 1995a). In particular, the diversity of fish species in Mud and Salt Slough is similar to other locations in the San Joaquin Valley (CVRWQCB, 1995b).

Experts from the California Department of Fish and Game (DFG) have conducted Selenium Verification Studies for the State Water Resources Control Board (SWRCB) since 1986. In 1991, DFG experts measured selenium levels in 254 tissue samples from eight species of fish collected in Mud Slough, the San Joaquin River and San Joaquin River backwater areas (California Department of Fish and Game, 1994). They found that:

- no species contained selenium at levels of concern for human health;
- few tissue samples even approached levels where toxic effects in fish might begin to appear; and
- selenium concentrations were lower in fish taken from backwater areas than in fish taken from the streams, showing that selenium is not being selectively concentrated in backwater areas.

Only 0.8% (2 out of 254) of the fish samples taken by DFG in 1991 exceeded levels where toxic effects in fish might begin to appear. These samples, collected in the San Joaquin River above and below the confluence with the Merced, only exceeded the level of concern by 10% and it is highly doubtful that these two sample results provide a statistically significant indication of any adverse effects on fish. Earlier DFG studies of selenium levels in muscle and livers of catfish taken from Mud and Salt Sloughs found selenium levels far below toxic levels, no adverse effects and no threat to human consumers (SWRCB, 1990, pages vi, 5 and 8).

In addition, information presented by Williams et al (1994) indicates that selenium levels around 10 ppb in San Joaquin Valley streams are not likely to harm birds:

1. Selenomethionine (the essential amino acid methionine with sulfur replaced by selenium) causes the selenium-associated reproductive impairment observed in birds and fish;
2. The threshold for reproductive impairment in birds occurs when the average selenomethionine content of food is 4-8 ppm.
3. Birds, and invertebrate or vertebrate food organisms, cannot make selenomethionine.

4. Selenomethionine is created in algae and enters the food chain when algae are consumed by vertebrates and invertebrates.
5. Selenomethionine levels in birds, or food organisms, are likely to be less than or equal to selenomethionine levels in algae;
6. At the same water concentration of selenium, selenomethionine content of algae is lower in higher sulfate waters.
7. At sulfate levels of only 33 mg/L (lower than observed in San Joaquin Valley streams), selenomethionine levels in algae at the base of the food chain have fallen to 4 ppm, below the dietary threshold of selenomethionine for reproductive impairment in birds.

In contrast, SWRCB's 1987 analysis of water concentrations of selenium needed to protect waterfowl (suggesting an objective around 1 ppb) is inappropriate for San Joaquin Valley streams because it:

- does not account for the effects of San Joaquin Valley sulfate levels on selenium concentrations in food organisms, and
- assumes that birds subsist entirely on food taken from waters with elevated levels of selenium.

3. **EPA's suggested methods for establishing site-specific water quality objectives are not applicable to substances like selenium that cause harm by bioaccumulating through the food chain.**

EPA's suggested methods for establishing site-specific objectives, set forth in "Interim Guidance on Determination and Use of Water-Effect Ratios for Metals" (EPA-823-B-94-001, 1994) are designed for substances that are directly toxic. The Water Effects Ratio procedure employs bioassays to determine the difference in toxicity observed in site waters and in the reference water used to establish the national water quality criterion. The Water Effects Ratio (WER) is the concentration that causes toxic effects in site water divided by the concentration that causes toxic effects in the reference water used to establish the national standard. The resulting site-specific objective is

Site-specific objective = WER x (EPA national objective)

Bioaccumulation through the food chain, not direct toxicity, is the main issue with respect to selenium (Maier and Knight, 1994). In this case, the Water Effects Ratio approach cannot be used (C. Stephan, EPA, personal communication). New methods must developed to identify site-specific objectives for contaminants like selenium that cause harm by bioaccumulating through the food chain. These methods must recognize that background levels used to develop site-specific objectives must be site-specific background levels in the west side of the San Joaquin Valley, and <u>not</u> national or global background levels.

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Economic Considerations In Choosing Beneficial Uses And Water Quality Criteria

The assignment of beneficial uses and the selection of water quality criteria in the Grassland Area will generate benefits and costs for the residents of California. The best set of beneficial uses and criteria will achieve the proper balance of public benefits and public costs.

Benefits include the protection of water quality, while costs include the reductions in economic activity that will occur, if agricultural production declines, due to increased recirculation of saline drainage water. Reductions in farm-level production will cause further reductions in the sales of firms that provide inputs to farms, and in the income of households that are employed directly in agriculture and in the supporting industries.

The net economic impact on local communities and on the value of agricultural output in California is, in part, a function of the beneficial uses and the water quality criteria that are selected for the Grassland Area. The appropriate economic criterion, to maximize the net public benefits of water quality objectives, is to match the incremental gain in the values achieved in selecting policy parameters with the incremental reduction in economic activity.

The Grassland Basin Drainers are developing economic information that can be used to evaluate the net public benefits generated by agricultural production and natural resources in the region. That information will include estimates of the economic value of crops produced each year, and the revenues that are generated by industries that provide inputs to farmers. The number of jobs provided by agriculture and the impact of agriculture on household income and expenditures will also be estimated.

The Drainers are also preparing an economic analysis of the long-term impacts of water quality objectives on agricultural production. Increased recirculation of subsurface drainage water will cause soil salinity to increase, over time, causing reductions in the yield of salt-sensitive crops. Those crops are often more profitable than salt-tolerant crops, and they provide greater public benefits per acre-foot of irrigation water. Water quality criteria that enable farmers to maintain salt balance will ensure that the public benefits generated by the production of salt-sensitive crops can be sustained, in the future.

Farmers and districts in the Grassland Basin have implemented many improvements in water management practices, in recent years, to maximize the value of limited water supplies and reduce the volume of drainage water discharged to the San Joaquin River. They have also invested significant resources in experiments to evaluate alternative methods of removing selenium from drainage water, before it is discharged to the River. All of these investments, which generate both private and public benefits, are made possible by the net returns generated in crop production. The optimal set of beneficial uses and water quality criteria will enable farmers to continue making these investments that promote long-term productivity and enhance environmental quality.

October 4, 1995

Mr. William H. Crooks, Executive Officer
California Regional Water Quality Control Board
Central Valley Region
3443 Routier Road, Suite A
Sacramento, California 95827-3098

Subject: Comments on the Staff Report on The Water Quality Objectives and Implementation Plan to be Used for the Regulation of Agricultural Subsurface Drainage Discharges in the San Joaquin River Basin

Dear Bill,

Enclosed are written comments prepared by the San Luis & Delta-Mendota Water Authority, in response to the Regional Board Staff Report dated August 1995. These comments expand upon the concepts and analysis that we presented, very briefly, at the Regional Board Workshop on September 22. In general, the Water Authority and the Grassland Basin Drainers support the approach taken by staff regarding water quality objectives in the San Joaquin River Basin.

We would like to include with these comments, by reference, the written material we submitted to the Regional Board on July 6, 1995. That material was prepared in response to the Workshop on Beneficial Uses and Water Quality Criteria to be Used in the Basin Plan Amendment. The July 6 comments include important discussion of beneficial uses and the methods used to select a selenium water quality objective for the San Joaquin River, Mud Slough, and Salt Slough.

The San Luis & Delta-Mendota Water Authority plans to work with the Regional Board and the Environmental Protection Agency to determine the most appropriate water quality objectives for the San Joaquin River and Sloughs, using the best scientific and economic data available. It is possible that site-specific water quality objectives may protect beneficial uses at a lower cost to the public. At this time, however, we are moving forward aggressively with efforts to achieve the proposed water quality objectives and selenium load targets. Therefore, we are not presenting new information regarding the appropriateness of the proposed water quality objectives at this time.

The Staff Report on the Water Quality Objectives and the Implementation Plan addresses many important issues regarding the selection and achievement of water quality objectives in the Grassland Area. We appreciate the effort put forth by your staff in preparing a thoughtful and pertinent report that describes both the current water quality conditions in the Grassland Area and the challenges that remain in reducing selenium loads that are generated largely by nonpoint sources.

Our comments address selected statements and analysis in the Staff Report that under-estimate the potential economic impacts of the proposed objectives. The report states correctly that despite significant efforts to reduce drain water volume and selenium loads in recent years, selenium concentration objectives in the region are still exceeded in some months. Further knowledge is required about the relationship between irrigation activities and drainage water volume and selenium loads. In addition, farmers and districts will need to make even greater investments in new and existing irrigation technologies, and in selenium removal methods, to achieve water quality objectives.

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We appreciate this opportunity to provide detailed comments regarding material presented in the Staff Report. We have also developed cost estimates for some of the activities described in the Staff Report, such as improving irrigation technologies and treating drainage water to remove selenium. We describe, very briefly, the Regional Management Plan that is being implemented by the Grassland Basin Drainers to achieve selenium load targets. A copy of that Plan was submitted to the Regional Board with our July 6 comments.

The Grassland Basin Drainers have analyzed the potential economic impacts of the recirculation of drainage water that may be required to achieve selenium load targets. We are including with these comments our estimates of the potential impacts of the Total Monthly Maximum Load targets prepared by Regional Board Staff and the load targets that are included in the Tentative Use Agreement for the Wetlands Bypass. We are also transmitting with these comments a report that describes the economic model used for that analysis.

The magnitude of the potential economic impacts on agriculture and on local communities, and the experience needed to identify and implement cost-effective measures for achieving water quality objectives provide a strong case in support of the long-term compliance schedule proposed in the Staff Report.

Thank you for this opportunity to provide comments on the Staff Report. Please let me know if any additional information from the San Luis & Delta-Mendota Water Authority would be helpful, at this time.

Sincerely,

Daniel G. Nelson
Executive Director

Enclosures

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Comments Regarding Water Quality Objectives and an Implementation Plan for the San Joaquin River Basin

Prepared by the San Luis &
Delta-Mendota Water Authority

October 4, 1995

These comments pertain to the "Staff Report on the Water Quality Objectives and Implementation Plan to be Used for the Regulation of Agricultural Subsurface Drainage Discharges in the San Joaquin River Basin," August 1995. That report was prepared by the California Regional Water Quality Control Board for the Central Valley Region.

Comments Regarding Water Quality Objectives and an Implementation Plan for the San Joaquin River Basin

ıe Regional Board Staff Report on the Water Quality Objectives and the ıplementation Plan addresses many important issues regarding the selection and :hievement of water quality objectives in the Grassland Area. The Regional ɔard Staff has put forth considerable effort in preparing a thoughtful and ırtinent report that describes both the current water quality conditions in the ·assland Area and the challenges that remain in reducing selenium loads that are ınerated largely by nonpoint sources. The report states correctly that despite ɜnificant efforts to reduce drain water volume and selenium loads in recent ıars, selenium concentration objectives in the region are still exceeded in some onths. Further improvements in irrigation technology, water management, and lenium removal methods will be needed to achieve water quality objectives.

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Specific Comments On the Staff Report

Compliance Time Schedule

The water quality objectives presented in the Staff Report include a 2 µg/lL selenium objective (monthly mean) for wetland supply channels and Salt Slough, and a 5 µg/L selenium objective (4-day average) for the San Joaquin River and Mud Slough (North). The compliance time schedule presented in Table 11 of the Report (page 39) includes a compliance date of October 1, 1996 for the wetland supply channels and Salt Slough, October 1, 2015 for the San Joaquin River downstream of the Merced River, and October 1, 2020 for the San Joaquin River upstream of the Merced River and Mud Slough (North). The Water Authority strongly supports this time schedule, though it has reservations about the October 1, 1996 date for the wetland supply channels and Salt Slough.

Specifically, the Grassland Basin Drainers will need an alternate route for subsurface drainage water in order to achieve the selenium concentration objective for the wetland supply channels by October 1, 1996. The Wetlands Bypass program will certainly increase the likelihood that the 2 µg/L selenium objective can be achieved in the wetland channels. If the Wetlands Bypass program does not go forward, the 2 µg/L selenium objective will not be achievable.

The proposed compliance dates for the San Joaquin River and Mud Slough (North) provide more time for developing the technologies that will be required to achieve the selenium concentration objectives. The additional time is appropriate, given our incomplete knowledge regarding irrigation and drainage relationships, the inherent uncertainty that describes the drainage water volume and loads observed in the region, and the large expenditures that will be required to generate better information and to develop cost-effective technological solutions.

The proposed compliance schedule will enable farmers, districts, and state and federal agencies to collect and analyze data describing the potential impacts of selenium on water quality and beneficial uses in the San Joaquin River and Mud Slough (North). At present, the potential biological impacts of selenium in these waterways are not known with certainty. It is possible that higher concentrations of selenium will not have a negative impact on beneficial uses in the San Joaquin River and Mud Slough. If this is the case, then the overall public benefits generated by water resources in the Grassland Basin will be enhanced by allowing higher concentrations of selenium. The proposed compliance schedule

will enable researchers and policy makers to address this issue more completely, at the appropriate time.

Some of the oral comments presented at the Regional Board's September 23 Workshop suggested that the proposed compliance schedule allows too much time for the Grassland Basin Drainers to achieve selenium concentration objectives. It was suggested that the Regional Board implement a more restrictive compliance schedule, in order to prevent degradation of the San Joaquin River. Some of the comments also alluded to the time that has elapsed since 1983, when selenium was first identified as a problem at the Kesterson National Wildlife Refuge. Some also suggested that farmers and districts in the Grassland Basin have made little effort to improve water management practices and to reduce drainage water volume and loads in recent years.

The San Luis & Delta-Mendota Water Authority and the Grassland Basin Drainers believe the Regional Board should retain the proposed compliance time schedule, because the public will benefit from the time provided to develop cost-effective methods for reducing selenium loads in subsurface drain water. Agricultural production in the Grassland Basin generates significant private and public benefits. Water quality in the San Joaquin River is also an important public resource and beneficial uses in the River should be protected. A policy that enables farmers to continue producing agricultural products, while protecting water resources, is clearly in the public's interest. The monitoring program described in the Staff Report will ensure that water quality is not degraded in the San Joaquin River, while farmers, districts, and researchers develop appropriate methods for reducing selenium loads sufficiently to achieve concentration objectives.

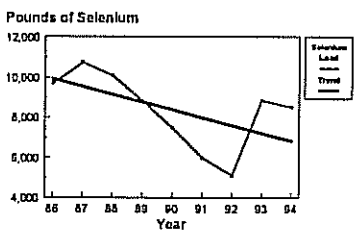
Efforts to protect water quality in the San Joaquin River should not be compared to the problems caused by selenium at Kesterson. Those problems were caused by very high concentrations of selenium in a set of drainage water holding ponds. Over time, as the drainage water evaporated, the concentration of selenium increased to levels that were many times greater than those observed in the San Joaquin River, which is a flowing system in which water is not ponded or allowed to evaporate. Biological problems like those observed at Kesterson have never been reported in the San Joaquin River, and it is very unlikely that such problems will occur in the future.

Farmers and districts in the Grassland Basin have made substantial investments in irrigation technology and improvements in water management practices in recent years. As a result, drainage water volume and loads were reduced significantly during 1990 through 1992. The volume and loads increased somewhat in 1993 and 1994, but the long-term trend remains downward-sloping (Figure 1). In

addition, farmers and districts have already implemented most recommendations of the San Joaquin Valley Drainage Program. Remaining recommendations are now being implemented as part of a Regional Management Plan developed by the Grassland Basin Drainers. These improvements and the associated reductions in drainage water volume and loads reflect the gains that can be achieved with existing technology. Sustained reductions in drainage water volume and loads, beyond those observed to date, will require greater adoption of existing technologies and development of new techniques for minimizing deep percolation and removing selenium from subsurface drain water.

Figure 1.

Selenium Load Trend (1986-1994)



The potential economic impacts of selenium load restrictions are presented later in this document. That analysis suggests that if a Total Maximum Monthly Load program is implemented immediately, to achieve a 5 µg/L selenium concentration objective, the total value of crop production would be reduced by $41.4 to $65.3 million during a five-year period. Most of that decline would be caused by decreases in crop yields due to rising soil salinity, as recirculation is increased beyond the level that can be sustained while maintaining salt balance. The California Water Code enables the Regional Board to consider such economic impacts, when evaluating the potential benefits and costs of its water policy decisions.

The compliance time schedule proposed by the Regional Board will limit the total load of selenium discharged from the Drainage Problem Area to 8,000 pounds per year, beginning on October 1, 1997. This restriction is designed to prevent degradation of the San Joaquin River during the time in which farmers, districts, and researchers develop new technologies for achieving concentration objectives. Although it will be difficult and costly to achieve the 8,000 pound limit, we

believe this method of implementing water quality objectives is appropriate in this case. The selenium load restrictions should protect water quality in the San Joaquin River, while enabling agricultural production to be continued in the region.

Studies to be Conducted

The Staff Report includes a list of nine studies that should be undertaken to develop better information for refining water quality objectives and the Regional Board regulatory program (pages 42-44). These include development of a groundwater model, analysis of the costs and benefits of actions to achieve water quality objectives, and examination of site-specific impacts of trace elements in subsurface drain water. In addition, the Report notes that better drainage reduction technologies must be developed and transferred to the farm level. Regional storage of salts and the impacts of a valley-wide drain should also be examined. The impacts of recirculating drainage water on soil resources and crop yields, and the role of upslope contributions to subsurface drain water volume and loads should also be investigated. The San Luis & Delta-Mendota Water Authority agrees with the need to study all of these issues and we believe the time required to conduct these analyses is further justification for the proposed compliance time schedule.

Results of these studies will provide information regarding the most appropriate selenium concentration objectives and the best methods for achieving those goals. It is clear that very large investments will be required to achieve water quality objectives in the Grassland Basin. The knowledge that will be gained from further research and near-term efforts that are currently underway to reduce selenium loads will be essential in identifying and implementing appropriate investments.

Drainage Reduction Scenarios

The Staff Report includes a discussion of alternative drainage reduction scenarios to demonstrate the feasibility of achieving selenium load reduction goals (Appendix B). While the general intent of that analysis is valid, some of the key assumptions are over-simplified and the results give an incorrect impression that selenium load reductions can be achieved with little effort and minimal cost by farmers and districts. Readers of the Staff Report may be given the impression that significant reductions in selenium loads can be achieved very quickly if farmers and districts would simply improve irrigation practices on 45,700 acres of drained land, remove selenium from 1,530 acre-feet to 3,150 acre-feet of

concentrated drainage water, retire 3,000 acres of land from production, and plant another 3,000 acres in eucalyptus trees.

Key assumptions that must be examined in this analysis include the 1,400-pound reduction in selenium load achieved by retiring 3,000 acres of land that are served by drainage systems producing the most selenium load. Land retirement has not yet been implemented in the Drainage Problem Area. Therefore, there are no data to verify or predict the actual reduction in selenium load that may be achieved by retiring 3,000 acres of land. It is possible that some of the selenium collected in the targeted drainage systems will be collected by other drainage systems on land that is not retired. If this occurs, then the reduction in selenium load will be less than the assumed 1,400 pounds.

A successful land retirement program will require voluntary participation among farmers and landowners. Therefore, it is not clear that districts will be able to retire precisely the land that is served by drainage systems producing the most selenium. If this cannot be accomplished, the reduction in selenium load will be less than the assumed 1,400 pounds. In addition, it is possible that terminating drainage service on selected parcels of land will have a negative impact on adjacent parcels that are "effectively drained" by drainage systems on the retired parcels. If this occurs, monetary compensation or drainage service may be required by farmers or landowners of the adjacent parcels. If drainage service is provided to those lands, the actual reduction in selenium loads achieved through land retirement will be less than expected.

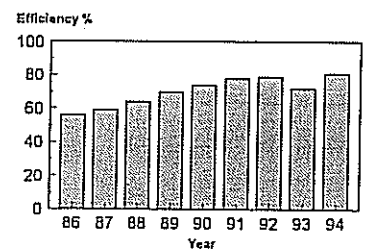
The analysis presented in Appendix B of the Staff Report assumes that improvements in irrigation practices will reduce deep percolation by 0.35 acre-feet per acre on land that is effectively drained by subsurface drainage systems. Therefore, irrigation improvements on 45,700 to 49,000 acres of land are expected to reduce selenium loads by 4,240 pounds to 5,300 pounds, each year. This assumption is optimistic, given that we have not observed sustainable reductions of this magnitude, in recent years. Selenium loads were reduced from 10,700 pounds in 1987 to 5,160 pounds in 1992 (a reduction of 5,540 pounds), but this reduction was not sustained in 1993 and 1994 (Figure 1).

Much of the reduction in selenium loads observed since 1987 may have been caused by a lowering in the high water table, following several years of persistent drought conditions in the region. In addition, many farmers and districts recirculated large volumes of saline drainage water in 1991 and 1992 to augment limited water supplies. However, the recirculation observed in those years cannot be sustained, over time, while maintaining salt balance.
In many physical and engineering problems, the initial efforts to achieve a specific goal generate greater gains than efforts undertaken at a later time. In the

Grassland Basin, many farmers have already implemented the most affordable improvements in water management practices and they have achieved impressive reductions in drain water volume and selenium loads. Irrigation efficiencies achieved during 1991 through 1994 are approaching the maximum efficiencies that may be attainable in the Grassland Basin (Figure 2). Further improvements in water management will be more expensive and they will generate smaller reductions in drain water volume and selenium load, per dollar invested in the effort. It is probable that further improvements in water management practices will not reduce deep percolation by 0.35 acre-feet per acre, because most farmers have already reduced deep percolation by a significant portion of that amount.

Figure 2.

Irrigation Efficiencies in
The Grassland Basin, 1986-1994



Source: Cal. Poly. State Univ., 1994.

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The analysis in Appendix B also assumes that eucalyptus trees on 3,000 acres of land in the Drainage Problem Area will remove 3,920 pounds of selenium. Like land retirement, this policy will require voluntary participation among farmers and landowners willing to dedicate a portion of their land to producing eucalyptus trees using saline drainage water. The potential difficulty in marketing eucalyptus products and the potential increase in soil salinity that will occur on the land when saline drainage water is recirculated for many years will be significant deterrents to participation. In addition, there are limited data available for predicting the reductions in drainage water volume and selenium loads that will occur by planting eucalyptus trees.

The summary section of Appendix B in the Staff Report includes the statement that the "selenium load reductions required to meet a 5 µg/L 4-day average selenium objective in the San Joaquin River in a dry year are technically achievable." This statement may be conceptually valid, but it avoids the empirical realities described above, and it fails to report any of the potential economic impacts of implementing the scenarios described in Appendix B. In brief, it is "technically feasible" to reduce pollutant loads below current levels in most cases of pollution in the United States. However, the cost of achieving further reductions in pollutant loads often exceeds the expected benefits. It is necessary to consider both the costs and the benefits of feasible solutions, in order to determine the optimal strategy.

The costs of implementing the scenarios described in Appendix B can be estimated using average total revenues for crop production in the Drainage Problem Area and the cost of treating drainage water presented in the Staff Report. The cost of improving water management practices is not included in this discussion, because these improvements are appropriate and will be required in any scenario that is successful in achieving water quality objectives. The estimated cost to retire 3,000 acres of land from production is $4.5 million, provided that land can be purchased for an average price of $1,500 per acre. This cost will double if a regional entity or a federal agency purchases 3,000 additional acres for planting eucalyptus trees. The cost of constructing a treatment plant to remove selenium from 1.2 to 2.8 million gallons of drainage water, per day, may exceed $1.0 million. Therefore, the estimated fixed cost of implementing the scenarios in Appendix B ranges from $5.5 million to $10.0 million, net of the costs of improving irrigation practices.

The estimated annual costs of treating 1,530 acre-feet to 3,150 acre-feet of drainage water will range from $0.5 million to $0.9 million, using the cost estimate of $300 per acre-foot presented in the Staff Report. That estimate is based on expert testimony in litigation, and it may under-estimate the true cost of removing selenium from drainage water. At present, there are no selenium removal methods that are known to be successful and cost-effective. The true cost of a viable removal technology could exceed $300 per acre-foot, when it becomes available.

Removing 6,000 acres of land from crop production (including the 3,000 acres of eucalyptus trees) will reduce total revenue in the region by an estimated $7.7 million, using an average total revenue of $1,280 per acre. Sales by industries that provide inputs to agriculture and expenditures by households employed in farming and in the supporting industries will decline by an estimated additional $8.6 million. Therefore, even when using assumptions in the Staff Report, the estimated annual reduction in economic activity that will result if the scenarios in

Appendix B are implemented will be from $8.1 million to $16.2 million. An economic analysis prepared for the Grassland Basin Drainers indicates that the potential reductions in economic activity could be much greater if recirculation is the primary method of achieving selenium load reductions.

Costs of Implementing Improvements

The Staff Report notes that the Regional Board estimated the annual cost of implementing the 1988 regulatory program for subsurface drainage to be from $17.00 to $67.00 per acre (page 10). The Report also notes that the San Joaquin Valley Drainage Program estimated the annual cost of implementing its recommended plan to be $81.00 per acre. Current estimates of the costs required to implement farm-level improvements in water management practices and district-level improvements in drainage water management, and to construct and operate selenium treatment plants are greater than earlier estimates.

The amortized annual capital and maintenance cost for a sprinkler system large enough to irrigate a 150-acre field is $73.45 per acre, while the amortized annual capital and maintenance cost for a siphon tube system is just $2.96 per acre. Therefore, the annual fixed cost of irrigation rises by $70.49 per acre when farmers switch from siphon tubes to sprinklers.

The variable cost (labor, water, and energy) of using sprinklers to pre-irrigate cotton fields is slightly less than the variable cost of using siphon tubes, because the value of water saved offsets the higher labor cost of using sprinklers. However, the estimated variable cost of using sprinklers for all summer irrigations on cotton fields is $194.58 per acre, while the estimated variable cost of using siphon tubes is $109.96 per acre. Therefore, farmers using sprinklers for all summer irrigations on cotton will spend $84.62 per acre more for labor, water, and energy than farmers using siphon tubes. The higher variable cost of using sprinklers during summer irrigations is the principal reason that most farmers prefer using sprinklers only for pre-irrigation, while using siphon tubes for summer irrigations of cotton. The total cost of irrigating cotton fields with sprinklers (including both the fixed and variable costs) is $155.11 per acre greater than the total cost of using siphon tubes.

Many farmers in the Grassland Basin have begun using sprinklers for germination irrigations on tomatoes, even though the cost is significantly higher than using siphon tubes. The estimated variable cost of using sprinklers for germinating tomato fields is $77.44 per acre, while the estimated variable cost of using siphon tubes is $58.24 per acre. Therefore, farmers germinating tomatoes with sprinklers will spend $19.20 more per acre for labor, water, and energy than

farmers using siphon tubes. The total cost (fixed and variable) of germinating tomatoes with sprinklers is $89.69 per acre greater than the total cost of using siphon tubes. Farmers using sprinklers for the first or second seasonal irrigations on tomatoes will incur even higher variable costs.

The Regional Board's estimated cost of implementing the 1988 regulatory program and the San Joaquin Valley Drainage Program's estimated cost of implementing its recommendations can be compared to these estimated costs of improvements in irrigation practices, after adjusting for inflation. The adjusted cost estimates, in 1994 dollars, are $21.30 to $83.93 per acre for the 1988 regulatory program and $91.85 per acre for the SJVDP recommendations. It is interesting to note that the cost of switching from siphon tubes to sprinklers for all cotton irrigations is actually greater than the estimated cost of implementing either of these programs. The estimated cost of replacing siphon tubes with sprinklers for germinating tomatoes is greater than the estimated cost of implementing the 1988 regulatory program and is almost as great as the cost of implementing the SJVDP recommendations.

The Staff Report includes a statement that the costs of implementing solutions to the drainage problem "might be offset if crop yields increase in response to improved irrigation management or if cropping patterns change to higher value crops (page 10)." It is true that improvements in irrigation distribution uniformity and better scheduling of irrigation deliveries can generate improvements in crop yield that may partially offset the higher costs of owning and operating sprinkler systems. However, it will be difficult to maintain or improve crop yields in districts where a significantly larger proportion of the total subsurface drain water volume must be recirculated to achieve necessary reductions in selenium loads.

The electrical conductivity of water delivered to farm turnouts will rise when districts increase the proportion of subsurface drain water that is recirculated and blended with fresh water supplies. This can become a serious problem for farmers using sprinklers, because most plants are susceptible to foliar injury from salt in irrigation water. Higher salinity of irrigation water will also limit the planting of higher value crops because farmers will not want to absorb the risk of crop damage on fruits and vegetables, which require higher planting and investment costs. Therefore, the feasibility of using sprinklers and planting higher value crops will be diminished in districts that must reduce selenium loads significantly by recirculating drain water. In addition, higher salt loads in delivered water will cause soil salinity to increase more rapidly, over time. Higher salinity in both water and soil resources may offset the potential yield increases that would otherwise result from improvements in water management practices.

Potential Economic Impacts of Selenium Load Restrictions

Conceptual Framework

Policy makers seeking the best water quality objectives and implementation plan for the Grassland Basin should consider several economic concepts when evaluating pertinent tradeoffs and opportunities. These concepts include the incremental costs and benefits generated by implementing water quality objectives, the uncertainty that exists regarding farm-level irrigation activities and the selenium concentrations and loads observed in the San Joaquin River, and the role of exogenous events, such as rainfall, that cannot be controlled by farmers or irrigation districts. The optimal set of water quality objectives will maximize the net public benefits generated by water resources in the region. The best implementation plan will include concentration objectives that ensure protection of water quality and beneficial uses, while maintaining agricultural production.

The Grassland Basin includes large areas of wetlands and waterways that provide significant value to the residents of California. The Basin also includes some of the most productive farmland in the state. The per-acre yields of cotton, cantaloupes, tomatoes, and other fruits and vegetables are among the highest in California. In a typical year, farmers irrigating more than 90,000 acres of farmland in the Grassland Basin produce more than 100,000 bales of cotton, 200,000 tons of tomatoes, and 3,000,000 cartons of cantaloupes. These products are shipped to markets throughout the United States and to many other countries.

Agricultural production in the Grassland Basin generates both private and public values. The total revenue received for crops is one estimate of the total private value earned in crop production. However, consumers of farm products receive benefits that exceed the prices paid for these products. This occurs because agricultural commodities are sold in competitive markets. For example, most Californians are able to purchase fruits and vegetables at prices that are lower than what they would actually be willing to pay for these products. The difference between what they are willing to pay, and what they actually pay in the marketplace, represents an economic surplus to consumers. The total value of this consumers' surplus generated in the Grassland Basin each year would be measured in the millions of dollars.

Agriculture in the Grassland Basin also generates positive economic values for local firms and communities. The expenditures for farm inputs generate revenue

for companies that provide equipment and supplies. Agriculture also provides income to households employed directly in farming and in the supporting industries, and the revenue base for most local communities is heavily dependent on agricultural production and processing. International trade accounts are also strengthened by agriculture, which generates a large proportion of the commodities exported from California to countries throughout the world.

The total value of crops produced in the Grassland Basin each year is about $113 million. This generates about $38 million in annual expenditures for inputs such as seed, fuel, and fertilizer. Households employed in farming and in the supporting industries spend about $88 million per year for goods and services. Therefore, the total value of economic activity generated by agriculture in the Grassland Basin is about $239 million per year. In addition, more than 4,000 persons are employed as a result of agricultural production in the region.

The appropriate public policy for the Grassland Watershed is to maintain agricultural production, and the private and public values generated by that activity, provided that water quality objectives are achieved in the San Joaquin River. The goal is to achieve the correct balance among the benefits gained by implementing water quality objectives and the costs imposed on agriculture. These costs will include direct expenditures and investments to reduce drain water volume and selenium loads, and indirect losses in revenue caused by declining crop yields and the changes in cropping patterns that will occur when salts accumulate in the region's soils. Salts will accumulate when farmers and districts increase their re-use of saline drainage water to achieve significant reductions in selenium loads. Both the direct and indirect costs imposed on agriculture will be measured in the millions of dollars per year.

Most of the selenium entering the San Joaquin River from the Grassland Basin is generated by nonpoint sources that include thousands of acres of irrigated farmland. The precise relationship between irrigation water management and drainage volume and loads is not completely understood and reductions in selenium concentrations and loads cannot be predicted with certainty. A large amount of information and experience has been gained since the mid-1980s, but much remains to be learned, regarding the impact of improvements in irrigation practices on sustainable reductions in selenium loads. The Regional Management Plan to be implemented by the Grassland Basin Drainers provides a unique opportunity to increase our knowledge regarding irrigation and drainage relationships.

Over time, we have learned that large rainfall events, and other exogenous factors which have not yet been explained, have a significant effect on drain water volume and selenium loads in some years. When these events occur,

selenium loading to the San Joaquin River increases, despite efforts of farmers and districts to reduce drain water volume and loads. We must continue efforts to gain a better understanding of all factors that contribute to selenium loads.

Farmers and districts in the Grassland Basin are currently implementing improvements in water management practices and constructing drainage management facilities, despite the inherent uncertainty regarding irrigation and drainage relationships. Evidence of this commitment is provided by the expenditures that are being made by farmers and districts in this effort. For example, the estimated cost of implementing the Regional Management Plan is more than $500,000 per year, in addition to the expenditures by farmers and districts for improvements in source control and for construction of district drainage water facilities. The initial cost of a sprinkler irrigation system large enough to irrigate a typical 150-acre field is about $49,000. Many farmers have purchased one or more sprinkler systems in recent years to manage irrigation water more effectively.

Irrigation and drainage districts have also begun investing in facilities to improve their ability to blend drainage water with fresh water supplies for delivery to farm fields. One relatively small water district has recently invested about $1.8 million in a new drainage water recycling system. The amortized cost of this system is $50.54 per acre, assuming a 10-year loan period and a 4% real rate of interest. Farmers and landowners in the Grassland Basin are making these expenditures and investments with the outlook that a long-term solution to the drainage problem will be developed.

The long-term outlook remains positive, even though the cost of discovering and implementing components of the solution will be very expensive. The Grassland Basin Drainers believe that current load reduction efforts that include farm-level source control measures and regional drainage water management will be augmented in the future by a reliable and affordable method for removing selenium from drainage water. The Drainers have examined many possible methods for removing selenium, in recent years, and these research efforts will continue in the future.

It is essential that we develop a comprehensive and cost-effective program for achieving water quality objectives in the Grassland Basin. A rapidly expanding world population will place increasing demands on the production of food and fiber in the 21st century. Farmers in California's San Joaquin Valley will play a significant role in meeting those demands. Our goal must be to maintain the soil and water resources required to support increased production in the future, while also maintaining and even enhancing the environmental amenities that Nature has provided.

Empirical Estimates

The Grassland Basin Drainers have examined the potential economic impacts of selenium load restrictions, using an economic model of crop production in the region. The model simulates the impact of recirculating saline drainage water to achieve selenium load reduction targets. Over time, soil salinity increases when districts recirculate a larger proportion of their saline drainage water. The yields of salt-sensitive crops, such as tomatoes and other vegetables, decline when soil salinity increases, causing reductions in total revenue. These crops are no longer produced when yield reductions cause the net revenue to decline below the net revenue generated by producing salt tolerant crops. In some scenarios, the increase in soil salinity is sufficient to cause yield reductions in cotton and other salt-tolerant crops, causing further reductions in total revenue.

Reductions in agricultural output cause reductions in economic activity among companies that sell productive inputs to farmers and among households employed directly in farming or in the supporting industries. Estimates of these indirect and induced economic effects are developed using input/output multipliers provided by the U.S. Department of Agriculture. These estimates provide an overview of the potential regional economic impacts of achieving selenium load reduction targets.

The Regional Board staff has circulated a proposed Total Maximum Monthly Load (TMML) program for achieving selenium concentration objectives in the San Joaquin River (Karkoski, 1995). That program includes specific selenium load restrictions to achieve selenium concentration objectives with acceptable rates of exceedance. Implementing a TMML program in the Grassland Basin will be very difficult, because water flow in the San Joaquin River is quite variable from year to year, and from month to month, in most years. Therefore, the selenium load targets required to achieve the desired concentration exceedance rate are much lower than the selenium loads actually discharged to the River in most years. Reducing those loads to comply with the TMML program will cause significant reductions in economic values.

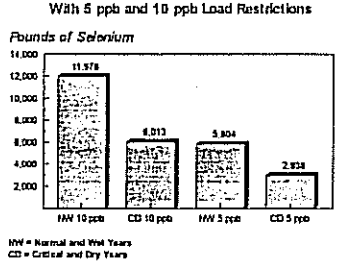
The Grassland Basin Drainers have estimated the potential economic impacts of two TMML programs: 1) to achieve a 5 µg/L selenium concentration objective, and 2) to achieve a 10 µg/L selenium concentration objective. The Drainers have also estimated the potential economic impacts of achieving the selenium load targets that are currently included in the draft Use Agreement for the Wetlands Bypass. That document is being circulated, at this time, by the U.S. Bureau of Reclamation for comments from the public.

The TMML programs and the Tentative Use Agreement include selenium loads that are specified for each month of the year. The Tentative Use Agreement also has annual selenium load targets that are less than the sum of the monthly selenium load targets. The TMML programs include a single set of monthly selenium load targets that would be implemented in normal and wet, or in critical and dry years. The annual and monthly load targets in the Tentative Use Agreement decline, over time, to achieve a 15% reduction in selenium loads by the fifth year of the Use Agreement.

The 10 µg/L TMML program would allow irrigation and drainage districts in the Grassland Basin to discharge 11,978 pounds of selenium during normal and wet years and 6,013 pounds of selenium during critical and dry years (Figure 3). The average load of selenium discharged by districts during 1986 through 1994 is about 8,000 pounds, with a maximum load of 10,700 pounds in 1987 and a minimum load of 5,160 pounds in 1992. The maximum annual selenium loads permitted in the 5 µg/L TMML program would be 5,804 pounds in normal and wet years, and 2,938 pounds in critical and dry years. The 10 µg/L TMML program would require significant reductions in selenium loads during critical and dry years, while the 5 µg/L TMML program would require significant load reductions in all years.

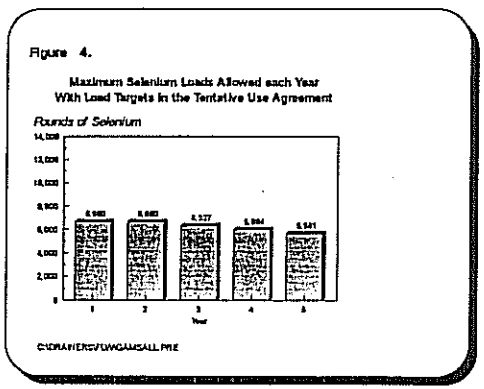
Figure 3.

Maximum Selenium Loads Allowed each Year
With 5 ppb and 10 ppb Load Restrictions

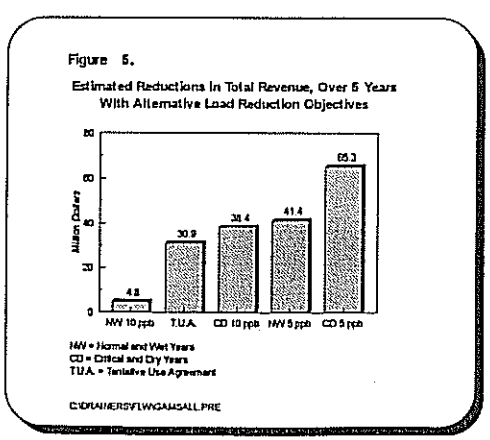


Selenium load targets in the Tentative Use Agreement begin with 6,660 pounds in the first two years and decline to 5,661 pounds in the fifth year (Figure 4). The potential economic impacts of these targets will be similar to those imposed in the 5 µg/L TMML program during normal and wet years, and the 10 µg/L TMML program during critical and dry years. However, some of the monthly load

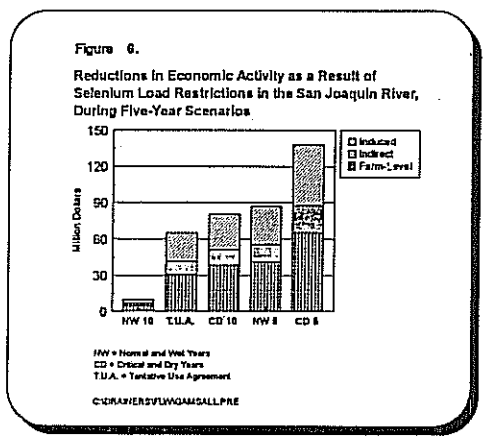
targets are less restrictive than those in the TMML programs. Therefore, the potential reductions in crop yields and revenues caused by the Tentative Use Agreement will be less severe than with either of the TMML programs.



The estimated reductions in total revenue during a five-year period range from $4.8 million for the 10 µg/L TMML program during five normal and wet years, to $65.3 million for the 5 µg/L TMML program during five critical and dry years (Figure 5). The estimated reduction in total revenue with the Tentative Use Agreement is $30.9 million. The estimated indirect and induced effects range from $5.4 million for the 10 µg/L TMML program to $72.5 million for the 5 µg/L TMML program. The estimated indirect and induced effects of the Tentative Use



Agreement are $34.3 million. Therefore, the estimated total economic impacts during a five-year period range from $10.2 million for the 10 µg/L TMML program to $137.7 million for the 5 µg/L TMML program (Figure 6). The estimated total economic impact of the Tentative Use Agreement is $65.1 million.



Estimates presented in the previous paragraph do not include any investments in water management technologies and facilities, or in selenium treatment plants, that will be required to achieve the selenium load targets. The goal of this analysis is to depict the most likely reductions in the agricultural revenue and regional economic activity when soil salinity rises and causes changes in crop yields and cropping patterns.

The Regional Management Plan

The potential economic impacts of reducing selenium loads to comply with either of the TMML programs or the Tentative Use Agreement are significant, and they provide a clear economic incentive for developing new technologies to reduce drain water volume and to remove selenium from subsurface drain water. Given the economic values generated by agriculture, it is clearly in the public's interest that we develop a comprehensive solution to the drainage problem that protects water quality and beneficial uses, while maintaining a vibrant agriculture in the Grassland Basin. An aggressive, regional approach to managing drainage water is the first step in developing that solution.

The Grassland Basin Drainers are currently implementing a Regional Management Plan that includes the re-routing of drainage water from channels in the Grassland Water District to the Wetlands Bypass. The Plan also includes the hiring of a Regional Drainage Coordinator who will assist districts and farmers with efforts to reduce the drainage water volume and selenium loads. We look forward to full implementation of the Regional Management Plan, and we are hopeful that a coordinated, regional approach to drainage water management will provide new information regarding specific activities that will reduce selenium loads in the Grassland Basin. A copy of the draft Regional Management Plan was submitted to the Regional Board with testimony from the San Luis & Delta-Mendota Water Authority, on July 6, 1995.

The Regional Management Plan will become the centerpiece of efforts to reduce drain water volume and selenium loads during the next five years. The information and experience gained by implementing the Plan will be used to develop specific components of a comprehensive long-term program for maintaining water quality in the Grassland Basin. The compliance time schedule proposed in the Staff Report provides the necessary framework for developing an appropriate solution to the drainage problem. The San Luis & Delta-Mendota Water Authority and the Grassland Basin Drainers look forward to working with the Regional Board, State Board, and the Environmental Protection Agency in developing and implementing the long-term plan.

References

California Polytechnic State University, 1994. Grassland Basin Irrigation and Drainage Study. Final Report to the California Regional Water Quality Control Board, Central Valley Region, Contract Number 1-078-150-1, Sacramento.

California Regional Water Quality Control Board, 1995. Staff Report on the Water Quality Objectives and Implementation Plan to be Used for the Regulation of Agricultural Subsurface Drainage Discharges in the San Joaquin River Basin, 45 pp.

Karkoski, J., 1994. A Total Maximum Monthly Load Model for the San Joaquin River, Staff Report of the California Regional Water Quality Control Board, Central Valley Region, Sacramento, 86 pp.

December 11, 1995

Mr. Bill Crooks, Executive Director
California Regional Water Quality Control Board
for the Central Valley Region
3443 Routier Road, Suite A
Sacramento, CA 95827-3098

Dear Bill:

Enclosed are the comments prepared by the San Luis & Delta-Mendota Water Authority, pertaining to the November 1995 Staff Report on the "Compliance Time Schedule to be Used for the Regulation of Agricultural Subsurface Drainage Discharges in the San Joaquin River Basin."

The comments include discussion of the likely farm-level and regional economic impacts of the proposed Compliance Time Schedule, and the expenditures and investments required to achieve water quality objectives. We also compare the expected economic impacts and costs of concentration-based performance goals with those of load-based performance goals. The Water Authority prefers that the Regional Board retain the concentration-based performance goals in the Compliance Time Schedule, while using selenium load targets only as a backstop measure if the concentration objectives are not achieved. Concentration-based performance goals will protect beneficial uses in the San Joaquin River at much lower cost to farmers and local communities than would load-based performance goals.

We also discuss the need to begin a formal process for developing a site-specific selenium concentration objective for the San Joaquin River. As you know, we believe the EPA national water quality criterion for selenium is more restrictive than necessary to protect beneficial uses in the River. We are eager to work with the Regional Board, EPA, and other agencies in conducting the research needed to determine a more appropriate water quality criterion.

The proposed Compliance Time Schedule imposes the EPA national water quality criterion for selenium on October 1, 2005, during Above Normal and Wet water years. The Water Authority requests that the Regional Board include a Re-Opener Clause in

the Basin Plan Amendment, to review the appropriateness of the EPA criterion, before it is implemented. This would provide an opportunity for the Board to consider an alternative set of water quality objectives for protecting beneficial uses in the San Joaquin River.

We appreciate the opportunity to submit these written comments and we would be happy to meet with you or your staff, at any time, to provide further information describing any of the analyses we conducted in preparing this material.

Sincerely,

Daniel G. Nelson
Executive Director

DGN/slm

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Comments Regarding the Compliance Time Schedule For Regulating Agricultural Subsurface Drainage Discharges in the San Joaquin River Basin

Prepared by the
San Luis & Delta-/Mendota
Water Authority

December 1995

These comments pertain to the "Staff Report on the Compliance Time Schedule to be Used for the Regulation of Agricultural Subsurface Drainage Discharges in the San Joaquin River Basin, November 1995. That Report was prepared by the California Regional Water Quality Control Board for the Central Valley Region.

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Comments Regarding the Compliance Time Schedule
For Regulating Agricultural Subsurface Drainage
Discharges In the San Joaquin River Basin

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A. The Proposed Compliance Time Schedule

The Grassland Basin Drainers agree, in principle, with the Compliance Time Schedule presented on Page 2 of the November Staff Report. However, the Drainers are concerned that several components of that Schedule may not be technically feasible at this time, or in the near future. Therefore, we are requesting that the Compliance Time Schedule be modified as shown in Table 1. We are also requesting that the Regional Board include a Re-Opener Clause in the Basin Plan Amendment to determine the appropriateness of the 5 ppb, 4-day average concentration standard, before that standard is implemented.

Table 1. Suggested Revision of the Compliance Time Schedule Presented in the November 1995 Staff Report

Water Body/Year Type	Oct 1 1996	Oct 1 2002	Oct 1 2005	Oct 1 2010
Salt Slough and Wetland Water Suppy Channels	2 ug/l Monthly Mean			
San Joaquin River Below the Merced River; Above Normal and Wet Water Year Types		5 ug/l Monthly Mean	5 ug/l Monthly Mean	5 ug/l 4-day Average
San Joaquin River Below the Merced River; Critical, Dry, and Below Normal Water Year Types		8 ug/l Monthly Mean	8 ug/l Monthly Mean	5 ug/l 4-day Average
San Joaquin River above the Merced River and Mud Slough (north)				5 ug/l 4-day Average

Our specific comments regarding the Compliance Time Schedule include the following:

1. The 2-ppb monthly mean selenium objective for Salt Slough and Wetland Water Supply Channels cannot be achieved if the Use Agreement regarding the Wetland Bypass does not go forward. At this time, we are constructing the facilities needed to use the Bypass, and to remove agricultural drainage water from Salt Slough and the water supply channels. We are planning to begin moving drainage water into the Bypass in early 1996.

2. The 5-ppb and 8-ppb monthly mean concentration objectives that will be implemented on October 1, 2002 are appropriate performance goals. We will work to achieve those goals on schedule, using a combination of regional drainage water management activities, real-time monitoring, further improvements in farm-level irrigation practices, and other source reduction efforts.

3. We accept the use of annual load targets as a backstop measure to ensure that concentration objectives are achieved from October 1, 2002 through September 30, 2009. However, we do not believe that annual load targets should be used as the primary performance goal. The cost of achieving annual load targets is much more expensive (please see Section G of these comments) than the cost of achieving concentration-based performance goals.

4. Some members of the public suggested using annual or monthly load targets for performance goals, beginning on October 1, 2002. As noted above, the cost of achieving annual load targets is significant, and the cost of achieving monthly load targets would be prohibitive. In addition, monthly load targets would severely limit efforts to manage drainage water volume regionally. For example, potential trading of selenium load allotments among districts will be less likely to occur if trades cannot be defined over more than one month.

5. The technology required to achieve the 5-ppb, 4-day average selenium concentration standard on October 1, 2005 is not yet available. That standard will require that most selenium in agricultural drainage water is removed by a treatment process, prior to releasing the drainage water into the San Joaquin River. Scientists have proposed several possible methods for removing selenium, in recent years, but a cost-effective method is not yet available. The estimated cost of potentially feasible selenium removal methods ranges from $368 to $2,368 per acre-foot of drainage water (Table 2). Deep well injection, though cheaper, may not be environmentally acceptable.

6. In recent years, the Grassland Basin Drainers have supported several studies and pilot projects investigating alternative selenium removal methods. These efforts will continue in the future, but there is no guarantee that a cost-effective method will be developed by the year 2005.

7. We request that the Regional Board delay implementation of the 5-ppb, 4-day average selenium concentration in the San Joaquin River, below the Merced River, during Above Normal and Wet Years, from October 1, 2005 until October 1, 2010. This will permit additional time to develop a cost-effective treatment technology and to re-consider appropriate selenium concentration objectives for the San Joaquin River. In its place, we request that the Regional Board continue to implement the 5-ppb monthly mean concentration objective from October 1, 2005 through September 30, 2010.

8. We also request that the 8-ppb monthly mean selenium concentration objective for the San Joaquin River, below the Merced River, during Critical, Dry, and Below Normal Years be extended through the period October 1, 2005 through September 30, 2010. The 5-ppb monthly mean objective included in the proposed Compliance Time Schedule cannot be achieved during dry years, without significant investments in treatment technologies that are not yet cost-effective (Table 2).

9. The Compliance Time Schedule includes a 5-ppb, 4-day average concentration objective for the San Joaquin River, above the Merced River, and Mud Slough (North), in all water year types, beginning on October 1, 2010. It will not be possible to achieve that standard unless an alternative route for moving

Table 2. Estimated Costs of Alternative Selenium Treatment Processes

Process	Development State	Estimated Cost	Estimated Treatment And Disposal Costs (1994 dollars)
		($/AF)	($/AF)
Bacterial (Binnie)	Pilot prototype	150 to 225	447 to 526
Iron Filings	Pilot prototype	120 to 285	416 to 589
Iron Hydroxide	Pilot mini-batch	100 to 150	395 to 447
Algal/Bacterial	Pilot mini-batch	75 to 150	368 to 447
Ion Exchange	Laboratory bench	300	605 to 289
Reverse Osmosis	Pilot prototype	980 to 1,220	1,321 to 1,574
with Waste Pond		1,650 to 2,250	1,737 to 2,368
Vapor Compression Evaporation		2,000	2,105
Deep Well Injection		189	199

Notes:
(1) Costs are based on a 10 million gallon per day plant (30 AF per day or 10,800 AF per year).
(2) Iron exchange cost is based on Yuma estimates. The cost of operating smaller sized plants for selenium removal would possibly be much higher.
(3) Disposal cost ranges between $50 and $500 per acre-foot. An average cost of $275 per AF was used for this analysis.
(4) Adjusted to 1990 dollars using the CPI from Detailed Report, US Department of Labor, Bureau of Labor and Statistics, April 1995, Table 24, pg 64.

Source: Bainbridge, David A., 1990. "Selenium in California, Volume 2, Critical Issues," A report to the State Water Resources Control Board, 90-9-WQ, Sacramento CA, 111 pp.

drainage water from the Grassland Basin to the San Joaquin River, below the Merced River, is developed. The estimated cost of building that facility is about $16 million, and many permits will be required before construction could begin. We request that the Regional Board acknowledge the need for this new facility, and include language in the Basin Plan Amendment noting that it may not be possible to improve water quality in Mud Slough (North) until that facility is constructed.

B. Site-Specific Objectives

1. The Grassland Basin Drainers are concerned that the scientific information supporting EPA's national water quality criterion for selenium is not adequate for imposing that standard in the San Joaquin River. The 5-ppb, 4-day average concentration standard was developed using data from Belews Lake in North Carolina, where ambient sulfate concentrations are much lower than those in the San Joaquin River. There is good reason to believe that the higher sulfate concentrations in the San Joaquin River may prevent selenium from harming aquatic wildlife (Please see the comments submitted to the Regional Board by the Water Authority, dated July 6, 1995).

2. It is quite possible that a water quality objective that allows selenium concentrations in excess of 5 ppb will protect beneficial uses of water in the San Joaquin Valley, for the following reasons:

   a) Field studies by the California Department of Fish and Game have not reported toxic levels of selenium in fish found in streams with selenium concentrations ranging from 10 ppb to 20 ppb (Cal. Dept. of Fish and Game, 1994).

   b) Selenium objectives that protect fish in the San Joaquin Valley will probably protect birds in the region (Skorupa, 1995).

3. We request that the Regional Board, as part of its Basin Planning Process, implement a formal procedure to develop a site-specific selenium concentration objective for the San Joaquin River and Mud Slough. You will recall that in the Consensus Letter signed by USBR, EPA, and the Grassland Basin Drainers, we described the need to examine this issue in the near

future (Consensus Letter, 1995, p. 3). Given the expected difficulty and expense of achieving the current EPA national standard, it is imperative that we determine if that standard is appropriate, as soon as possible. The Drainers are ready to work with the Regional Board, EPA, and other agencies to begin that process.

4. We suggest that the Regional Board retain Statement Number 14 on Page 6 of the November 1995 Staff Report, which states that "the Regional Board staff will coordinate with US EPA and the dischargers on a study plan to support the development of a site-specific selenium water quality objective for the San Joaquin River and other effluent dominated waterbodies in the Grassland watershed."

5. We request that the Regional Board initiate the site-specific review process as soon as the Basin Plan Amendment is adopted. As noted in our verbal comments on December 7, the Water Authority is willing to support this effort financially, and we will need time to generate the necessary resources and conduct the investigation. We wish to begin discussions regarding this process and develop an appropriate time schedule, in order to define the site-specific criterion, prior to the year 2002.

C. A Re-Opener Clause

1. We request that the Regional Board include a Re-Opener Clause in the Basin Plan Amendment, to enable re-evaluation of water quality objectives in the San Joaquin River before the 5-ppb, 4-day average concentration standard is imposed during wet or dry years. Information and knowledge gained during 1996 through 2000 will be valuable in assessing progress made in reducing selenium loads and concentrations in the Grassland Basin during years in which the Use Agreement for the Wetlands Bypass is in place. In addition, the Drainers will have implemented a real-time monitoring system and other innovative measures for managing drainage water throughout the region. The Re-Opener Clause would enable the Regional Board to consider whether the environmental or biological benefits gained by imposing the 5-ppb, 4-day average concentration standard exceed the costs imposed on farmers and local communities, before that standard is imposed.

D. Use Agreement for the Wetlands Bypass

1. The Regional Board has received a Consensus Letter dated November 3, 1995 from parties that participated in discussions regarding use of the Wetlands Bypass and other activities involving the regulation of agricultural drainage water. The Consensus Letter was signed by the San Luis & Delta-Mendota Water Authority, the U.S. Bureau of Reclamation, the U.S. Environmental Protection Agency, and the U.S. Fish and Wildlife Service. The Water Authority and the Grassland Basin Drainers are committed to the terms of this letter agreement, which include significant reductions in selenium loads discharged to the San Joaquin River.

2. The Grassland Basin Drainers are implementing a Regional Management Plan that represents an opportunity to achieve reductions in selenium loads in the region, and to manage drainage water volume and loads to achieve concentration objectives. Regional management will enable farmers and districts to coordinate individual and district efforts to reduce drain water volume in a manner that maximizes the probability of achieving water quality objectives.

3. Natural variation in rainfall and river volume will always complicate efforts to achieve water quality objectives in the San Joaquin Valley. The Consensus Letter recognizes the impact of natural events on drainage water volume and loads by incorporating a formal review process to determine the degree to which selenium load exceedances are caused by natural events and irrigation activities. The review process is appropriate to prevent farmers and districts from being held responsible for the nature-induced component of drainage water volume and loads, while encouraging reductions in the irrigation-induced component.

4. A principal feature of the Regional Management Plan that is being implemented by the Water Authority is a Real-Time Monitoring Program that will enable districts to manage drainage water volume and loads according to ambient water quality conditions. The load reduction targets in the Consensus Letter will ensure that water quality in the San Joaquin River is not degraded during the term of that Agreement, while the Grassland Basin Drainers are developing and implementing a Real-Time Management Program.

The Drainers will use that program, in conjunction with significant reductions in selenium loads, to achieve selenium concentration objectives in the River.

5. The 5% annual reductions in selenium load contained in the Consensus Letter should <u>not</u> be extended beyond the term of the Use Agreement, because further reductions would be inconsistent with efforts to utilize Real-Time Management to achieve selenium concentration objectives. The goal of that effort is to utilize assimilative capacity in the River, in order to minimize the economic impact of maintaining water quality objectives. Further reductions in selenium loads will occur, when necessary, to achieve concentration objectives. However, performance goals based on loads, rather than concentrations, would be punitive in nature and would reduce the incentive to develop an innovative Real-Time Management Program, while not providing significant improvements in water quality.

E. Selenium Concentrations vs. Loads

1. At the December 7 Regional Board Workshop, several members of the public requested that the Regional Board implement <u>load-based</u> performance goals, rather than the <u>concentration-based</u> goals that are currently in the proposed Compliance Time Schedule. This would greatly increase the cost of achieving the performance goals, without generating significant water quality benefits. In 1988, the Regional Board proposed a 5-ppb monthly mean selenium concentration objective for Above Normal and Wet Years, and an 8-ppb monthly mean objective for Critical, Dry, and Below Normal Years, to protect beneficial uses in the San Joaquin River. We are working to achieve those goals by October 1, 2002. We compare the economic impacts of concentration-based and load-based performance goals, below.

2. Several individuals also called for <u>monthly</u> load performance goals, rather than annual loads. Monthly load restrictions would seriously limit our ability to manage drainage water regionally, and to maximize the value of our investment in real-time monitoring.

3. The original Regional Board selenium concentration objectives have been achieved in most months of most years, during 1988 through mid-1995 (concentration data are not yet available for late 1995). As shown in Figure 1, there have been only 4 exceedances of the 5-ppb monthly mean selenium concentration objective during the most recent 20 months of years classified as Above Normal or Wet. In all four cases of exceedance, the monthly mean concentration was less than 10 ppb.

4. Due to persistent drought conditions in California, six of the most recent eight years have been classified as Below Normal, Critical, or Dry. As shown in Figure 2, there have been only 17 exceedances of the 8-ppb monthly mean selenium concentration objective during the 72 months recorded during 1988 through 1994, with the exception of 1993, which was not a dry year. In 15 of the 17 cases of exceedance, the monthly mean concentration was less than 12 ppb, and in the remaining two cases of exceedance, the mean monthly concentration was less than 14 ppb.

5. The Water Authority and the Grassland Basin Drainers are investing significant resources in efforts to achieve selenium concentration objectives in all months of wet and dry years. We believe it is essential that the concentration-based performance goals included in the Compliance Time Schedule for implementation on October 1, 2002 be retained as presented in the November Staff Report. It is not appropriate to replace these concentration-based objectives with selenium load restrictions, and the additional cost of achieving further load reductions will not be offset by additional improvements in water quality.

F. Brief Review of Historical Data

1. The Grassland Basin Drainers have accomplished significant reductions in drainage water volume and loads in recent years. As shown in Figure 3, the volume of drainage water discharged from the Grassland Basin was reduced each year from 1987 through 1992. A similar pattern is evident for the selenium load discharged from the Grassland Basin (Figure 4). Both the volume and load have increased, somewhat, in 1993 and 1994, but the long-term trends are downward-sloping. A large component of the reduction in drainage water volume observed during 1987 through 1992 is the surface runoff that was

Figure 1. Monthly Mean Selenium Concentration At Crows Landing for Above Normal and Wet Years

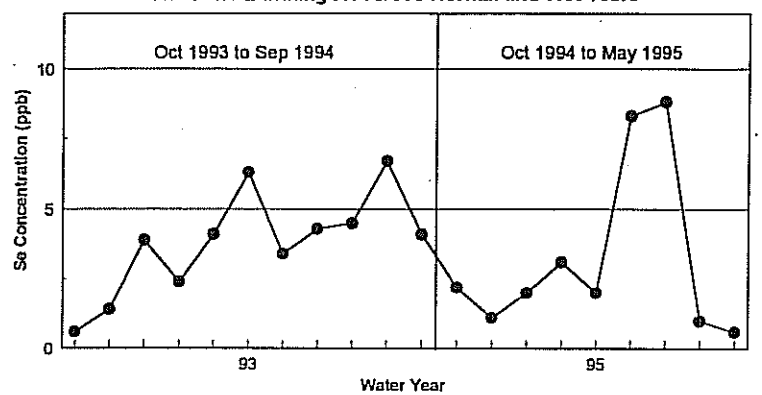


Figure 2. Monthly Mean Selenium Concentration At Crows Landing for Critical, Dry and Below Normal Years

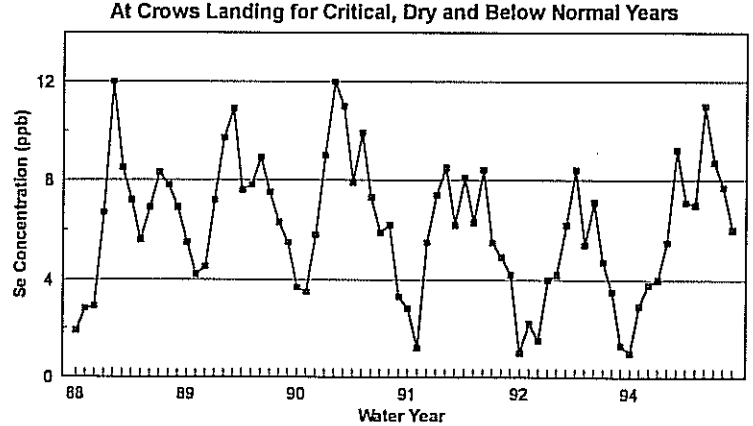


Figure 3. Volume of Drainage Water Discharged From the Grassland Basin, 1986 to 1994

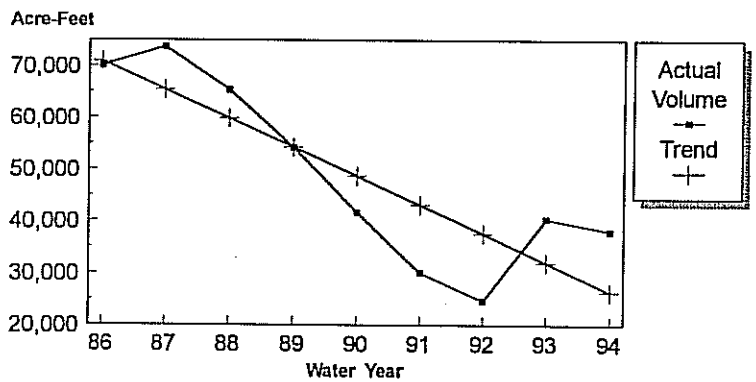
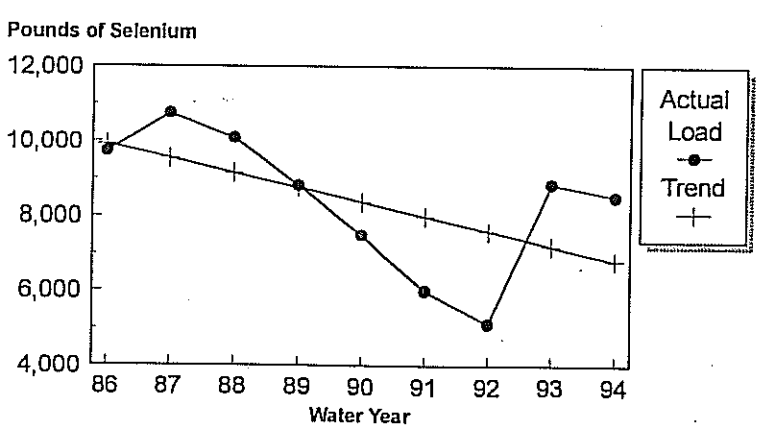


Figure 4. Selenium Load From The Grassland Basin, 1986 to 1994



conserved by farmers during years in which surface water supplies were reduced by persistent drought conditions.

2. The volume of drainage water released each month from the Grassland Basin varies with irrigation activities and exogenous events, such as rainfall and major storms. As shown in Figure 5, the volume of drainage water released each month begins to increase in January and February, when farmers pre-irrigate cotton and melon fields. The volume increases again in June and July, during the summer irrigation season of cotton. A similar pattern is observed for monthly loads of selenium (Figure 6).

3. The impact of exogenous events can be seen in Figures 5 and 6, where the monthly volume and load of selenium discharged from the Grassland Basin was quite large in March, 1995. This increase in volume and load was caused by heavy rainfall and storm water flows from the coastal foothills, through Panoche and Silver Creeks, into the Grassland Basin. These flows were generated by the same storm system that damaged portions of the California Aqueduct and destroyed a bridge on Interstate Highway 5, near Coalinga. Most cotton and melon fields had already been pre-irrigated before this storm occurred. The heavy rainfall occurred when the soil profile was saturated, causing a surge in the volume of water discharged from subsurface drainage systems. It is possible that this event caused an increase in drain water volumes and loads throughout the irrigation season.

4. The monthly volume and load data depict the variation that occurs in these parameters in the Grassland Basin. Some of this variation can be reduced by further improving irrigation practices and by implementing a regional management program. However, a significant component of the variation is due to exogenous events that are beyond the control of farmers and districts in the Grassland Basin.

5. Farmers and districts have made substantial investments in irrigation technology and improvements in water management practices in recent years. As a result, district-average irrigation efficiencies have increased from about 50% to more than 80% in recent years (Cal Poly, 1994). In addition, most of the recommendations of the San Joaquin Valley Drainage Program (USBR, 1990), for the Grassland Basin, have already been implemented or are being

Figure 5. Monthly Volume of Drainage Water Discharged From the Grassland Basin, October 1986 to May 1994

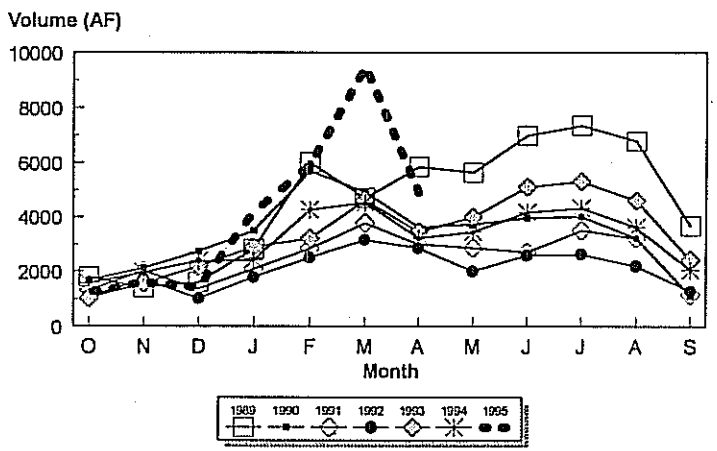
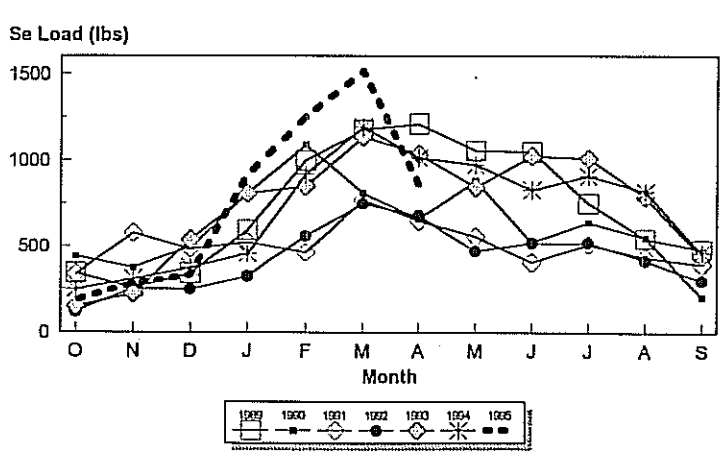


Figure 6. Monthly Selenium Load From the Grassland Basin, October 1986 to May 1995



implemented as part of the Regional Management Plan described elsewhere in these comments. Despite all of these improvements, it appears that further reductions in selenium loads are required to achieve concentration objectives.

6. The analysis in Appendix B of the August 1995 Regional Board Staff Report suggests that the necessary reductions in selenium loads can be achieved through further improvements in irrigation practices, and by retiring 3,000 acres of land, and planting 3,000 acres of eucalyptus trees or treating drainage water to remove selenium. While the general intent of that analysis is valid, some of the key assumptions are over-simplified and the results give an incorrect impression that further selenium load reductions can be achieved with little effort and minimal cost by farmers and districts. We have already described some of our concerns with Appendix B in the comments we submitted to the Regional Board on October 4, 1995 (pages 5-9). The goal in re-stating our concerns at this time is to counter the comments of the individuals who suggested in their oral comments on December 7, that technological methods to achieve dramatic reductions in selenium loads are already available. Unfortunately, cost-effective measures are not yet available, but the Grassland Basin Drainers are continuing to invest in research and development efforts.

G. Estimated Costs of Achieving Water Quality Objectives

1. We have estimated the investments and expenditures that will be required during 1996 through 2015 to achieve the water quality objectives presented in the Compliance Time Schedule. We compare these costs with estimates for two alternative scenarios that include the 5-ppb and 8-ppb monthly mean selenium concentration objectives, beginning in 2002, and in all years thereafter. The purpose of this analysis is twofold:

   A. To compare the costs of achieving the proposed Compliance Time Schedule, which includes the 5-ppb, 4-day average concentration standard, with scenarios that do not include that standard, and

   B. To compare the costs of concentrat[illegible]-based and load-based performance goals in scenarios that include the 5-ppb and 8-ppb monthly mean selenium concentration objectives.

2. The three scenarios are the following:

   A. Compliance Time Schedule, with load-based performance goals, and the 5-ppb, 4-day average concentration standard is imposed in 2005 during Above Normal and Wet Years, and in 2010 during Critical, Dry, and Below Normal Years.

   B. A modified Compliance Time Schedule, with the 5-ppb and 8-ppb monthly mean objectives imposed as load-based performance goals, beginning in 2002. The 5-ppb, 4-day average concentration standard is not imposed.

   C. A modified Compliance Time Schedule, with the 5-ppb and 8-ppb monthly mean objectives imposed as concentration-based performance goals, beginning in 2002. The 5-ppb, 4-day average concentration standard is not imposed.

3. Drainage water recirculation facilities are constructed in all three scenarios, so that districts can recycle an estimated 29,000 acre-feet of drainage water, each year, during 1996 through 2001. Districts also implement the Regional Management Plan and sponsor further research on selenium removal methods (except in Scenario C), during these years. Farmers invest in improved irrigation practices in all three scenarios. The estimated annual cost of these efforts during 1996 through 2001 is $16.46 per acre in Scenarios A and B, and $14.40 per acre in Scenario C.

4. A selenium removal plant is constructed in the year 2001 in Scenarios A and B, so that districts can achieve the TMML selenium load constraints. These constraints are the same in these two scenarios, because both are based on the 5-ppb and 8-ppb monthly mean concentrations. Districts treat an estimated 19,600 acre-feet of drainage water each year, during 2002 through 2004, while recycling an estimated 5,200 acre-feet of drainage water. In this analysis the estimated cost of treating drainage water, to reduce the selenium concentration by 50%, is $400 per acre-foot. A selenium removal plant is not required in Scenario C, but districts recycle an estimated 14,500 acre-feet of drainage water to achieve the concentration objectives. The estimated annual cost of these efforts during 2002 through 2004 is $90.11 per acre in Scenarios A and B, and $8.19 per acre in Scenario C.

5. The volume of drainage water recycled and treated is increased during 2005 through 2015 in Scenario A, in order to achieve the TMML loads associated with the 5-ppb, 4-day average concentration standard. Districts recycle an estimated 8,800 acre-feet of drainage water and treat an estimated 45,500 acre-feet of drainage water, each year, in Scenario A. The recycling and treatment program does not change in Scenario B, because the EPA standard is not imposed. Similarly, districts continue to recycle 14,500 acre-feet of drainage water in Scenario C, during 2005 through 2015. The estimated annual cost of these efforts is $197.29 per acre in Scenario A, $90.11 per acre in Scenario B, and $8.19 per acre in Scenario C.

6. Estimated investment costs include the cost of constructing recycling facilities, building a selenium removal plant, and extending the Wetlands Bypass to the San Joaquin River. The extension will be required in all three scenarios, if water quality objectives are imposed in Mud Slough, beginning in 2015. The amortized costs of these investments are $8.37 per acre for the recycling facilities, $44.86 per acre for the selenium removal plant, and $27.05 per acre for the Bypass extension. As noted above, the selenium removal plant is not required in Scenario C.

7. The sum of the present value of expenditures and investments during 1996 through 2015 is $211.7 million for Scenario 1, $145.2 million for Scenario 2, and $35.8 million for Scenario C (Table 3). These results suggest that farmers will need to invest an estimated $2,138 per acre, over the 20 years during 1996 through 2015, in order to achieve the TMML loads included in the Compliance Time Schedule and the EPA 5-ppb, 4-day average standard. The total investment is an estimated $1,497 per acre for Scenario B, in which the 5-ppb and 8-ppb concentration standards are implemented using TMML loads. The total investment declines to $369 per acre if the 5-ppb and 8-ppb concentration objectives are implemented as monthly mean concentration objectives.

8. These results suggest that if the Compliance Time Schedule is implemented using load-based performance goals and including the EPA 5-ppb, 4-day average standard, agricultural land values in the Grassland Basin may be reduced to zero. Land that is valued at $2,000 per acre cannot support a present value of expenditures and investments of $2,138 per acre.

Table 3. Estimated Sum of the Present Value of Expenditures and Investments Needed to Achieve Alternative Selenium Load and Concentration Objectives, During 1996 through 2015

Scenario	Sum of Present Value of Expenditures and Investments	
	Total	Per Acre
	(Million Dollars)	(Dollars)
A. Compliance Time Schedule With TMML Loads beginning in 2002 And EPA Standards beginning in 2005	211.7	2,183
B. Compliance Time Schedule with 5 ppb, and 8 ppb TMML Loads beginning in 2002 And No EPA Standards	145.2	1,497
C. Compliance Time Schedule with 5 ppb and 8 ppb Concentration Objectives beginning in 2002 And No EPA Standards	35.8	369

9. The 5-ppb and 8-ppb concentration objectives will also cause significant reductions in land values, if they are implemented as a load-based program. Some of the farmland in the Grassland Basin will not be able to support a present value of expenditures and investments of $1,497 per acre.

10. The costs of achieving the 5-ppb and 8-ppb concentration objectives can be supported by current land values and production opportunities, provided that the EPA standards are not imposed in 2005.

H. Potential Reductions in Economic Activity

1. The selenium load restrictions included in the Compliance Time Schedule will cause significant economic impacts on farmers and local communities, if selenium load reductions must be achieved through further improvements in irrigation practices and by increasing the re-use of saline drainage water. As shown in Figure 7, the selenium load target for Above Normal and Wet Years, beginning in 2002, will require significant reduction in typical selenium loads. Further reductions will be required, beginning in 2005. A similar pattern is observed for Dry and Below Normal Water Years in Figure 8. Achievement of these load reductions will require better management capability and technology than are currently available.

2. The load restrictions depicted in Figures 7 and 8 were developed using a Total Maximum Monthly Load approach to maintaining concentration objectives in the San Joaquin River. That approach minimizes the probability of exceeding concentration objectives by selecting load limits that would achieve the objectives during periods when the volume of water in the River is the lowest volume observed in recorded history. As such, the TMML approach is extremely restrictive and will result in ambient water quality conditions that often exceed the levels required by concentration objectives. As described above, significant investments and expenditures will be required to achieve the load reductions depicted in Figures 7 and 8. In addition, the yields of salt-sensitive crops will be reduced. The analysis presented below provides an estimate of the economic impacts that will occur if the TMML loads are imposed as performance goals.

Figure 7. Actual Selenium Loads and Maximum Loads in the Compliance Time Schedule For Above Normal and Wet Years

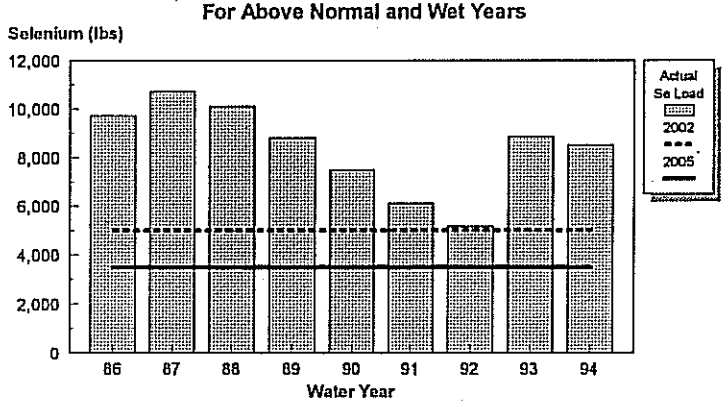
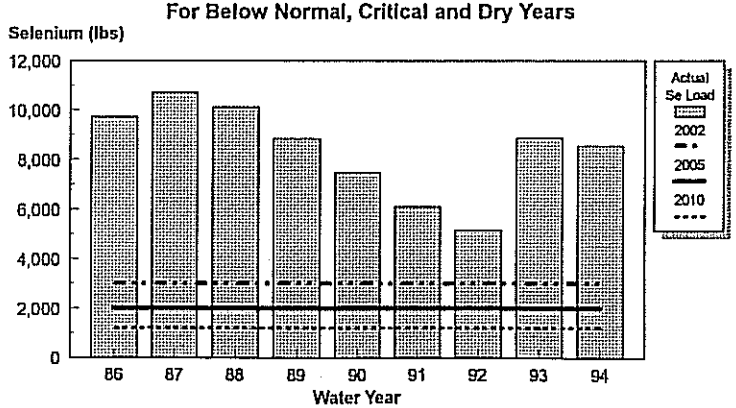


Figure 8. Actual Selenium Loads and Maximum Loads in the Compliance Time Schedule For Below Normal, Critical and Dry Years



3. The Grassland Basin Drainers have examined the potential economic impacts of selenium load restrictions, using an economic model of crop production in the region. The model simulates the impact of recirculating saline drainage water to achieve selenium load reduction targets. Over time, soil salinity increases when districts recirculate a larger proportion of their saline drainage water. The yields of salt-sensitive crops, such as tomatoes and other vegetables, decline when soil salinity increases, causing reductions in total revenue. These crops are no longer produced when yield reductions cause the net revenue to decline below the net revenue generated by producing salt tolerant crops, causing further reductions in total revenue. A complete description of the economic model is provided in Wichelns and Houston (1995).

4. Without a cost-effective process for removing selenium from drainage water, efforts to achieve water quality objectives in the Compliance Time Schedule will consist largely of further improvements in farm-level irrigation practices, increased recirculation of saline drainage water, and regional coordination of drainage water volume and loads. We estimate that the proposed Compliance Time Schedule will cause significant reductions in farm-level revenues, regional economic activity, and employment, if load-based performance goals and the EPA 5-ppb, 4-day average concentration standards are imposed. In particular, we estimate that the following economic impacts will occur, over time, as soil salinity increases:

   A. The sum of the present value of total revenues earned during 1996 through 2015 will be reduced by an estimated $324.7 million.

   B. The sum of the present value of direct (farm-level), indirect (support industries), and induced (household expenditure) effects of agricultural production, during 1996 through 2015, will be reduced by an estimated $684.9 million.

   C. The number of jobs supported by agricultural production in the Grassland Basin will be reduced by an estimated 1,130 persons in the year 2005 and by an estimated 1,457 persons in the year 2015.

5. Several individuals and agencies involved in drainage issues have suggested that a land retirement policy could be implemented in the Grassland Basin, to assist in reducing drainage water volume and loads. However, a land retirement policy would actually exacerbate the economic impact of the

proposed Compliance Time Schedule. We have estimated the potential impact of a policy that would require 20% of farmland in the Grassland Basin to be retired during 1996 through 2015, in conjunction with the proposed Compliance Time Schedule. The estimated economic impacts are the following:

A. The sum of the present value of total revenues earned during 1996 through 2015 would be reduced by an estimated $463.9 million.

B. The sum of the present value of direct (farm-level), indirect (support industries), and induced (household expenditure) effects of agricultural production, during 1996 through 2015, would be reduced by an estimated $978.5 million.

C. The number of jobs supported by agricultural production in the Grassland Basin would be reduced by an estimated 1,281 persons in the year 2005 and by an estimated 1,612 persons in the year 2015.

The land retirement policy causes the present value of total revenue to decline by an additional $139.2 million, when compared with the decline induced by the Compliance Time Schedule. The sum of direct, indirect, and induced effects is reduced by an additional $293.6 million when the land retirement policy is imposed. Total revenue is reduced because farmland is fallowed before it becomes too saline to support profitable agricultural production. In later years of the Compliance Time Schedule scenario, the 20% land retirement policy does not generate a binding constraint on crop production because increasing soil salinity causes a similar reduction in irrigated area.

I. References

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Skorupa, J., 1995, Personal communication.

United States Bureau of Reclamation, 1990. "A Management Plan for Agricultural Subsurface Drainage and Related Problems on the Westside San Joaquin Valley." San Joaquin Valley Drainage Program, Final Report, Sacramento, California, 183 pages.

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October 4, 1995

California Regional Water Quality Control Board
Central Valley Region
3443 Routier Road, Suite A
Sacramento, CA. 95827-3098

Dear Sir:

Reg: Water Quality Objectives and the Implementation Plan to be Used in a Basin Plan Amendment for Regulation of Agricultural Subsurface Drainage in the Grassland Area.

These comments in brief were presented at the September 22, 1995 workshop.

In 1983 I held in my hands the first deformed migratory bird, an American Coot chick found at Kesterson NWR evaporation ponds. This changed my life. I am very disappointed at the lack of meaningful action and continued inaction by this Board over the past 10 to 12 years regarding the Selenium / agricultural drainage and wastewater issue.

In 1983 the Kesterson fiasco started to unfolded as U.S. Fish and Wildlife Service researchers surfaced a complex and deadly element of this witch's brew of agricultural pollution (drainage and wastewater) in the San Joaquin Valley. Dead and deformed young and embryos of nesting migratory birds found at Kesterson NWR, the then terminuses of the San Luis Drain. Several populations of fish were also eliminated from the ponds. This agricultural pollution (drainage and wastewater) contained elevated concentrations of many elements including selenium, boron, molybdenum, and numerous chlorides and sulfates. The trace element selenium, however, posed substantial ecotoxicological risk to fish and wildlife and their habitats. Selenium toxicity was determined to be the cause of what has become known as the Kesterson syndrome.

In 1984, Mr. Robert James Claus, the owner of a duck club in the Grasslands, appeared before a hearing of this Regional Board which is governed by local folks, requesting it to take enforcement against the discharger of agricultural drainage and wastewater of questionable quality. This Board had no problem with the emerging water quality situation at Kesterson. In fact it looked the other way. Mr. Claus had to fight his way over the Regional Board's failure to take action, in order to get a hearing before the State Board. By that time, pictures on television and the front page of newspapers showing dead and deformed young of migratory birds with grotesque heads, bulging brains, without legs or eyes and the knowledge that populations of fish in the Kesterson ponds had already been elimination, could no longer be ignored.

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State Board Action and Order WQ 85-1.

The State Board held a hearing in October 1984 and took many hours of testimony. The Board issued its Order No. WQ 85-1 on February 5, 1985. This Order set some instream standards, sent several research activities into action and made notice of many concerns including "If the Bureau closes Kesterson Reservoir and continues to supply irrigation water to Westlands Water District without implementing an adequate disposal option, continued irrigation in the affected area of Westlands Water District could constitute an unreasonable use of water". No action has been taken by this Board on this issue.

Some recent historical data from the National Pesticide Monitoring Program regarding Selenium in fish taken from the San Joaquin River tributary Mud Slough at the Los Banos WMA showed that the Selenium residues in whole body fish from the Sacramento and San Joaquin River were about the same in 1972 and 1973. However by 1985 the Selenium residues in fish taken from the same Mud Slough at the Los Banos WMA sampling site increased almost 9 times over the 1973 residues.

The period of 1973 and 1977, with its 5 fold increase in Selenium loading of fish tissues, must be the time frame of significant loading of Mud Slough / Salt Slough system. The Department of Fish and Game estimated pre-1985 selenium loading from the grasslands at 2600 pounds annually. However from a review of the fish tissue data from the National Pesticide Monitoring program, it is very possible that the pre-1985 Selenium loading of the San Joaquin River (1950 to 1975) was considerable less then the 2,600 pounds estimated by the CDFG.

Another interesting note is that the State Board in its Water Quality Monitoring Report No. 82-1 TS (July 1982) did not report Selenium present at San Joaquin River sampling locations for either water year 1980 or 1981. Did the Board test for Selenium? Did it fail to find minimal concentrations? Trace amounts were found in the Tuolumne and Stanislaus Rivers.

Comments to Regional Board Concerns:

Is watershed approach appropriate? Source control must be the guiding light for all discharges in the watershed. The Selenium problem of the Grasslands watershed must be solved within that watershed. Dilution of Salt Slough outflow by the Merced River flows, is not a logical solution to Selenium pollution in the San Joaquin River or South Delta. Protecting resources, uses and values covered by the State's public trust mandates must be the first order of business.

Economic implications. Pollution control and the protection of trust values must be a cost of doing business, just as is the price of water, the wages paid to farm hands and the cost of fuel to run equipment. The urban or industrial water user must pay the

cost of water delivery as well as clean up as a household cost or a cost of doing business. So should agricultural users of water.

Should the Regional Board adopt other policies or prohibitions? It is long past due for the Regional Board or State Board to investigate the misuse or unreasonable use of water and any public nuisance caused by inconsiderate land use and water management which has resulted in contaminate laden wastewater and drainage being dumped or discharged into waters and tributaries to Salt and Mud Sloughs and the San Joaquin River. Such actions have impacted public and private lands under the general management of various migratory acts and applicable laws (San Luis NWR complex and Federal wetlands easement lands), lands under the management of the California Dept of Fish and Game, lands and waters under the general control of the State Lands Commission, and resources, uses and values, and other beneficial uses of water protected by the public trust.

The State Board in its Agricultural Water Management Guidelines for Water Purveyor's, dated September 1984, states "Failure to take appropriate measures to minimize excess application, excess incidental losses, or degradation of the water quality constitutes unreasonable use of water". Therefore by definition, if a use of irrigation water degrades or destroys the beneficial uses of the water, or causes a public nuisance, that particular water use is beyond the reasonable and beneficial use provisions of Article 10 Section 2 of the State Constitution.

Documentation that the public's fish and wildlife resources, their associated uses and ecological values; private and public beneficial uses of water have been unreasonably impacted by the wastewater and drainage generated by the delivery and use of Federal irrigation water supplied to irrigate soils containing high levels of chlorides, sulfates, Boron, Selenium and several other salts or trace elements, is replete in scientific papers and reports from many sources that are in the files of the Regional Board, State Board and other State and Federal agencies.

Alternate water quality standards or other strategies that the Regional Board should implement.

The 2 ppb should apply to all waterways and channels of the Grasslands and the San Joaquin River.

There is no single best management solution or practice for all situations. Any overall corrective action will require a mix of several actions. However Land Purchase / Land retirement is an important first step that must be acted upon by this Board. This effort at source control can have quick and positive results and many public benefits.

Purchasing or otherwise retiring lands containing significant levels of selenium or other toxic materials would have only a one time cost. There would be little if any maintenance costs. Lands not needed for conservation purposes such as to help restore native grasslands and related fauna of the San Joaquin Valley, could be sold, with title restrictions, for selected compatible uses such as dry land farming, grazing, etc. Within the Westlands W.D. problem soils have been estimated at 100,000 to 275,000 acres (Alternatives Descriptions Report USBR, April 1991).

The majority of the land within the San Luis Unit sold for $100.00 to $350.00 per acre pre-project. Lands in the Tulare Basin costs about the same. At a cost of $1,000.00 per acre it would cost $100,000,000.00 to retire 100,000 acres. Lands acquired should be purchased at or near pre-project adjusted prices and today's realities. The reasoning being that the land had values which justified its price, i.e. grazing $50.00 to $100.00/acre; dry land farming $ 100.00 to $300.00/acre, irrigated $400.00 to $1000.00/acre, based on pumping the limited or poor ground water and extensive alkali problems. Any value added to the price of land based on speculation, or on the expectations of cheap, Federally subsidized water being delivered to the Westside and Southern end of the San Joaquin Valley, or on the construction of a Federal drainage facilities should not be included in determining market value. In addition problem soils without water are just about worthless.

For each acre not irrigated or otherwise retired, there would be commensurate saving of about 3.5 to 4.5 acre feet of water per acre or about 350,000 to 450,000 acre feet for each 100,000 acres taken out of irrigation. This water would be firm yield water. In addition for each acre not in production there would be a reduction of 20 to 60 pound of pesticides (active ingredients) plus 80 to 250 pounds of carrier materials, (oils, etc.) not applied to the soils. In addition there would be a reduction of the amount of drainage and wastewater generated of about .6 to .8 acre feet per acre of land retired or 60,000 to 80,000 acre-feet for each 100,000 acres of land retired. There would be a saving in electrical energy by not having to pump the 350,000 to 450,000 acre-feet from the Delta. There should be benefits to fish resources and associated fisheries as 350,000 to 450,000 acre-feet less would have to be pumped from the Delta. The water savings could be used to restore or otherwise benefit fish resources and fisheries throughout the waters of the Bay-Delta and watershed.

Is compliance schedule appropriate? NO! The 2 ppb should apply to all waterways and channels of the Grasslands and the San Joaquin River. The 5 ppb in the San Joaquin River does not prevent the bio-accumulation of Selenium in the downstream biota to levels which could be chronic or outright toxic to some of the more sensitive aquatic organs. Protecting only part of the public trust resources is not resource protection in the public interest.

A 5 to 7 year implementation / compliance schedule is reasonable with a Selenium loading down to 2000 pounds or less. However, a program that extents the total period out to 15 to 20 years is out

of the question. The Selenium problem has gone on for almost 20 years. The people do not need it for another 15 to 20 years.

Enforcement of laws and regulations. The people or corporations responsible for this pollution, via their drainage and wastewater, must be held accountable. In this situation the administrators of USBR, Westlands Water District and those of other irrigation or drainage districts receiving Federal water, such as Broadview Water District, Firebaugh Canal Water District, Pacheco Water District, Panoche Drainage District, Central California Irrigation District, Charleston Drainage District, and the farm operators irrigating selenium soils or otherwise causing drainage problems, are known or can be quickly identified. They all must be held accountable for their actions. Penalties should include the loss of irrigation water supply, forfeiture of water rights, clean-up costs, jail time and incentive fees, or a combination of these. The time to take enforcement action is long over due.

Are the proposed objectives and plan consistent with State and Federal regulations and policies?

The non-degradation language of the Federal Water Pollution Control Act of 1972 (Clean Water Acts) as amended, and its criteria fishable and swimmable water quality by 1985, has been violated for years in the San Joaquin River. This plan insures at least another 20 years of the same Selenium pollution.

The Staff desires to move a source of agricultural pollution from one location to another. The Staff wants to legalize Selenium pollution of the San Joaquin River by Grassland watershed irrigators / drainers by up to 8000 pounds annually. A new outlet for the Drain would be constructed sometime in the future (by 2020) to below the confluence of the Merced River, in order to take advantage of its inflow / dilution property.

* This action is inconsistent with the purpose and intend of the Federal Water Pollution Control Act of 1972, as amended.

* The Staff's baseline reference dates are to restrictive. Use of the 1986 to 1994 baseline rewards the drainer / polluters and short changes the protection of the public trust. The Staff or Board should consider using the average Selenium loading of the San Joaquin River 1950 to 1975 as the historical time frame or reference rather than the 1986 to 1994 period.

* Models can only present what we think we know about Selenium and not what our ignorance level is about Selenium.

* The total loading of a system with a substance that bio-accumulates i.e. Selenium, threatens the entire food chain and the renewability of resources utilizing the receiving waters.

* The aquatic ecosystem can not absorb the Total Maximum Concentration Load of all substances (such as chlorides, sulfates, Selenium, Boron, Molybdenum, diazinon, Arsenic, Mercury, etc.) and maintain beneficial uses. The bio-accumulative aspect of Selenium and its safe window is far too critical and has too many unknowns for such a concept of total maximum concentration loading to be endorsed.

* The Total Maximum Concentration Load of an ecosystem ignores the synergistic effects of the various chemical components that are already in or that are being added on a daily bases.

* The Staff's idea that the people must accept as a given that waterways in agricultural communities need a lower standard of water quality in order to protect historical agricultural uses and local discharge customs, is not protecting the public trust, is not in the long term public interest of sustainable agricultural or aquatic ecosystem renewability.

* Using the assimilation capacity of receiving waters provides false security to the general public who expect a quality aquatic environment and that associated resources, uses and values will be protected; that fish and wildlife are healthy and fit to eat; and to the landowner or water manager who would like certainty and longevity of investments and a water supply based on protection standards, not on the uncertainty of dilution.

* While it is reasonable that not all freshwater of the State be of High Sierra spring water quality, The public trust mandates that all freshwater should be of sufficient quality to protect public health, beneficial uses, and potential or actual water supplies; support healthy and diverse fish and wildlife populations, and other interests, uses and values covered by the public trust.

* Present and future resources, present and future uses and opportunities, and ecological values located downstream from the point of discharge should not be foregone for the immediate benefits of disposers located upstream or on the dilution capability of inflow.

The Staff Report indicates that the Drain and its contents (mud and liquid) would be under the control of a local authority. The San Luis and Delta Water Authority comes to mind.

* What State authorities and trust responsibilities would be transferred to the managing body? If monitoring is included, this would be like letting the fox guard the hen house.

* This local body is another layer of government that the public must wade through in order to get the various water quality laws and regulations enforced and corrective action taken.

* History has shown that local bodies are best for issuing special favors for special interests. To say it in a different way, although the laws and regulations are in the people's favor, those who implement them all too frequently aren't.

* Since the State has failed, for what ever reason, to enforce the applicable laws and regulations to protect water quality, --Why are the people to believe that a local body like a Canal Authority, will carry out and enforce those same laws and regulations?

* Where is the monitoring program. Any monitoring must include the waterways of the Grasslands, the Drain and that reach of the San Joaquin River between the Mendota poll and its confluence with Salt Slough. Any monitoring program must be reviewed by the public and be conducted by a a recognized inventory or research entity, i.e. USGS, etc.

Selenium in the agricultural drain and wastewater contaminated the aquatic environment of the Grasslands and which caused the death and deformities of migratory birds and wiped out populations of fish at the Kesterson NWR evaporation ponds, is a public nuisance, and is in direct response to the waste and unreasonable use of subsidized irrigation water.

The State, as trustee of its waters and its fish and wildlife resources, has the implied powers to do everything necessary to protect the continued viability and stewardship of trust interests and resources. (See City of Long Beach v. Mansell, 91 Cal Rps 23, 37; 3 Cal 3d 462,482 - 1970, People v. California Fish Co. 166 Cal 576, 138 Cal Rps 79, 87, 88 - 1913. All it takes is the will of the Regional or State Board to do so.

I expect a reply as to what actions the Regional Board intends to taking regarding my comments within 30 days. No meaningful reply will be equated to no action.

Sincerely,

Felix E. Smith

Felix E. Smith
4720 Talus Way
Carmichael, CA. 95608

cc: Carla Bard, 235 S. Padre Juan, Ojai, CA. 93023

Jack Hug, at Cotchett & Pitre, San Francisco Airport Office Center, 840 Malcolm Rd, Suite 200, Burlingame, CA. 94010

cc: interested parties

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December 14, 1995

Mr. William Crooks - Executive Officer
Regional Water Quality Control Board -
Central Valley Region
3443 Routier Road, Suite A
Sacramento, Ca. 95827-3089 Fax 255-3015

Dear Mr. Crooks:

Subject: Proposed Basin Plan Amendment - Control programs related to pesticides, agricultural drains, and other constructed water bodies. Nov. 1, 1995 Notice of Public Workshop.

Throughout out the Central Valley natural water courses have been greatly altered or modified to both deliver water to and drain the land. At one time of the year these waterways deliver water or move water from one parcel to another and from one farmer to another. These waterways contain irrigation water, agricultural spillage and wastewater. At some locations the water is used and reused meeting agricultural needs and the beneficial uses of fish and wildlife in state waters and on public and private preserves. At other locations these waterways carry water that has been infused with various agricultural chemicals, trace elements, sodium and sulfate salts and / or sediment quickly rendering once useable water supplies unusable or impaired for many beneficial uses.

Sacramento Valley

Rice culture is a major water quality concern with its baggage of applied chemicals, temperature and silt additions to the Sacramento River.

Retention time requirements for several chemicals applied to rice have increased significantly since first instituted in 1984 (CWRCB 1990). No obvious fish kills have been observed since that time. Chronic impacts to selected fishes and food chain organisms may have occurred, but documentation is lacking. Such chemicals as DDT, toxaphane, etc, because of persistence and bioaccumulation abilities were taken off the market long ago. The registration of Bentazon based chemicals was cancelled in 1989 because of groundwater contamination. Most of the discussion about fish and wildlife exposure to rice culture chemicals has been through the water column. This could underestimate actual exposure if food chain organisms have been contaminated by chemicals or trace elements.

Methyl Parathion. There is concern about continued use of Methyl Parathion. More information is needed regarding the influence of Methyl Parathion on the acute and chronic mortality to

invertebrates and to egg, embryo, and larval striped bass (Finlayson et al. 1993).

Parathion. Parathion is a very toxic chemical. It usually looses biological activity in 2 to 4 weeks; however, it does bioconcentrate in aquatic organisms. Applied to water it persisted for 690 days. In a laboratory experiment when Parathion contaminated tadpoles were feed to mallard ducklings, all ducklings died after consuming a single meal of tadpoles, and brain cholinesterase was severely depressed. Because of its extreme toxicity and sublethal affects to birds and mammals, the continued use of Parathion on rice instead of less toxic insecticides should be critically evaluated before application (Smith 1987).

Carbofuran. Carbofuran is very toxic to soil organisms. Primary productivity is the basis of the food chain in most aquatic environments. The sublethal effects of Carbofuran to earthworms and other soil organisms should be further studied to better understand its risks to soil fauna and environment (Anton et al. 1993a). It is important to understand the bioaccumulation process of Carbofuran in algae to ascertain if there are chronic/sublethal affects to algal growth (Anton et al. 1993b). There is some knowledge of the additive toxicity of some pesticides, however, the synergists affects of several pesticides and metals is either unknown or has not been reported.

Carbofuran has a low soil adsorption coefficient, relatively long anaerobic soil metabolism half-life, and is very water soluble. Therefore very mobile and likely to be found in drains, surface waters, and sediments, from treated lands. Such properties account for the long-lasting occurrence of Carbofuran in agricultural drains containing rice tailwater (Menconi and Gray 1992).

Because of Carbofuran's toxicity, moderate persistence, and toxic degradation products, wildlife exposure, even at recommended application rates, should be avoided (Smith 1987). Ingestion of this material by eating killed organisms has impacted mammals and migratory birds. Carbofuran has killed waterfowl, passerines, hawks and eagles in California and several other states. The secondary poisoning of animals, both raptors and mammals, by Carbofuran has occurred and is very disturbing (Williams 1993).

Other Pesticides. Molinate and Thiobencarb have been identified in tissues of fish and other food chain organisms. See Table 3-6, page III-21 CWPCB 1990. The toxic effects of Molinate and Thiobencarb are cumulative in juveniles of chinook salmon, steelhead trout, white sturgeon, striped bass, channel catfish and Neomysis. There was also some bioconcentration of these materials in muscle of selected fish, 5 ppm for Thiobencarb and 2 ppm for

Molinate. Higher residue levels would be expected in lipid-rich tissues such as ovaries.

Toxic materials that accumulate in eggs could have adverse impacts on embryonic development and thus on successful reproduction. Work done with Thiobencarb and Molinate indicates that Thiobencarb was 15 times more acutely toxic than Molinate to larval striped bass. For juvenile fishes the difference in acute toxicity between Thiobencarb and Molinate are 11 times for striped bass, 15 times for steelhead trout, 17 times for chinook salmon and 19 times for channel catfish (Finlayson and Faggella 1984 in CWRBC 1990). Both Molinate and Thiobencarb showed appreciable toxicity to 25 day-old white sturgeon fry. Molinate appears to have a greater propensity for cumulative toxicity (Bailey 1985 in CWRCB 1990, Appendix F-4).

Molinate and Thiobencarb have been detected in sediment samples from the Sacramento River. The soils of rice producing fields should be tested for these and other materials. Information on the persistence, mobility, metabolites, residues, and other aspects of the fate of rice chemicals at the field level is apparently unknown. Data are needed on the availability and toxicity to benthic organisms and on the effects of such chemicals on the basic food chain starting with phytoplankton.

Sublethal Impacts. Impacts of pesticides on the immune system are now being discussed in the literature. Under laboratory conditions, test animals are usually well cared for and in good health. Tests are conducted under controlled conditions. In the wild, the life stages most affected are eggs, larvae, and young, the aged, sick, pregnant or otherwise stressed. Carbofuran has been associated with reduced immunoglobulin levels, decreased lymphocytes and bone marrow cells in mice. This can contribute to morbidity and premature mortality. Increased mortality occurred after a challenge by Salmonella typhimurium bacteria. Methyl Parathion has been shown to cause immune system impairment, and to increase death rates in mice exposed to Salmonella typhimurium (Eisler 1985, Olson 1986).

The potential exists for serious damage to aquatic ecosystems via food chain organisms contaminated by immunotoxicants. A negative impact to planktonic forms could reduce primary productivity of a an aquatic system. The process by which ricefield chemicals move through the aquatic ecosystem could also have an impact on fish and wildlife populations, be they in a seasonal wetland, the lower Sacramento River or the San Francisco Bay Estuary.

Other Impacts. Temperature. There is a significant heat budget associated with the discharge of ricefield drainwater that must be absorbed by the fish and other aquatic resources of the Sacramento River. The temperature of the rice-field discharge water during the first half of the 1984 rice season, April 27 to July 5, varied

between a mean minimum of 51.3 to 72.1 F to a maximum of 80.2 to 93.5 F (CWRCB 1990 Appendix I). This spill and wastewater coupled with rice chemical residues could have an adverse impact on aquatic food chain organisms plus selected anadromous species. White sturgeon embryos and larvae, striped bass eggs, embryos, and larvae, chinook salmon and steelhead trout juveniles and smolts all utilize the reach of the Sacramento River impacted by rice spillage and wastewater. Silt is a constant visual esthetic problem for recreational uses of the Sacramento River.

Coincidental Aquatic Habitat

Many of the ditches and channels that carry rice spillage and wastewater could be called "Coincidental Aquatic Habitat" during the dry summer season. However they are also part of the drainage pattern during fall discharge and during wet periods. Any definition of "Coincidental Aquatic Habitat" must include being isolated from any surface or ground- water connections. The best management practice to protect against rice chemical, temperature, and silt degradation, may be a no discharge - water retention and recirculation system. A system of retention reservoirs may be necessary to adequately hold and detoxify selected chemicals and control silt. These reservoirs could be used to store water for fall flood-up after rice harvest to help decompose rice straw.

San Joaquin Valley

The irrigation of saline, seleniferous soils and the resultant drainage and wastewater has impacted water and its beneficial uses and has contaminated habitats (waters, waterways, wetlands and their respective biota) for a long time. Contamination of groundwater and surface water supplies and ecological values of the Grasslands, its wetlands, waterways and on to the San Joaquin River (Barnes 1985) and continues today.

A most critical concern is the trace element selenium, its toxic effects and long term impacts to the aquatic ecosystem and its biota. On going investigations document that considerable agricultural drainage and wastewater continues to enter San Joaquin Valley groundwaters and surface waters. Salt Slough and Mud Slough (north) are major carriers of agricultural pollution, accounting for 57% of the salt load, 71% of the boron load, and 85% of the selenium load per year entering the San Joaquin River during water-years 1993 and 1994 (CRWQCB-CVR 1995). Also during water years 1993 and 1994 the mean monthly selenium concentration standard of 5 ppb (Federal EPA Standard) in the San Joaquin River was violated 21 of the 24 months of record or 87 % of the time (CRWQCB-CVR, January 1995). No enforcement action has been taken by the Regional Board or the Attorney General regarding such violations. During the years 1986 to 1994 the actual poundage of selenium entering the San Joaquin River varied between 3,300 and 11,150 pounds per year (CRWQCB-CVR 1995).

In 1992 and 1993 over 77 percent of the fish sampled from Mud Slough and 85 percent of the fish samples from Salt Slough had selenium residues 4 to 12 ppm, levels of toxic concern. Over 3 percent in Mud Slough and 2 percent in Salt Slough were above the toxic level i.e. over 12 ppm (Henderson, et al USFWS 1995).

Today's research indicates that waterborne selenium of 2 parts per billion (ppb) or greater is considered hazardous to the aquatic ecosystem and to the health and long-term survival of fish and wildlife populations because of bioaccumulation of selenium in food-chain organisms. The extremely narrow margin between "safe" and "toxic" selenium levels in tissue, along with the propensity for it to accumulate in the aquatic food web, underscores the biological importance of even slight increases of selenium in the environment (Lemly 1993). The most sensitive indicators of selenium toxicity in fish and aquatic birds is partial or complete reproductive failure. Such failure can occur with little or no mortality or visible symptoms in adults (Lemly et al 1993). The subtle effects of reduced or failed reproduction has devastating long term consequences for aquatic biota (LeBlanc 1995).

The dietary toxicity threshold for selenium in fish and wildlife is only 3 ppm. Because of this food chain organisms containing 3 ppm dry weight or more should be viewed as potentially lethal to fish and aquatic birds that consume them (Lemly 1993).

Continuing research has demonstrated that aquatic ecosystems and associated fish and wildlife are more sensitive to selenium and other substances of concern in subsurface drainage and wastewater than previously believed. Water quality criteria must protect aquatic ecosystems rather than specific species. This would indicate a selenium concentration in State waters of 2 ppb or less (Lemly 1993, Maier and Knight 1994).

Today, about 29 miles of Mud and Salt Sloughs and the lower 100 miles of the San Joaquin River are impaired in quality (CSWRCB-DWQ 1990). This reach of the San Joaquin River is the defacto San Joaquin Valley drain. It is a witch's brew of agricultural chemicals, trace elements, chloride and sulfate salts and colloidal material (Clays) carried by drainage and wastewater. Elevated concentrations of many elements and salts including selenium, boron, molybdenum and chloride and sulfate salts are commonly observed. The pesticides DDT, chlordane and toxaphene were added long ago and still are found in aquatic life including fish. Recent and new agricultural pesticides such as diazinon and methidathion have been added to this witch's brew (Kuivila and Foe 1995). The impacts to the aquatic ecosystem by diazinon and methidathion must be better understood. Impacts could extend to Delta and San Francisco Bay ecosystems.

What should be the Regional Board's next step

The legality of disposing wastes and other debris (including wastewater) into waters and waterways was clarified by case law over 100 years ago. The California Court stated in People v. Gold Run Ditch and Mining Co. (4 Pac Rpt at 1152 -1884) that mining companies do not gain a right through custom or common practice to continue dumping their hydraulic mining wastewater and related debris into streams and waterways of the State.

The Court indicated that the material being dumped into rivers constituted a nuisance. The Court stated that public trust rights held by the people are paramount and controlling over the dumping of wastewater and other debris into the State's waters and waterways. The disposal of mining debris was found to be an invasion of public rights and a public nuisance, therefore unlawful. The act of disposing of mining debris was enjoined. The ruling was against the entire hydraulic mining industry. Each company could continue to mine, but could not dump or allow their wastewater and other debris to enter the waters and waterways of the state.

In a similar case, People v. Elk River Mill and Lumber Company (40 Pac Rptr 466 - 1895) the pollution and destruction of beneficial uses was alleged by downstream users of Elk River. The State Supreme Court ruled that if the conformation of the defendant's land is such that he can not operate a dairy without putting or allowing manure and associated filth to flow into Elk River, then he must find some other use for the land.

In People v. Truckee Lumber Co. (116 Cal 397, 48 Pac 374 -1897) the action was to enjoin a nuisance. Truckee Lumber allowed saw mill wastes (shavings, dust, edgings and other wastes) to enter the Truckee River. The material was polluting the river, poisoning aquatic life, killing trout and other aquatic life and was destroying a trout fishery. The Court recognized the public trust nature of the various properties being impacted. The court stated "it is well established principle that every person shall so use and enjoy his own property, however absolute and unqualified his title, that his use of it shall not be injurious to the equal enjoyment of others having an equal right to the enjoyment of their property nor injurious to the rights of the public".

Dumping of mill wastes in the Truckee River was found to violate the rights of the people and a public nuisance. This finding was based on the people's ownership of the fish resource, the water and the quality of that water, and the fishery of the Truckee River. The Court also indicated that the State Attorney General can on his own information maintain an action to enjoin a public nuisance.

It is unlawful to deposit any substance into the waters of the state deleterious to fish, plant life or wildlife or which result in contamination, pollution or a nuisance. The management of many agricultural chemical could fit that description. Agricultural drainage, spillage and wastewater can impact the viability of aquatic ecosystems. Drainage and wastewater resulting from irrigating saline, seleniferous soils is a pollutant and was ruled a nuisance at Kesterson. Seleniferous drainage continues to move through the soil and into the groundwater and to the surface water causing new and continuing damage each day creating a nuisance. The resultant contamination, because of toxic effects of selenium and its ability to bioaccumulate in biota, is expressly prohibited by at least 3 state statutes, Fish and Game Code section 5650 et seq.; Health and Safety Code section 5410 et seq.; and Water Code section 13000 et seq.

The Gold Run, Elk River and Truckee Lumber cases make it clear that as a matter of law, one must exercise his or her rights or use his or her property so as not to infringe on the rights, interests or properties of others and that holders of water rights are entitled to the natural flow of the water undiminished in quality.

The public trust doctrine also provides a principled common law theory for protecting water quality, especially against non point polluters. Protecting fish and other aquatic resources necessarily implies protecting water quality. Irrigation that causes pollution presumably can be regulated under the theory that the term "beneficial use" means both beneficial to the appropriator and not harmful to the public trust interests.

The essence of the rulings and findings made over 100 years ago fit the contemporary needs of today's people concerned and interested in protecting resources, uses, ecological values and water quality for all beneficial uses. In order to protect the greater public interest, it is time for the State Board or the Attorney General to take the appropriate enforcement action.

Sincerely,

Felix E. Smith
4720 Talus Way
Carmichael, CA., 95608
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September 12, 1995

Paul E. Jepperson, Supervising Engineer
California Regional Water Quality Control Board
Central Valley Region
3443 Routier Road, Suite A
Sacramento, CA 95827-3098

Dear Paul,

It appears that conflicting commitments will preclude our attendance at your September 22 workshop on the Water Quality Objectives and Implementation Plan regarding Subsurface Drainage Discharges. We are, therefore, submitting these written comments for consideration at the workshop.

We believe that addressing the selenium problem without also addressing the river salinity problem may result in adopting measures for selenium control that may have to be revised, with resulting further cost, in order to be economically and physically compatible with salinity and boron control in the river. We are also skeptical of using selenium load control as a surrogate for achieving the required selenium concentrations in the river. Furthermore, measures to reduce the discharged load of either selenium or salt may actually increase their concentration in the river. The assumed availability of dilution water may not be as forecasted in different year types. The CVP-IA and the new Bay/Delta Control Plan and other water use shifts may substantially alter recent historical flows, particularly in regard to seasonal distribution. Furthermore, the load approach precludes potential quick solutions such as providing dilution by circulating water from the DMC to the river with recapture in the Delta for return to the canal. The emphasis on annual load also inhibits achieving the desired concentration by controlling the time of drainage release to coincide with fish releases, power releases, etc.

The salinity and toxic ion problems in the river are almost entirely due to the CVP's operations. They did not exist prior to 1950. Downstream riparians and senior appropriators from the Merced down through the South Delta must not be expected to wait another twenty years for the impact to be mitigated. The selenium is largely leached from westside soils, but the salt and boron are largely imported via the DMC and then concentrated by water consumption.

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It would be disingenuous to pretend that westside agriculture can continue in the long run without either a salt removal system direct to the Bay or ocean, or ruinous discharges to the Delta via the river. Yet Table A-2 appears to say that direct discharge is eliminated from consideration because it is unpopular and costly, and Table II proposes to take twenty years to resolve the selenium problem in the river. It does not even address the salinity and boron problem in the river. We agree that there should be a watershed approach. However, the watershed includes the entire river and South Delta. Furthermore, a piecemeal approach to controlling components of water quality may be as bad as a piecemeal approach to the watershed.

We realize that the Regional Board is under pressure to address the selenium problem, and that it is expedient to give less attention to downstream water quality problems and to the long term survival of agriculture, both in the drainage area and downstream. However, we believe you should not allow these considerations to deter you from addressing this complex matter in a manner that is expeditious and which encompasses the entire scope of dissolved solids and the entire affected watershed.

Thank you for your consideration.

Sincerely,

Alex Hildebrand

Alex Hildebrand

cc Cliff Wisdom

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October 4, 1995

SOUTH DELTA WATER AGENCY'S COMMENTS TO WATER QUALITY OBJECTIVES AND IMPLEMENTATION PLAN FOR THE REGULATION OF AGRICULTURAL SUBSURFACE DRAINAGE DISCHARGES IN THE SAN JOAQUIN RIVER BASIN

The SOUTH DELTA WATER AGENCY ("SDWA") continues to believe that the current water quality objectives and implementation plan for subsurface drainage are inadequate because of their failure to address and control high salinity discharges into the San Joaquin River. There are and will be no objectives and policy of implementation for salinity control if the Regional Board continues to address the issue by stating that an out-of-valley drain is the best solution. Since the Regional Board is not actively working to get the drain, is not implementing any salinity objectives for the upper San Joaquin in the interim, and is not proposing any plans to decrease salt discharges into the San Joaquin River, the Regional Board is ignoring the problem. The recent history of this issue is that the Regional Board failed to adopt any water quality standards for its salinity in its Basin Plan wherein it recommended "other agencies" should act on this problem. Then the State Board

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also failed to act but asked the Regional Board to address the issue. Now that the ball is back in the Regional Board's court, it is once again being kicked under the table.

Every time upstream discharges exceed the Vernalis salinity standard, the San Joaquin River is being degraded in violation of Water Code § 12232. This, in turn, forces the burden of dilution of this poor quality water on other, mainly downstream users. Every time downstream water is released to dilute this water, a downstream user is deprived of the ability to put that water to beneficial use. At the same time, the water users in between the poor quality water and the dilution water (and in fact users below the point of dilution), are forced to use the poor quality water.

All of this is coupled with the unfortunate fact that the USBR (the entity charged with meeting the Vernalis standard) has traditionally failed to meet this standard on a regular basis. Even today the Bureau is determining how much water to allocate for dilution based on availability, not on need. Hence, not sending discharge goals and limits is ignoring the problem even when it is now known that the one existing protection is inadequate.

It is then disingenuous to state a policy that the San Joaquin River may be used to remove salts from the Basin so long as water quality objectives are met (Staff Report at p. 4).

The Regional Board's Staff Report should include a survey of when and how often the Vernalis standard has not been met, a survey of what water may be available for dilution purposes, and a survey of current and proposed actions (i.e., spring fish flows, water purchases, Grassland/San Luis Drain Project) which will exacerbate the salinity problem. Such an approach would show the problem is getting worse and force the Board to act to control discharges.

In its justification for giving selenium control first priority (Staff Report at p. 19), staff states there are several significant salinity sources in the Basin besides agricultural subsurface drainage. This statement does not appear to be supported by the facts. The only significant discharges into the San Joaquin River that exceed the Vernalis standard come from surface and subsurface agricultural drainage. If each is now to be used as a reason why the other need not be addressed at this time, the problem will never be resolved.

It is interesting to note that the Regional Board favors more restrictive conditions to the (eventual) out-of-valley drain then it does for the San Joaquin River. Under the current proposals, the river will continue to transport excess salts to the Delta, regardless of the salt concentrations at the point of discharge, while the drain should only be built if "[A]ll toxicants would be

reduced to a level which would not harm beneficial uses of receiving waters" (Staff Report at p. 22).

What the Regional Board has failed to do is to address the issue of salinity control in the Basin. Any deadline for limiting discharges of water with salt concentrations above the Vernalis standard would be a step in the right direction and force the persons and entities causing the quality problems to correct or mitigate their adverse effects. No deadline, however, ensures continued degradation of the San Joaquin River not only to the river's detriment, but also to that of the downstream users.

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By _____
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December 7, 1995

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SOUTH DELTA WATER AGENCY'S COMMENTS TO STAFF REPORT ON COMPLIANCE TIME SCHEDULE FOR THE REGULATION OF AGRICULTURAL SUBSURFACE DRAINAGE DISCHARGES

The South Delta Water Agency ("SDWA") would like to reaffirm its earlier comments submitted on September 12, 1995, and on October 4, 1995. Although pressure is being exerted to first deal with the selenium issue, the Regional Board should not separate this issue from other important ones. To do so runs the risk of exacerbating other problems or making it more difficult to address those other problems in the future.

As stated earlier by Mr. Alex Hildebrand of our Agency, we believe that using selenium load controls does not appear to be the appropriate way of achieving water quality goals. Actions instituted to limit loads can actually increase concentrations resulting in even worse river quality at various times of the year.

As evidence of this, one need only look to the Grasslands Bypass Project. That Project's Supplemental Environmental Assessment continually refers to the fact that it will not increase salt loads in the San Joaquin River, and so the Project will not affect downstream quality. However, the Project separates the "good" water from the "bad" water and reuses the good. The effect of this is to have a smaller amount of drainage with a higher salt concentration being discharged in the San Joaquin River. Hence, even if the load into the river from this area is maintained, the river and downstream users are damaged by the higher concentrations. Having the (hoped for) better water offset this later in the year is of no help to agricultural diverters.

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The salinity problem has existed since the operation of the CVP began nearly 45 years ago. To date, the only action taken to address this problem has been to require the USBR to release fresh water from New Melones to dilute the contamination. The SDWA and other entities have for many years requested that both the State and Regional Boards take action to begin to correct this problem, but to no avail. At this time, the good quality water of New Melones is being dedicated to alleviating the problems caused by other areas and thus depriving the Stanislaus water shed from the beneficial use of that water.

Currently, at least three different projects or programs (1995 Bay-Delta Fish and Wildlife Objectives, the USBR's Interim Water Acquisition Program, and the Grasslands Bypass Project) will result in either less dilution water available in the summer months or a worse quality of water in the river during those same summer months. Yet, at every step in the process (the Basin Plan, the Water Quality Control Plan, Amendments to the Basin Plan, and water permit change applications), both the State and Regional Boards agree there is a salinity problem and then take no step to address it. This current step appears to simply reaffirm that the Regional Board will allow projects such as the Grasslands Bypass Project to worsen San Joaquin River quality.

Concurrently with the investigation of the selenium problem, the Regional Board should face up to its statutory responsibilities and address the salinity problem. By not even examining the issue at this point, the Regional Board's actions will probably make it more difficult and more expensive to cure the salinity problem when and if that issue is ever addressed.

In the short term, coordination of releases of bad quality discharge water with other flows for dilution purposes, or prohibiting certain high concentration discharges appears to be the only reasonable alternatives for salinity control. In the long run, an out-of-valley discharge of the salts and toxic ions appears to be the only practical solution.

The SDWA encourages the Regional Board to address the salinity problem at this time so that the downstream users who continue to be harmed by upstream CVP operations do not have to wait another 20 years before they begin to see the light at the end of the tunnel.

Very truly yours,

By _____
JOHN HERRICK

JH/dd
cc: Karna Harigfeld, Esq.
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July 7, 1995

VIA TELEFAX AND U.S. MAIL

Mr. Dennis Westcot
Senior LWU Analyst
REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION
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Re: Comments to the Staff Report on Beneficial Use Designations and Water Quality Criteria for the Regulation of Agricultural Subsurface Drainage Discharge in the San Joaquin Basin (5C)

Dear Mr. Westcot:

On behalf of Stockton East Water District ("Stockton East"), we would like to provide the Regional Board with the following brief comments to the Staff Report on Beneficial Use Designation and Water Quality Criteria for the Regulation of Agricultural Subsurface Drainage Discharge in the San Joaquin River Basin (5C).

CONTROL OF SALINITY IN THE SAN JOAQUIN RIVER:

Of critical concern to Stockton East is the impact on water quality in the San Joaquin River caused from agricultural drainage discharges, and in specific, the effects of increased concentrations of salinity in the river. We recommend when amending the Basin Plan for regulation of agricultural drainage discharges that a salinity water quality criteria be developed to protect the beneficial uses of the San Joaquin River.

As you know, all water that flows out of the Grassland Basin goes into the San Joaquin River. It is essential to control the concentration of salinity entering the river. By establishing a measurable criteria for salinity, the water quality of the San Joaquin River will be enhanced.

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PROGRAM OF IMPLEMENTATION:

When the Regional Board prepares its program of implementation for achieving the water quality objectives, it essential to include a compliance time schedule which will ensure that the objectives are met in a timely manner.

We thank you for allowing us to comment on this preliminary report, and look forward to participating in the development of the water quality objectives and program of implementation for the Basin Plan amendment.

Should you have any questions or concerns, please feel free to contact me.

Very truly yours,

KARNA E. HARRIGFELD
Attorney-at-Law

KEH:cjm
cc: Edward M. Steffani

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October 4, 1995

VIA TELEFAX AND U.S. MAIL

Paul E. Jepperson
Supervising Engineer
California Regional Water Quality Control Board
Central Valley Region
3443 Routier Road, Suite A
Sacramento, California 95827-3098

Re: Water Quality Objectives and Implementation Plan for Regulation of Agricultural Subsurface Drainage in the Grasslands Area

Dear Mr. Jepperson:

On behalf of Stockton East Water District ("Stockton East"), we would like to provide the Regional Board with the following comments to the Staff Report on Water Quality Objectives and Implementation Plan to be Used in a Basin Plan Amendment for Regulation of Agricultural Subsurface Drainage in the Grasslands Area.

WATER QUALITY OBJECTIVES FOR THE SAN JOAQUIN RIVER:

Stockton East believes that it is critical to establish water quality objectives for salinity for the entire San Joaquin River, not simply at Vernalis. While the focus of the staff report is the establishment of water quality objectives for selenium, we believe that it is essential to do the same for salinity to fully attempt to resolve the problems plaguing the San Joaquin River.

The salinity problem has been an issue since the 1970's. Volumes of studies have been conducted which identify salinity as a major contributing factor to poor water quality in the San Joaquin River, but to date that information has been ignored.

Discharges of agricultural drainage water results in a significant degradation of the water quality in the San Joaquin River. The result of the degradation of the water quality directly impacts Stockton East because releases of water are required to be made from New Melones Reservoir to dilute the pollution caused from the agricultural discharges. These releases for water quality purposes have prevented Stockton East from receiving the water

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entitled to it under its contract with the Bureau of Reclamation and must not be tolerated by the Regional Board.

As Stockton East is particular concerned with the effects of increased concentrations of salinity in the San Joaquin river, we specifically request that the Basin Plan amendment include the establishment of water quality objectives for salinity to protect the beneficial uses of the San Joaquin River. By establishing a water quality objective for salinity on the San Joaquin River, the water quality of the San Joaquin River will be enhanced.

PROGRAM OF IMPLEMENTATION:

While we are encouraged that the Regional Board is contemplating requiring non-point source dischargers to obtain waste discharge requirements which will impose effluent limitations for selenium, we once again believe that similar effluent limitation must be imposed for salinity.

Furthermore, the staff report is silent on what would happen prepares if the waste discharge requirements are not met. We have seen from past practice that when a water quality objective is not met, agricultural drainage simply continues without any type of enforcement action being taken. We request that strict the program developed for achieving the water quality objectives include a strict compliance schedule which will ensure that the objectives are met in a timely manner.

We thank you for allowing us to comment on this staff report, and look forward to participating in the development the Basin Plan amendment.

Very truly yours,

KARNA E. HARRIGFELD
Attorney-at-Law

KEH:tlw
cc: Edward Steffani

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December 8, 1995

VIA TELEFAX AND U.S. MAIL

Paul E. Jepperson
Supervising Engineer
California Regional Water Quality Control Board
Central Valley Region
3443 Routier Road, Suite A
Sacramento, California 95827-3098

Re: Water Quality Objectives and Implementation Plan for Regulation of Agricultural Subsurface Drainage in the Grasslands

Dear Mr. Jepperson:

On behalf of Stockton East Water District ("Stockton East"), I would like to reiterate our concerns with the Regional Board and its Staff Report on Water Quality Objectives and Implementation Plan to be Used in a Basin Plan Amendment for Regulation of Agricultural Subsurface Drainage in the Grasslands Area.

While we are encouraged by the Regional Board's stepping up of the compliance schedule for meeting the selenium water quality objectives,. Stockton East strongly urges the Regional Board to establish water quality objectives for salinity for the entire San Joaquin River, not simply at Vernalis. We believe that to truly resolve the multitude of problems facing the San Joaquin River salinity water quality objectives must be established on the entire river.

For nearly three decades, the salinity levels in the San Joaquin River have been a major contributing factor to poor water quality in the San Joaquin River, but to date nothing has been done to remedy this situation, except for releasing water from New Melones to "dilute" the pollution. These releases for water quality purposes have prevented Stockton East from receiving the water entitled to it under its contract with the Bureau of Reclamation and must not be tolerated by the Regional Board.

Furthermore, the re-opening of the San Luis Drain has been approved by the Bureau even though the environmental documents show that there will be a significant impact on

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San Joaquin River water quality by re-opening the drain. The increase salinity which will be caused by this discharge into the San Joaquin River makes it imperative to establish water quality objectives for salinity.

As Stockton East is particular concerned with the effects of increased concentrations of salinity in the San Joaquin river, we specifically request that the Regional Board amend the Basin Plan to include the establishment of water quality objectives for salinity to protect the beneficial uses of the San Joaquin River.

We thank you for allowing us to comment on this staff report, and look forward to participating in the development the Basin Plan amendment.

Very truly yours,

JEANNE M. ZOLEZZI
Attorney-at-Law

JMZ/KEH:tlw
cc: Edward Steffani

te of California

Memorandum

To : Dennis Westcot
Central Valley Regional Board (S)

Date: OCT 6 1995

Jesse M. Diaz, Chief
Division of Water Quality
From : STATE WATER RESOURCES CONTROL BOARD
901 P Street, Sacramento, CA 95814
Mail Code G-8

Subject: COMMENTS ON STAFF REPORT FOR DRAFT BASIN PLAN AMENDMENT FOR REGULATION OF SUBSURFACE AGRICULTURAL DRAINAGE DISCHARGES IN THE SAN JOAQUIN RIVER BASIN

This memorandum responds to Paul Jepperson's request of September 5, 1995 for comments on the proposed Basin Plan amendment. We have reviewed the staff report and have the following comments.

1. You are proposing to revise Policy b in Table 6 (p. 18) to discourage rather than prohibit activities that increase the discharge of poor quality drainage water. This seems inconsistent with the discussion of this policy on pages 19 and 20 (which seems to support a prohibition) and with the prohibition in Table 8 (p. 28).

2. Policy g (Table 6, p. 18) appropriately takes a watershed perspective on the problems in the Grasslands. It recognizes that watersheds are complex systems, that it may not be possible to support all beneficial uses in all water bodies at every location, and that compromises may be necessary. We fully support this approach.

3. As you know, the San Joaquin Valley Drainage Program ceased to exist after the publication of their final report in 1990. References to this group in Table 7 (p. 28) therefore probably refer to the San Joaquin Valley Drainage Implementation Program.

4. Large load reductions will be necessary to meet water quality objectives for selenium. At this time these reductions may not be attainable except by large scale land retirement. Without a valley drain to export salt and/or a breakthrough in the development of a cost-effective treatment technology, there appears to be no other option but to take lands out of production.

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You have recognized this difficulty by allowing up to 20 years to meet objectives (with milestones). This compliance schedule was subject to some criticism at the recent workshop as being too long. While 20 years appears to be realistic under these circumstances, you may want to consider this an upper limit, not subject to revision in the event that management measures are not effective or that a permanent solution is not found. On the other hand, it may be appropriate to accelerate the compliance schedule if a solution or even partial solutions are forthcoming. This would include development of a suitable treatment technology, implementation of a drainage export program, or extension of the discharge point to a location below the Merced River.

5. There are advantages to the use of static effluent limits which you point out in Appendix D. This method is probably appropriate at this stage of the regulatory program; however, given the difficulty which is expected in meeting the objectives, a dynamic system should be investigated which will take full advantage of the increased assimilative capacity of the river during high flows.

6. The setting of effluent limits and the issuance of WDRs represents a substantial change in the regulation of subsurface agricultural drainage discharges. As you point out in Appendix C, this amounts to a progression from Tier Two to Tier Three of the Nonpoint Source Management Strategy. It is unfortunate that Tier One and Tier Two were not successful in achieving water quality goals. However, as you point out, issuing WDRs can provide the regulatory incentives to ensure water quality goals are met. It also demonstrates that the Regional Board is serious about its water quality protection program and hopefully will encourage other nonpoint source pollutant dischargers to do what is necessary to make Tiers One or Two successful.

We will be following the implementation of the Basin Plan with great interest and hope that it is successful.

If you have any questions, the staff person most knowledgeable on this subject is Walt Shannon, and he can be reached at 657-1027. You may also call Jack Hodges, Chief of the Nonpoint Source Ag Unit, at 657-0682.

cc: Walt Pettit, EXEC
John Ladd, DWQ

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

14 July 1995

William Crooks, Executive Officer
California Regional Water Quality Control Board
Central Valley Region
3443 Routier Road, Suite A
Sacramento, CA 95827-3098

Subject: San Joaquin Basin Plan Amendment

Dear Mr. Crooks::

Thank you for the opportunity to both review the staff report on *The Beneficial Uses Designations and Water Quality Criteria to be Used for the Regulation of Agricultural Subsurface Drainage Discharges in the San Joaquin Basin (5C)* and attend your staff's presentation of the report at the June 23, 1995 Regional Board workshop. Both the report and the presentation were highly informative.

As you may know from our comments on the advanced draft staff report and our conversation with your staff on June 14, 1995, we are very impressed with the thoroughness and thought which you and your staff have given to developing the proposed beneficial uses for the Grasslands watershed area. In particular, we are glad to see the attention the Regional Board staff has given to the wetland channels as part of its beneficial use identification process.

As you also may know, the Regional Board is in the process of amending its Basin Plan at the same time that the San Luis Delta-Mendota Water Authority is in the process of negotiating with the U.S. Bureau of Reclamation for its reuse of the San Luis Drain for conveyance of agricultural drainage waters out of the Grasslands area wetland channels and to the San Joaquin River via Mud Slough. You may recall that a similar proposal in 1991 resulted in the development of an Environmental Assessment and a Finding of No Significant Impact which outlined the process by which environmental commitments would be made a part of the agreement to reuse the drain. Most specifically, the 1991 FONSI proposed to rely on the Regional Board to adopt as part of its Basin Plan Amendment, load reduction targets and a schedule for reductions which would apply to use of the drain. The Authority's 1995 proposal is identical to its 1991 proposal in this regard.

It has long been EPA's opinion that use of the drain has environmental costs which must be mitigated by a commitment on the part of the Authority to reduce contaminant loads to the San Joaquin River over time. The costs include acute and chronic levels of toxicity in Mud Slough and increased contaminant loads to the San Joaquin River. While using the Basin Plan Amendment as the vehicle for establishing the appropriate load reduction targets and schedule is most appropriate, it is the less than perfect timing of these two events which is somewhat worrisome (i.e., the Authority would like to sign a Use Agreement by August 1, 1995; the Basin Plan Amendment is scheduled to go before the Board in December 1995 with State Board approval in 1996). We hope to engage you and your staff in more regular dialogue on this subject over the next several months to ensure that the two processes are coordinated as best as is possible.

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Specifically regarding the staff report on beneficial uses, we have four general comments to offer. Other more specific comments are included as an attachment. First, as above, we believe the Basin Plan Amendment should more clearly acknowledge the presence and potential reuse of the San Luis Drain as an important and complex component of drainage management in the Grasslands area.

Second, it is EPA's view that the Regional Board has an obligation to designate appropriate beneficial uses and water quality objectives for all waters of the state. Even if perceived as a benefit to the watershed as a whole, the quality of one waterbody can not be traded for the quality of another waterbody through the beneficial use setting process. The watershed protection approach can be used to rank priority issues for cleanup within each watershed. These priorities can best be reflected in a flexible implementation plan which provides extended time frames for addressing lower priority problems. Ultimately, though, it is EPA's opinion that each waterbody must meet designated uses or have uses reviewed through a use attainability analysis.

Third, as a reminder, federal regulations are very clear on the subject of waste transport as a designated use of waters of the United States. The 40 CFR 131.10 says:

> "In no case shall a State adopt waste transport or waste assimilation as a designated use for any waters of the United States."

While the staff report does not propose as part of Table 2, waste transport as a designated use, it does identify as part of Table 3, subsurface agricultural drainage as a current use of many of the wetland channels. While the draft staff report does not appear to conflict outright with the regulations, we thought it appropriate to highlight the above subsection of the regulations for your consideration in the finalization of the Basin Plan Amendment. You may find that clarification of this point in the Amendment is warranted.

As a final matter, the staff report provides a literature review of selenium investigations which establishes a range of potential water quality objectives for selenium. Unlike the beneficial uses, however, the staff report does not make specific recommendations regarding an appropriate selenium objective. We would be happy to work more closely with you and your staff in the event that further technical discussion would be useful to you in developing a final recommendation.

Thanks again for the opportunity to review the draft staff report. We look forward to discussion and review of the implementation plan, including a schedule and load reduction targets, when such a plan is available for comment. As with the water quality objectives, we would be happy to work more closely with you and your staff on this subject, if additional technical discussion would be viewed as helpful. Please feel free to contact me or Alydda Mangelsdorf of my staff at (415) 744-2015.

Sincerely,

Maria C Rea

Maria Rea, Chief
Northern California and Hawaii Watershed Section

Attachment

cc: Mike Delamore, Bureau of Reclamation
John Ladd, SWRCB
Dan Nelson, Delta-Mendota Water Authority
Steve Schwarzbach, USFW
Terry Young, EDF
Department of Fish and Game

U.S. EPA Region IX Comments regarding
The Staff Report on
The Beneficial Uses Designations and Water Quality Criteria to be Used for the Regulation of Agricultural Subsurface Drainage Discharges in the San Joaquin Basin (5C)

1. The staff report does not present the public health risks associated with subsistence fishing, egg gathering and other foraging in and around the Grasslands watershed area. The risks associated with these activities may disproportionately affect ethnic and low-income communities. To ensure environmental justice, the Basin Plan Amendment must provide a mechanism for protecting this current use.

2. The staff report proposes that Mud and Salt Sloughs should not be protected for cold water migration. Reasonable arguments are made to support this proposal. However, the staff report does not fully contemplate the current incidental migration of cold water fishes. Nor, does it contemplate the increased incidental migration of cold water fishes which is likely to occur as a result of increased flows in Mud Slough following the reopening of the San Luis Drain, should that occur. The Basin Plan Amendment must more fully address this issue.

3. The staff report proposes that the wetland channels should be protected as limited warm water habitat. The Basin Plan Amendment must better define the "limited" warm water habitat use and whether some distinction from a "full" warm water habitat use is intended.

4. The staff report proposes that the wetland channels should not be protected for contact recreation (i.e., swimming). Reasonable arguments are made to support this proposal. However, several drownings are reported in the wetland channels every year suggesting that swimming does currently exist as a use. The Basin Plan Amendment must more fully address this issue.

5. The staff report proposes that Mud Slough should not be protected for the preservation of biological resources of special significance. Reasonable arguments are made to support this proposal. However, the staff report does not fully contemplate the association of Mud Slough with Kesterson National Wildlife Refuge and the potential for over flows from Mud Slough (i.e., stormwater flows). This is of particular importance given the increased flows and constituent loads to Mud Slough which will be experienced should the San Luis Drain be reopened. The Basin Plan Amendment should more fully address this issue.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

NOV 22 1995

William Crooks
Regional Water Quality Control Board
Central Valley Region
3443 Routier Road, Suite A
Sacramento, CA 95827-3098

Subject: Staff Report on Water Quality Objectives and Implementation Plan to be Used for the Regulation of Agricultural Subsurface Drainage Discharge in the San Joaquin River Basin

Dear Mr. Crooks:

This letter contains the U.S. Environmental Protection Agency's (U.S. EPA) general comments on the above referenced staff report dated September 1995. As you know, representatives of U.S. EPA participated in the Regional Board workshop on the staff report held on September 22, 1995 and provided comments regarding the nexus between the proposed Basin Plan Amendment and the consensus process begun during the summer of 1995 regarding use of the San Luis Drain. Since the Regional Board workshop, the Regional Board has issued a revised staff report dated November 1995 which we are still in the process of reviewing. A letter commenting on the revised staff report will be forthcoming and will include more specific comments.

In general, the U.S. EPA is supportive of the approach the Regional Board staff has proposed as a means of better controlling subsurface agricultural drainage discharges in the San Joaquin River Basin. We specifically support the Regional Board staff's proposal to: 1) encourage the development and operation of a Regional Entity for basin-wide management of agricultural drainage in the Grasslands Basin, 2) issue a Waste Discharge Requirement with effluent limits for selenium discharges, and 3) require the development of an interim- and a long-term plan by which the Drainage Entity, individual drainage and irrigation districts, and individual farmers will better control selenium discharges so as to reduce selenium loads and meet water quality objectives. In fact, these are the same recommendations which the San Luis Drain consensus discussions arrived at after debate amongst many of the interested parties, including: U.S. EPA, U.S. Bureau of Reclamation, U.S. Fish and Wildlife Service, the Environmental Defense Fund, and the San Luis & Delta-Mendota Water Authority.

We would, however, like to raise two issues which concern us regarding the September 1995 staff report: 1) the length of the proposed compliance schedule and 2) the lack of commitment towards implementing the Total Maximum Daily Load (TMDL) model.

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COMPLIANCE SCHEDULE

Regarding the compliance schedule, U.S. EPA does not believe that a basin plan amendment allowing for a 20 or 25-year compliance schedule would be approvable by U.S. EPA in its review under the Clean Water Act. Nationwide, U.S. EPA has maintained that water quality standards should be achieved as soon as possible, and U.S. EPA has not previously approved compliance schedules longer than 10 years. U.S. EPA believes that the compliance schedule should be modified to ensure that the water quality standards are achieved in a more timely manner.

TOTAL MAXIMUM DAILY LOAD

Regarding the TMDL, section 303(d) of the Clean Water Act requires that States develop TMDLs for their water quality-limited waters where technology-based effluent limitations or other legally required pollution control mechanisms either do not exist or are not sufficient or stringent enough to implement the water quality standards applicable to such waters. The San Joaquin River was targeted for TMDL development in 1994 with an expected completion date of March 1995. We understand that the Regional Board staff has essentially completed the development of a TMDL for the water quality-limited segment of the San Joaquin River. The Regional Board or Executive Officer should adopt the TMDL, submit it for U.S. EPA review and approval, and then implement it.

The Basin Plan Amendment offers an excellent opportunity to establish the means by which the TMDL will be implemented, including the incremental phases in which it will be applied. However, the September 1995 staff report only proposes to base the final selenium load limits on the TMDL model and remains silent on the actual TMDL adoption and interim implementation plan. We believe that to be approvable the Basin Plan Amendment should provide more clarity on the issue of TMDL adoption and better flesh out the interim phases of TMDL implementation.

As mentioned above, we will be forwarding comments on the November 1995 revisions to the staff report as soon as possible. If you have any questions regarding these comments please contact me at (415) 744-2125 or Alydda Mangelsdorf of my staff at (415) 744-2015.

Sincerely,

for

Alexis Strauss, Director
Water Management Division

cc: Terry Young, EDF
Gary Bodker, Bay Institute
Hal Candee, NRDC
John Ladd, SWRCB
Penny Howard, USBR
Steve Schwarzbach, USFW
Dan Nelson, SL & DMWA

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

JAN 08 1996

William Crooks
Regional Water Quality Control Board
Central Valley Region
3443 Routier Road, Suite A
Sacramento, CA 95827-3098

Subject: Proposed Basin Plan Amendment for the Regulation of Subsurface Drainage Discharges in the San Joaquin River Basin

Dear Mr. Crooks:

Thank you for the opportunity to comment on the staff report entitled "The Compliance Time Schedule to be used for the Regulation of Agricultural Subsurface Drainage Discharges in the San Joaquin River Basin" dated November 1995. Since this most recent staff report modifies proposals of previous staff reports, we have attempted to review the portions of the three staff reports which have been prepared on this subject and which represent the new proposed basin plan language. Enclosed are comments which reflect this more comprehensive review.

You and your staff are to be commended for the extraordinary effort which is represented by the proposed basin plan to control subsurface drainage. In general, the plan represents a very aggressive and precedent-setting application of water quality tools to the problem of non-point source pollution. Our comments are crafted as recommendations which we believe will more greatly perfect this plan.

A summary of our recommendations is as follows:

1. We recommend that all existing and potential beneficial uses be identified for the San Joaquin River Basin, including: REC-2 and MIGR on Mud and Salt Slough, BIOL on Mud Slough and COMM on the San Joaquin River.

2. We recommend that both the narrative and numeric water quality objectives be adopted to apply to the entire delineated San Joaquin River watershed area, including the wetland channels, Mud Slough, Salt Slough, and the San Joaquin River including that portion of the river from the Mendota Pool to Sack Dam.

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3. We recommend that the Regional Board wait to consider amendments regarding salinity until it has prepared a thorough staff report evaluating the subject.

4. We recommend that the Regional Board make more clear the long-term commitments which will be required of Grassland Basin drainers to achieve the goals of the basin plan.

5. We recommend that the Regional Board adopt the staff's Total Maximum Monthly Load model and submit it to EPA for approval. In addition, we recommend that the primary interim control measures be load-based measures derived from the TMML model. The proposed concentration-based Performance Goals should be viewed as a companion tool to the TMML rather than the guiding principle. Regardless of whether the primary interim control measures are load- or concentration-based, however, we recommend that they be designed to improve water quality throughout the watershed, not just within specific waterbodies.

6. We recommend that the numeric water quality objective for selenium go into effect immediately upon adoption of the plan.

7. We recommend that the Regional Board reconsider the feasibility of compliance with the water quality objectives in less than the proposed 15 years. Further, we recommend that the Regional Board staff revise the implementation plan to provide only the authority to grant a compliance schedule, for non-point source discharges, of up to 10 (or 15) years. The Basin Plan itself should not establish a specific compliance schedule, thereby automatically deferring compliance with the water quality objectives. Instead, compliance schedules may be included in a State Waste Discharge Requirement, which the staff report indicates will be issued for discharges of agricultural subsurface drainage. Minimum required improvements should then be established for each 5 year permit period. The permit writer, however, should be given discretion to apply a more stringent compliance schedule than the maximum authorized by the Basin Plan, if one appears warranted.

8. Finally, we recommend that the Regional Board staff consider expanding the watershed boundaries to include the upslope area defined by Panoche-Silver Creek.

Thank you for consideration of the enclosed comments and recommendations. If you have any questions, please contact Alydda Mangelsdorf of my staff at (415) 744-2015.

Sincerely,

Marie C Rea

for Amy Zimpfer, Chief
Watershed Protection Branch

Printed on Recycled Paper

cc: Joe Karkoski, RWQCB
Mike Delamore, USBR
Penny Howard, USBR
Dan Nelson, SL&D-MWA
Joe McGahan, Summers Engineering
Michael Morse, USFW
Steve Schwarzbach, USFW
Terry Young, EDF
Gary Bobker, Bay Institute
Mary Dunne, DFG
Scott Fraser, USFW

BENEFICIAL USES

1. **Table 2: Designated and Proposed Beneficial Uses.** REC-2 (Canoeing) is designated as a use of the San Joaquin River but not Salt and Mud Slough. Boating is an occasional use of Mud and Salt Sloughs. As such, we recommend that REC-2 be adopted as a beneficial use of Mud and Salt Slough.

2. **Table 2: Designated and Proposed Beneficial Uses.** COMM (Commercial and Sports Fishing) is proposed as a beneficial use for Salt and Mud Slough but is not proposed for the San Joaquin River or the wetland channels. Fishing is an activity that occurs on the San Joaquin River. As such, we recommend that COMM be adopted as a beneficial use of the San Joaquin River.

3. **Table 2: Designated and Proposed Beneficial Uses.** MIGR (Warm and Cold Water Species) is proposed as a beneficial use for the San Joaquin River but not for Mud Slough, Salt Slough or the wetland channels. MIGR is defined as "use of water that support habitats necessary for migration or other temporary activities by aquatic organisms, such as anadromous fish." Anadromous and other fish engage in "temporary activities" in Mud and Salt Slough. As such, we recommend that MIGR be adopted as a beneficial use of Mud and Salt Slough.

4. **Table 2: Designated and Proposed Beneficial Uses.** BIOL is proposed for Salt Slough and the wetland channels but not for Mud Slough. Kesterson Wildlife Refuge borders Mud Slough. As such, we recommend that BIOL be adopted as a beneficial use of Mud Slough.

WATER QUALITY OBJECTIVES

5. **Table 1: Narrative Water Quality Objectives for the San Joaquin River, Mud Slough (North) and Salt Slough.** Under "Chemical Constituents" the Regional Board staff propose that Maximum Contaminant Levels (MCLs) be incorporated by reference as the concentration limits applicable to the San Joaquin River. While MCLs may be quite low for many constituents, they may nonetheless not be fully protective of some ecological receptors. As such, we recommend that the Regional Board staff provide greater scientific justification for their proposal to establish MCLs as the criteria appropriate for protecting both human and ecological health.

   In addition, we recommend that specific criteria for chemical constituents be identified for Mud Slough, Salt Slough and the wetland channels--or adopted for these waters by tributary rule.

6. **Table 1.** Under "pH" the Regional Board staff propose that "in determining compliance with the water quality objective for pH, appropriate averaging periods may be applied provided that beneficial uses will be fully protected." There is no explanation for what "appropriate averaging periods" might be. We recommend that the Regional Board staff provide an explanation of the range of averaging periods which it is proposing as appropriate.

7. **Table 1.** Under "Pesticides" the Regional Board staff propose a series of narrative and numerical objectives. The numerical objectives include:

   a. Total identifiable persistent chlorinated hydrocarbon pesticides shall not be present in the San Joaquin River, Mud Slough or Salt Slough in detectable quantities.

   b. The San Joaquin River shall not contain concentrations of thiobencarb in excess of 1.0 ug/l.

   c. The San Joaquin River shall not contain concentrations of pesticides in excess of MCLs.

   We recommend that the Regional Board adopt the numerical criteria to apply to the San Joaquin River, Mud Slough, Salt Slough, and the wetland channels.

   There are many pesticides commonly found in the waterways associated with agricultural regions in California. Sufficient information exists to adopt numerical criteria for pesticides other than those listed here. As such, we recommend that the Regional Board staff develop numeric criteria for the other pesticides commonly found.

   The narrative criteria evoke the standards of "adverse effects," "antidegradation," and "technically and economically achievable" to apply to the San Joaquin River, Mud Slough and Salt Slough. We recommend that the Regional Board staff define the term "adverse effects" to include: acute and chronic toxicity, bioaccumulation, and significant population and food web changes. Further, we recommend that the Regional Board adopt the narrative standards to apply to the wetland channels, in addition to the other listed waters.

8. **Table 1.** Under "Sediment" the Regional Board staff propose that adverse changes in suspended sediment load be prohibited. There is no discussion regarding the current condition of the Grasslands Basin as regards suspended sediments. As such, we

recommend that Regional Board staff provide greater clarity on the issue, confirming that current suspended sediment levels do not cause adverse affects requiring sediment loading reductions.

9. **Table 1.** Under "Temperature" the Regional Board staff propose that the San Joaquin River never be increased more than 5 degrees fahrenheit above natural receiving water temperature. There is no discussion, in this section, of the salmon protection objective adopted for the San Joaquin River and Sacramento/San Joaquin Delta which requires that "water quality conditions with cold water MIGR beneficial uses be maintained sufficient to achieve a doubling of natural production of chinook salmon from the average production of 1967-1991." As such, we recommend that the Regional Board staff provide greater scientific justification to demonstrates that an increase of 5 degrees fahrenheit is consistent with the goal of doubling salmon production.

10. **Table 1.** Under "Turbidity" the Regional Board staff propose that the San Joaquin River, Mud Slough and Salt Slough be free of turbidity that causes nuisance or adversely affects beneficial uses. Specific numeric limits are proposed which are based on the natural turbidity of the water body. Regional Board staff proposes to use "appropriate averaging periods" when determining compliance with this objective. Further, Regional Board staff proposes that a zone of dilution will be defined for any dredging activity. Within the zone of dilution, violation of the standard would be allowed. We recommend that the Regional Board staff provide an explanation of the range of averaging periods which it is proposing as appropriate. Further, we recommend that the Regional Board staff develop language which limits the extent of the violation allowed within the zone of dilution.

11. **Table 5**: Revisions to Numeric Water Quality Objectives Applicable to the San Joaquin River and/or Mud Slough (North) and Salt Slough. The Regional Board staff proposes to adopt two sets of boron objectives for the San Joaquin River from the mouth of the Merced to Vernalis–one which applies from March 15 through September 15 and one which applies from September 16 through March 14. They are 2.0 ppm and 2.6 ppm as maximum concentrations, respectively or 0.8 ppm and 1.0 as a monthly mean, respectively. Regional Board staff proposes a critical year monthly mean of 1.3 ppm for the San Joaquin River and a 5.8 ppm maximum/2.0 ppm monthly mean for Salt Slough, Mud Slough and the San Joaquin River from Sack Dam to the mouth of the Merced. A footnote indicating that an alternate set of objectives will provide for better water quality in Salt Slough and the San Joaquin River and a longer compliance period for Mud Slough should the San Luis Drain be opened has been stricken. Given the imminent opening of the San Luis Drain, we recommend that the Regional Board staff provide greater scientific justification for the proposed boron

term degradation of Mud Slough which will occur so as to gain benefits in Salt Slough and the wetland channels, may be justifiable only if degradation will not cause irreversible harm or significant environmental impacts and will be temporary in nature. We recommend that the Regional Board adopt language which ensures that its implementation plan protects against irreversible harm and significant environmental impacts anywhere in the watershed and ensures full compliance with water quality objectives in the long term.

15. **Table 6.** Policy 6.e and 6.f state that disposal of salts is the Regional Board's favored option and that a valley-wide drain to carry the salts is the best technical solution. Greater technical and scientific justification for this position is required. As such, the Basin Plan Amendment proposed for development in mid-1996 on the subject of salts is the better place to articulate and support these policies. We recommend that the Regional Board not adopt these amendments but reserve them for consideration in their salinity amendment.

16. **Table 2 (7): Potential Control Actions.** Item #1. Regional Board staff propose that the regulatory priority system for the Grasslands be based on "the sensitivity of the beneficial use to selenium" and "the environmental benefit expected from the action." We recommend that the Regional Board staff define these terms.

17. **Table 2 (7).** Item #3. Regional Board staff propose that the regulatory program be conducted as a series of short-term actions that are designed to meet long-term water quality objectives. Selenium control in Grasslands will require an increasingly greater capital investment on the part of farmers and drainage/irrigation districts. As such, the required actions will increasingly be long-term in nature, rather than short-term. Reliance on short-term actions will almost certainly not result in the next phase of long-term investment which will be required to solve the selenium problem. We recommend that the Regional Board staff develop language which makes clear the long term investments which are likely to be necessary to control selenium discharges.

18. **Table 2 (7).** Item #4. Regional Board staff propose that Performance Goals, in the form of concentration limits, be used to measure progress towards achieving water quality standards. Only in the event that the Performance Goals are exceeded will loading requirements kick in. This approach is in conflict with both the Regional Board's conclusion that load reduction is the best way of achieving water quality standards and the results of its TMML which identify the exact load limits necessary to meet water quality standards. Interim performance goals in the form of concentration limits offer a fine companion tool to load limits, but all available information suggests that only by progressively reducing selenium loads will water

quality standards be achieved and the environment adequately protected. We recommend that the Regional Board staff present the TMML to the Board for adoption. Further, we recommend that the Regional Board staff revise its implementation plan to use the selenium load limits derived from the TMML as the primary selenium control mechanism. These selenium control mechanisms should apply throughout the entire watershed area, not just in individual streams.

19. **Table 2 (7).** Item #5. Regional Board staff propose boron compliance dates of 1991 and 1993. The boron standards are not currently being met. We recommend that the Regional Board staff develop a control strategy for boron and any other constituent whose standard is regularly exceeded.

20. **Table 2 (7).** Item #6. Regional Board staff propose that (unidentified) selenium load reduction milestones will be incorporated into WDRs. Staff have eliminated a statement from Item #6 which was contained in the September 1995 staff report and which stated that load limits would be established to ensure that "the selenium water quality objective in Mud Slough (north) and the San Joaquin River upstream of the Merced River inflow is achieved..." We recommend that the Regional Board staff revise the language to ensure that load limits are designed not only to meet water quality standards downstream of the Merced, but throughout the watershed.

21. **Table 3 (8): Prohibitions.** Item b prohibits the discharge of agricultural subsurface drainage water to Salt Slough and wetland water supply channels with a WILD beneficial use designation. It appears that the channels proposed for protection are a subset of those formerly proposed. We recommend that the Regional Board staff identify on a map the specific channels it does and does not intend to be included.

22. **Table 4 (10): Estimated Percentage Change in Selenium Load within Each Month for Various Water Year Types to Meet a 5 ug/L 4-day Average Selenium Water Quality Objective Based on One in Three Year] Rate.** The table presented in the November 1995 staff report is notably different from the one presented in the September 1995 staff report with no corresponding explanation for the changes. We recommend that the Regional Board staff provide an explanation of the changes to the table as well as a general explanation of the method by which the table was derived.

23. **Table 11: Summary of Selenium Water Quality Objectives and Compliance Time Schedule.** Regional Board staff propose a 8,000 lbs/year selenium load limit as a maximum limit for the whole drainage problem area. This number varies from the number proposed by the drainers, EPA, USBR, and USFW which is 6,660 lbs/year. We believe that 6,600 lbs is the appropriate maximum load limit and has been agreed

upon by many of the stakeholders. Further, the Regional Board staff proposes that this limit not go into effect until 10/97 while the many involved stakeholders agreed that 6,660 lbs would go into effect immediately upon use of the drain. We recommend that the Regional Board staff revise its proposed maximum load limit to be 6,600 lbs. of selenium annually. Further, we recommend that the Regional Board staff revise its implementation date to be immediately upon adoption of the plan.

24. The proposed Basin Plan Amendment language and accompanying staff report are not very clear on the subject of when the 5 ppb selenium standard would go into effect. We recommend that the Regional Board staff propose language which make clear that the 5 ppb selenium objective will go into effect immediately upon adoption of the plan.

TMML

25. The proposed Basin Plan Amendment is not very clear regarding the Regional Board staff's Total Maximum Monthly Load (TMML). The TMML is designed as a tool for controlling selenium discharges by establishing allowable selenium load limits. EPA has accepted the general method proposed by Regional Board staff. However, specific load numbers have never been proposed for adoption and use. In our view, the TMML is precisely the tool which the Regional Board should adopt and implement as part of its selenium control strategy. As above, both selenium load limits and interim concentration limits could be put into effect as companion tools to promote water quality compliance. We recommend that the Regional Board staff propose that the Regional Board adopt the TMML. Further, we recommend that the Regional Board adopt the TMML for establishing the selenium load limits which will incorporated into the implementation plan.

COMPLIANCE SCHEDULE

26. The Regional Board staff propose that they establish a compliance schedule of 10 years for wet years and 15 years for dry years. This is a reduction of 10 and 5 years from their previous proposed schedule, respectively. EPA has never before approved a compliance schedule of longer than 10 years believing that 5 years is generally sufficient. Further, the analysis contained in the staff report appears to indicate that all of the selenium control mechanisms, except unproven treatment technologies, are immediately available for implementation. To accomplish the goals of water quality protection, the water authority, irrigation districts, drainage districts and farmers must begin a coordinated effort to implement, on a broad scale, these selenium control techniques. As regards the unproven technologies, it is our experience that an

aggressive compliance schedule acts as a tool to promote diligent technology development. As such, a compliance schedule which is shorter than the one currently proposed appears to be feasible and advisable.

Therefore, we recommend that the Regional Board staff revise its proposed compliance schedule to better account for the comments above. Further, we recommend that the Regional Board staff revise the implementation plan to only provide authority to grant a compliance schedule of up to 10 (or 15) years. The Basin Plan should not guarantee a specific compliance schedule, thereby automatically deferring compliance with the water quality objectives. While minimum required improvements should be established within the Basin Plan for each 5 year permit period, the permit writer should be given discretion to apply a more stringent compliance schedule if one appears warranted. Finally, should the Regional Board staff maintain its current proposal, we recommend that the staff provide greater scientific justification for the extended schedule, given the immediate availability of many load reduction tools.

WATERSHED DELINEATION

27. The Regional Board staff have delineated the San Joaquin River Basin watershed to include the wetland channels, Mud Slough and Salt Slough of the Grassland Basin and the San Joaquin River from the Mendota Pool to below the confluence with the Merced River. As you know, the EPA, Regional Board and numerous other parties have been involved in a Coordinated Resource Management and Planning effort in the Panoche-Silver Creek area. This area is the geologic source area for the Panoche alluvial fan which contributes the majority of selenium-tainted drainage water to the Grasslands and lower San Joaquin River. As was seen last spring, Panoche Creek continues to transport large quantities of selenium to the alluvial fan and the San Joaquin River (via the Mendota Pool). We recommend that the Regional Board staff consider re-delineating the watershed boundary to include the Panoche-Silver Creek upslope areas and to more formally engage all watershed stakeholders in the development and implementation of a selenium control strategy. We recommend that the Regional Board apply all of its tools, both regulatory and cooperative, to better coordinate a true watershed approach to this water quality problem.

United States Department of the Interior

FISH AND WILDLIFE SERVICE

IN REPLY REFER TO:

San Luis National Wildlife Refuge Complex
P.O. Box 2176
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(209) 826-3508

December 12,1995

Mr. William Crooks
Executive Director
Central Valley Regional Water Quality Control Board
3443 Routier Road, Suite A
Sacramento, California 95827-3098

Subject: Water Quality Objectives and Implementation Plan to be Used for the Regulation of Agricultural Subsurface Drainage Discharges in the San Joaquin River Basin. December 7,1995 workshop for review of revised schedule for implementation.

Dear Mr. Crooks:

The U.S. Fish and Wildlife Service's San Luis National Wildlife Refuge Complex (San Luis NWRC) appreciates the opportunity to provide comments to the Central Valley Regional Water Quality Control Board (Regional Board) on the revised implementation time schedule to be used for the regulation of Agricultural Subsurface Drainage Discharges into the San Joaquin River and Grassland Area, Merced County, California.

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We are pleased that your staff has responded favorably to the comments previously provided. Shortening the implementation time frame for compliance and establishing an effective enforcement program for the San Joaquin river and tributaries is an action many entities have long awaited. The San Luis NWRC will continue to be directly affected by all of the agricultural drainage effluent discharged from the San Luis drain (SL DRAIN) while used as the Grassland bypass. We support the reuse of the San Luis Drain as the Grassland bypass because this operation improves the distribution of high quality water supplies (CVPIA and water rights)to refuge lands from Grassland Water District canals and Salt Slough.

The implementation schedule reflected in table 1A on page two can still be improved by reflecting current agreements that have been signed by all necessary parties. The reuse of the SL Drain is going to be regulated by Waste Discharge Requirements (WDR) issued by your Regional Board. The reduction in selenium load that is required to continue use of the SL Drain should be reflected in table 1A. We realize that concentration levels in Mud Slough will not meet accepted water quality standards for some time. However, it is important to reflect upon the improvements that are expected and have already been agreed to by all the agencies involved. Again we must state opposition to the fifteen year time frame presented in the most recent report. Allowing the continuation of discharges of agricultural drainage water to Mud Slough (north) without specific goals for improvement is unacceptable.

The stated 2ppb Se objective for Grassland waterways and Salt slough are very significant, especially if you adopt the Basin amendment plan with immediate oversight and, if necessary, enforcement actions. Without such action,the expected improvements may just raise false hope for many affected parties. The water quality standards that will be phased in over time should be adopted effective immediately with the stated compliance periods.

Scott Frazer
Refuge Operations Specialist

United States Department of the Interior

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IN REPLY REFER TO:

In Reply Refer To:
FWS/EC95-0046

July 12, 1995

Mr. William Crooks
Executive Officer
Central Valley Regional Water Quality Control Board
3443 Routier Road, Suite A
Sacramento, California 95827-3098

Subject: Beneficial Uses and Water Quality Criteria Amendment for Agricultural Drainage in the Grassland Area

Dear Mr. Crooks:

The U.S. Fish and Wildlife Service (Service) appreciates the opportunity to comment on the Regional Board's plan to revise the Basin Plan amendment addressing regulation of agricultural subsurface drainage discharges from the Grassland area of the San Joaquin Valley. As you well know, the Service has been involved with drainage issues in the San Joaquin Valley for over 12 years. The Service has been at the forefront on documenting and researching the impacts of drainwater in general, and selenium more specifically, on fish and wildlife resources via field and laboratory studies.

The Service is pleased that the Regional Board is proposing beneficial uses for water bodies in the Grassland area, especially Mud Slough and Salt Slough. The proposed beneficial uses appear to be appropriate and will recognize the significance these water bodies have in the complex Grassland ecosystem. At the same time, the proposed designations will allow the flexibility needed to resolve drainage issues in the area.

The selenium criteria section of the Regional Board's staff report on the beneficial uses summarizes the current recommendations for selenium criteria but this summary does not fully reflect the complexity of drainwater impacts on fish and wildlife. Dietary intake of selenium is the most sensitive exposure pathway to fish and wildlife, thus true assessment of selenium risks to fish and wildlife are best determined by dietary levels rather than water concentrations (Moore, et al., 1990; Besser, et al. 1993). Selenium alone is not the only toxic component of drainwater. Salinity, sulfates, other trace elements, and atypical ion ratios in drainwater are also significant factors to consider in evaluating aquatic life criteria as these alone can also be toxic (Ingersoll, et al., 1992; Saiki, et al., 1992; Lemly , 1993). Even without addressing these issues the report references sufficient information to make an informed decision on appropriate selenium objectives for the Grassland area. Assessments of selenium criteria that will be fully protective of fish and wildlife point to concentrations of less than 2-3 ug/l. For example, in a recent review of the scientific literature, Maier and Knight (1994:Table 2) summarize eight studies examining fish and wildlife toxicity thresholds for waterborne selenium and show that the six most recent studies (1988-1992) unanimously conclude that criteria of about 2-3 ug/l or less are required to avoid toxicity. The Environmental Protection Agency (EPA) criteria of 5 ug/l is at the high end of the toxic threshold ranges recommended by various researchers (Maier and Knight, 1994:Table 2). A substantive body of peer-reviewed literature strongly supports a criterion of less than 5 ug/l to protect fish and wildlife resources, consequently it clearly would be contrary to existing scientific evidence to propose any criteria higher than EPA's outdated 5 ug/l value. The state of New Mexico

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recently concluded its triennial review of water quality standards and, based on extensive hearings and evaluation of currently available scientific evidence, adopted a criterion of 2 ug/l total recoverable waterborne selenium for waters with a wildlife habitat beneficial use designation (New Mexico Water Quality Control Commission 1995).

Comments made during the June 23, 1995, workshop, especially the simplistic peas and lima bean analogy for the sulfate/selenium relationship, reflect a lack of understanding of the complexity of selenium uptake, bioaccumulation, and it's ultimate effects. The Service would like the opportunity to fully evaluate any proposal presented to the Regional Board on the use of sulfate concentrations to determine selenium criteria. The current knowledge base on selenium toxicity supports an aquatic life criteria certainly no higher than 5 ug/l. Moore, et al. (1990) summarizes the toxicity of selenium and other drainwater components. The authors noted that although sulfates can have a protective effect on selenate toxicity, it does not affect the toxicity of selenite and organoselenium. Most fish and wildlife dietary exposure to selenium is in the form of organoselenium (Hamilton et al., 1990; Skorupa and Ohlendorf, 1991). Although we have not seen a "sulfate basis selenium criteria" proposal and, therefore, cannot provide specific comments at this time, we will provide some general comments on the subject.

Although the EPA criteria document uses the results of field studies at Belews Lake as the foundation of the 5 ug/l criteria, numerous other laboratory and field studies were used to support the recommended criteria. The criteria document also recognized that sulfates can reduce selenium toxicity by <u>some</u> organisms and noted the unique attributes that make deriving criteria for selenium so difficult. The form of selenium, the organism being exposed, the age of the organism, the water chemistry, other pollutants, length of exposure, and timing of exposure are some of the factors involved with assessing the impacts of selenium (Lemly, 1993).

The notion that sulfate concentrations can significantly reduce selenium toxicity or bioconcentration in organisms is contrary to all field studies and confirmatory laboratory studies done to date. Hamilton et al. (1990) found that chinook salmon fed a diet of a selenium contaminated San Luis Drain mosquitofish meal while being held in water simulating ionic ratios similar to the drain but without the selenium, accumulated significant amounts of selenium and had reduced survival and growth. Unpublished Service data on quarterly fish samples from Mud and Salt Sloughs in recent years show selenium concentrations within a level of concern range 77 percent of the time (4-12 ug/g fish) and above toxic concentrations (>12 ug/g) over 2 percent of the time. Invertebrate samples collected at the same time had selenium concentrations within concern ranges (3-7 ug/g) in Salt Slough 63 percent of the time and in Mud Slough 26 percent of the time. More significantly, invertebrates at Mud Slough were above toxic levels (>7 ug/g) 15 percent of the time. It appears that sulfate levels in Mud and Salt Sloughs are not currently limiting selenium bioaccumulation sufficiently to avoid toxic concentrations. Other Service studies have documented significant impacts to birds using evaporation ponds in the Tulare Basin. The bioaccumulation of selenium in bird eggs at these sites is very closely correlated to the waterborne selenium concentrations (Skorupa, 1994) despite orders-of-magnitude variation in sulfate levels at the various sites. It is very clear from such data, that for breeding waterbirds, the sulfate concentrations in these ponds explain almost none of the variation in egg selenium.

Although the Service has long recognized the importance of, and in principle approves of, the interim reuse of the San Luis Drain to remove drainage water from Salt Slough channels, it should not be done at the price of increased degradation of the San Joaquin River. Our recommendations have been and are currently based on no increased loading to the San Joaquin River greater than recent maximum annual loading already occurring before the reopening of the drain, that being about 8,000 pounds per year (WY 1988). An evaluation of the

loading in the Grassland area is very well summarized by Figure 2 of the Regional Board's staff report on the beneficial uses of the Grassland area. The difference between the drainage channel loads and the loads in Salt and Mud Sloughs is likely due to selenium being removed from the water column via numerous processes such as sedimentation, bioaccumulation, and even volatilization as the water travels through 70 or more miles of channels. If this drainwater is sent a shorter distance through the San Luis Drain and Mud Slough, the selenium removal process will not be as great, thus the loading to the San Joaquin will increase unless other control measures are implemented. The Regional Board's recent reports on selenium loading in the San Joaquin River show that improvements in irrigation efficiency alone will not control selenium. This reaffirms the San Joaquin Valley Drainage Program's initial recommendations that no one management action will solve the drainwater problems of the San Joaquin Valley. Other actions will need to be implemented to control selenium loading into the San Joaquin River.

In conclusion the Service recommends:

> Criteria for Salt Slough and associated channels should be 2 ug/l to fully protect the use of this water for wetlands.
>
> Criteria for Mud Slough should be 5 ug/l at all times to protect the freshwater aquatic resources. A phase-in period will likely be needed pending completion of the drain to the confluence of the Merced and San Joaquin.
>
> Criteria for both segments of the San Joaquin River should be no greater than 5 ug/l at all times to protect the aquatic resources.
>
> Selenium loading into the San Joaquin River via Mud Slough and Salt Slough should not exceed 8,000 pounds per year, with phased reductions highly desirable.
>
> Selenium concentrations should be determined on a total recoverable basis rather than dissolved as total selenium concentrations correlate best to impacts observed in fish and wildlife (Skorupa and Ohlendorf, 1991).

Again, the Service appreciates this opportunity to comment on the beneficial uses and water quality objectives for the Grassland area. We will continue to work closely with the Regional Board on these issues and hope to provide additional comments on sulfate based selenium criteria once we are able to review any recommendations the Regional Board may receive on this subject. If you have any questions please contact Tom Maurer or Steve Schwarzbach of my staff at (916) 979-2110.

Sincerely,

Joel A. Medlin
for Joel A. Medlin
Field Supervisor

Enclosure

cc: ARD-ES, Portland, OR
Refuge Manager, San Luis NWR Complex
CDFG, Region IV

References:

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United States Department of the Interior

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IN REPLY REFER TO:

In Reply Refer To:
FWS/EC95-0084

October 4, 1995

Mr. William Crooks
Executive Director
Central Valley Regional Water Quality Control Board
3443 Routier Road, Suite A
Sacramento, California 95827-3098

Subject: Water Quality Objectives and Implementation Plan to be Used for the Regulation of Agricultural Subsurface Drainage Discharges in the San Joaquin River Basin

Dear Mr. Crooks:

The U.S. Fish and Wildlife Service (Service) offers the following as comments on the Central Valley Regional Water Quality Control Board's (Regional Board) continuing effort to revise the Basin Plan amendment addressing agricultural drainage from the Grasslands area of the San Joaquin Valley. The Service previously commented on the Regional Board's first staff report on beneficial uses and water quality criteria for the Grasslands area on July 11, 1995. This letter provides comments on the Regional Board's second staff report on water quality objectives and the implementation plan. The Service also provided a verbal summary of these comments during the September 22, 1995 workshop held by the Regional Board.

In the short-term, the Service has four priorities regarding agricultural drainage in the Grasslands area.

1. Remove agricultural drainage flows from over 90 miles of Grassland channels, including Salt Slough, so as to free them for delivery of freshwater to Refuges made available pursuant to the CVPIA.

2. Specific monthly and annual load targets which assure that within two years of opening the drain, a drainage entity or individual drainers will implement actions to reduce selenium loads to the river by at least 5% per year through September 30, 2000 and beyond.

3. Commitment by the drainers to a long-term regional drainage management plan which incorporates the recommendations of the San Joaquin Valley Drainage Program (SJVDP) and the Environmental Defense Fund's (EDF) report "Plowing New Ground".

4. Adequate monitoring to document the effectiveness of drainage control actions and to assess impacts to the natural resources of the area and downstream.

The Service agrees that waste discharge requirements are appropriate and can be a tool to establish a compliance schedule for achieving the above priorities. We have concerns, however, about the Regional Board's proposed time schedule for meeting water quality objectives in the San Joaquin River and the valley-wide drain as discussed in the most recent report. In general the proposed amendment does not provide adequate incentives and promotes marginal progress towards meeting objectives. Specific comments are below.

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Compliance Schedule

The Regional Board's extended schedule to meet selenium water quality standards in the San Joaquin River and Mud Slough by the year 2020 is extremely and unacceptably protracted. The degradation of the San Joaquin River, Mud Slough, and Salt Slough has been ongoing for over 20 years. The drainage from the Grasslands area has been out of compliance with current objectives for 7 years. Given the volume of data, the significance of the resources being impaired, lack of incentives, and 7 years of inadequate enforcement of regulations, the time frame for compliance is too long and fails to promote the necessary measures for meeting water quality objectives in a timely way.

As seen in the data provided in the two Regional Board staff reports, best management practices and lack of incentives have done little to resolve drainage problems in the Grasslands area. A close look at the data presented in the staff report (tables B-4 and B-5) reveals that the water conservation efforts by the growers did have a positive effect on the amount of selenium coming from the area in production. The pounds of selenium per acre of land in production dropped from a high of 0.161 lbs/acre in 1987 to 0.078 lbs/acre in 1992 and in 1994 was 0.107 lbs/acre. This improvement was negated, in part, by an increase in the acres put into production which reached a high of 79,700 acres in 1994, up from a low of 66,300 acres in 1992. Individual actions such as halting water deliveries, land retirement, a valley-wide drain, or water conservation are either inadequate, too expensive, or unpalatable by themselves, but combinations of these actions will be more acceptable, less expensive, and will work effectively if the proper incentives are provided.

The Service believes that full attainment of beneficial uses can be reached using currently available control actions in a shorter period of time than the Regional Board is proposing. With a 5% reduction per year starting at the 6,600 lbs/yr level (as outlined in the proposed Bureau of Reclamation use agreement) and the extension of the bypass to below the Merced River, compliance could be met in all water bodies in 10 years.

Valley-wide Drain

The language proposed by the Regional Board on the valley-wide drain (VWD) now includes municipal and industrial dischargers when the Regional Board has yet to adequately address the agricultural drainage problems. The report lacks discussion of location of the VWD and impacts it will have on the receiving body(s). Specific comments regarding the VWD proposal are difficult to develop because the receiving water remains unidentified, the effluent is vaguely defined, cost estimates are unavailable, and the facility lacks any specific design. What is the anticipated volume of salts and effluents to be exported? What are the potential receiving waters? If they can not be identified, due either to political or technical considerations, how can this be considered a viable option? What will such a drain cost? Who will build and pay for this drain? Obviously a separate amendment, workshops, and hearings addressing a valley-wide drain are needed to put the issue into the proper perspective. The Service recognizes the need for the Regional Board to support the idea of a VWD in it's Basin Plan, but discussion of a generic, unproven, illdefined policy in a proposed amendment that deals with the Grasslands area confuses the issue and continues to promotes a "wait and see" attitude. Therefore, the Service suggests the Regional Board delete all referenced changes to the Basin Plan regarding the VWD and concentrate on the Grasslands issues at hand.

Numeric Objectives

The Service agrees at this time with water quality objectives of 2 ug/l for

Salt Slough and 5 ug/l for San Joaquin River (Sack Dam to Vernalis) and North Mud Slough. An overwhelming amount of data on selenium toxicity and bioaccumulation points to at least a 5 ug/l or lower criteria to protect waterfowl and fishery resources.

In addition to the water quality and loading objectives the Service recommends setting numeric and/or narrative objectives for the San Joaquin River, Mud Slough, and Salt Slough that utilize mean selenium concentrations in fish (whole body) and food chain organisms (invertebrates) based on the ecological risk guidelines proposed by the San Luis Drain Re-use Technical Advisory Committee. Mean fish whole body selenium concentrations should be less than 4 ppm and mean animal food chain organism concentrations should be less than 3 ppm. If these mean concentrations exceed the toxicity thresholds of 12 and 7 ppm respectively then immediate actions would need to be taken to improve water quality in the affected area. Attached is a copy of a draft Service report on biota monitoring in Salt and Mud Sloughs which describes the risk guidelines and the status of biota in these sloughs from 1992 to 1993.

Based on concentration and toxicity data collected in recent years by the Regional Board and the U.S. Geological Survey the Regional Board should considered setting a diazinon objective for the San Joaquin River.

Underlying principles of the implementation program.

In general the Service agrees with the underlying principles of the program to control agricultural subsurface drainage but the Regional Board should add the principle of reasonable and beneficial use of water as defined in state and federal laws. Does the use of irrigation water on land that creates a toxic discharge constitute a reasonable and beneficial use?

Policies proposed for adoption.

The policy statements in Table 6 are identified by letters but the text on the following pages uses numbers to identify each policy statement. This is confusing and should be corrected.

Statement a(1). Se should be the first priority, but boron, overall salinity, and ionic imbalance are also significant issues especially to downstream water users (Delta farmers, municipalities, etc). A policy statement should address these drainwater constituents also.

Statement b(2). The phrase "are prohibited" is changed to will be discouraged but the text on page 19 keeps the "are prohibited" and does not specifically say whether the change is recommended. The Service feels the statement "are prohibited" should remain and it's definition expanded beyond installation of new subsurface drainage facilities.

Statement d(4). What kinds of actions that would limit or prohibit reuse is the Regional Board referring to in this statement?

Statement e&f(5&6). Without providing technical information or data the Regional Board proposes to add wetland management as part of the San Joaquin Valley drainage problem. The Service takes exception to the inclusion of wetland management as one of the sources of the problem of salt management in the San Joaquin Valley. The remaining wetlands in the valley are a natural function of the ecosystem and are managed, under the constraints of limited water quantity and less than ideal quality, as near to the natural flooding cycles as possible in this effluent dominated system. Currently the wetland system of channels in the Grasslands removes ~25% of the selenium from the drainwater. Obviously wetland management is intimately tied to the drainage issue and will be involved in the solution, but to include them collectively with other dischargers in the valley as part of the problem is similar to suggesting that trees pollute the air. Boron may be a problem on certain properties in the south Grasslands area, but much of that may be attributed to having received tainted drainage water over the years. Unless the Regional Board can be more specific as to what managed wetlands are part of the problem, the Service requests that reference to wetland management be removed from the policies table and all other areas of the report that implicates it as part of the problem.

Statement f(6). See our comments above regarding the valley-wide drain, but in summary the VWD should be a separate Basin Plan amendment. Actions to protect the Grasslands area and San Joaquin River can be addressed in this amendment without confusing references to a VWD.

Statement h(8). This statement can be improved by discussing the important fish and wildlife resource that will benefit from reduced loading to the San Joaquin river and Delta such as the Delta smelt, winter-run Chinook salmon, the Sacramento splittail, the giant garter snake, and other fish populations.

An additional policy should state that actions taken will not increase degradation of any body of water.

Elements of a regulatory program.

Additional elements of a regulatory program that should be considered are:

Discourage increasing acres in production and limiting double cropping until objectives are met.

Investigate whether illegal diversions or discharges that increase drainage occur in the area.

Develop more useful information on loading from individual sumps and discharge points to assess the impacts of control actions.

Recommendations to limit water deliveries under reasonable and beneficial use laws if compliance schedules are not met.

Potential control actions.

Action 5&6. This page reflects the lack of action thus far and is proposed to continue. Long past-due dates are deleted from action 5 and new extended dates are added in action 6. The proposed milestone dates are not 5 yrs, not 10 years, but 25 years into the future.

Action 7. Is the October 1, 2000 date for compliance by individual drainers, if no regional entity exists, correct? If the Regional Board thinks individual drainers should be in compliance by the year 2000 then why should the group as a whole be given another 20 years to comply? The Service believes the compliance time frame can be tighter and other incentives to maintain a regional drainage entity can be used?

Action 8 - How will this be enforced?

Action 9 - We agree that wetlands management will be part of the solution but again this suggests, without providing technical information or data, that wetland management is part of the problem.

Action 10 - The Service feels that review by the Regional Board must be more frequent than 5 years and suggests a review period of 2 or 3 years.

Action 11 - The management plans must be of sufficient detail to address the effectiveness of control actions the individual district or farm level. Data from proper monitoring can address questions as seen with the water conservation efforts where per acre loading reductions were negated when

increased cropping occurred and claims are made that water conservation did not work.

Action 13 - This suggests evaporation basins can be constructed as a potential control action, but Appendix A, Table A-2 identifies evaporation ponds as being eliminated from further consideration as a viable option. Which does the Regional Board propose? The Service recommends elimination of evaporation ponds from consideration as proposed in Appendix A.

Action 15 - When will the Regional Board establish salinity standards?

State Water Resource Control Board Potential Control Actions.

Action 1 - After 25 years, if the drainers have yet to meet objectives, the Regional Board will only "consider" requesting the State Board to take action. After seven years of not meeting objectives the Regional Board should request the State Board to begin using its water rights authority and incrementally restrict water supplies as drainers do not meet load reductions.

Deleted Actions 2&4 - Why have all references to water conservation efforts been removed from this section?

Potential control actions by others.

Action 4 - This statement is not clear as to whether it suggests a valley-wide drain or just an extension of the San Luis drain to a point downstream of the Merced River. Such statements confuse the issue and promotes a move to ignore short-term actions and go directly to VWD concept.

Action 5 - The Refuge Complex has been trying to survive in the effluent dominated ecosystem of the San Joaquin Valley by working cooperatively with local interests. The Service accepts the responsibility of caring for the trust resources of the area and will participate in developing and implementing corrective actions.

Deleted Action 4 - Reference to water conservation is removed. Is water conservation no longer being considered as part of the solution? Has Bureau funding for such programs been eliminated?

Prohibitions.

Prohibition a. The Service agrees with this prohibition. See above comments on Policies Statement b(2).

Prohibition b. The waiver for exceeding the 2 ppb standard in the Grasslands channels, should the grassland bypass not be implemented, is not supported by the Service. The standard of 2 ppb is the appropriate standard for protection of fish and wildlife for this water body and the Refuge has water rights that are being violated. The Regional Board should develop strong alternatives such as stopping discharges via regulation of individual drainers as stated in Control Action 7.

Prohibition c. We support the prohibition on installation of new subsurface drainage facilities or the expansion of existing facilities which could exacerbate the water quality problems due to discharges of agricultural subsurface drainage. How will this be monitored and enforced?

Prohibition d. The Regional Board should mirror proposed use agreement goals and noncompliance fees or penalties as developed by the interested parties. These are a start up goal of 6,600 lbs/yr with short-term allowable but fineable loads of up to 20% over this goal (which is about 8,000 lbs/yr). If discharges are greater than 8,000 or if drainers do not meet load reduction targets over time, or fish and food chain organism mean concentrations are above toxicity thresholds the State Board should exercise its water rights authority to evaluate the reasonable use of water for irrigating contaminated soils. The Service believes that full attainment of beneficial uses can be reached using currently available control actions in a shorter period of time than the Regional Board is proposing.

Other comments on the Regional Board's staff report are as follows:

Page 4 - para 2

It is obvious that other actions are needed to meet water quality objectives not may be needed as stated.

page 9 -Other factors considered in ... water quality objective:

The statement "evidence continues to suggest that the selenium level .... for waterfowl habitat is lower than the U.S. EPA... criteria " should also include "and fishery habitat" after waterfowl habitat. The latest evidence as mentioned in our July 11, 1995 letter points to a fishery protective value lower than the current EPA criteria.

The statement " the Grassland watershed is a primary waterfowl habitat" needs to include giant garter snake habitat while the San Joaquin River and Delta area is splittail and Delta smelt habitat.

page 10 -

See comments above on the compliance schedule.

Page 31, para 3 -

Prohibition of discharges to Grassland channels should be maintained to protect the beneficial uses. See above comments on Prohibition b.

Page 32 -

Para 3 - Continued degradation of the San Joaquin River and Mud Slough is expected but this should be carefully monitored and be viewed only as an interim condition (i.e. 5 years). The Regional Board should not allow the continued degradation of this slough beyond the year 2000.

Para 6, Actions needed b. - See comments for compliance and prohibitions above.

Page 35 -

Para 3 - The Service agrees that in the absence of a regional entity the WDRs should be applied to individual districts or farms but the prohibition of discharges to the Grassland channels must be maintained to protect the beneficial uses.

Page 36 -

Para 1 - See previous comments on compliance schedule above.

Page 37 -

As one of the actions, the Service recommends the extension (that fully meets objectives) of the Grasslands channel bypass to a point below the Merced River confluence. An extension will protect the beneficial uses of the 11 miles of waterway most severely contaminated by discharging into Mud Slough. This extension should be constructed in the near term (by the year 2000) thus improving the conditions in Mud Slough and the

San Joaquin above the Merced much sooner than current proposals. This extension should be considered a separate issue from the concept of a valley-wide drain (see comments above).

Page 42 -

Item 4. Why has any reference to water conservation been removed from actions for the State Board to take? Such monitoring should be on a district or farm level to truly address effectiveness of control actions. See comments on control actions above.

Studies - Sufficient information is available to address drainage issues in the Valley and to determine sound water quality objectives.

Page 43 - The Service agrees that the USGS needs support to finish studies.

Appendix B -

Page B-4. The Regional Board assumes 3,000 acres of retired land, but is not clear as to where. The Regional Board goes on to propose that land draining to the 5 top selenium producing sumps in each district be retired which would be a total of 30-35 sumps. But it is not clear whether the Regional Board is trying to even the impact across districts or truly taking the land contributing the greatest to the loading problem out of production. This method of retiring land would show limited success, as in the results of the water conservation efforts (see above). The next sentence says just 5 sumps are to be retired. Is it 5 sumps from each district or 5 sumps total for the Grasslands area?

We appreciate the opportunity to comment on the Regional Board's proposed amendment to the Basin Plan and will continue to work closely with your staff on the numerous technical issues at hand. If you have any questions please contact Dr. Steve Schwarzbach or Mr. Tom Maurer of my Environmental Contaminant staff at 916-979-2110.

Sincerely,

for Joel A. Medlin

Joel A. Medlin
Field Supervisor

Enclosure

cc: ARD-ES, Portland, OR (w/o encl)
Refuge Manager, San Luis NWR (w/o encl)
CDFG, Region IV (w/o encl)
U.S. EPA, Region IX (w/o encl)

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
Sacramento Field Office
2800 Cottage Way, Room E-1803
Sacramento, California 95825

IN REPLY REFER TO:

In Reply Refer To:
FWS/EC95-0099

December 7, 1995

Mr. William Crooks
Executive Officer
Central Valley Regional Water
Quality Control Board
3443 Routier Road, Suite A
Sacramento, California 95827-3098

Subject: Beneficial Uses and Water Quality Criteria Amendment for Agricultural Drainage in the Grassland Area

Dear Mr. Crooks:

This letter responds to the notice from the Central Valley Regional Water Quality Board that it will hold an additional workshop on December 7, 1995, on the compliance schedule and interim measures for achieving selenium water quality objectives in the San Joaquin River and Mud Slough. We commend the Board and staff for their responsiveness and offer the following additional comments.

The previously proposed compliance date for the San Joaquin River below the Merced River confluence was October 1, 2015 and 2020, for above the Merced confluence and in Mud Slough. In our letter dated October 4, 1995, we noted the proposed compliance schedule was unreasonably long and the zone of greatest ecological risk from selenium, i.e., the reach of the San Joaquin River above the Merced confluence and the last 6 miles of Mud Slough were the last to be protected. We commend the staff recommendation to shorten implementation timeframes, however, the revised proposal still leaves the highest risk areas unprotected until the year 2010. We believe this timeframe could be shortened with a more aggressive mix of water quality management strategies including land retirement, irrigation efficiency improvements, treatment, and extension of the San Luis Drain to the confluence of the Merced and the San Joaquin River, per the recommendations of the San Joaquin Valley Drainage Management Plan. The mix of strategies and their relative aggressiveness in dealing with the problem will be driven by the actions the Board takes. We, therefore, support the staff report recommendation to use effluent limits rather than simply a regulatory encouragement of Best Management Practices to achieve water quality objectives, but we would prefer still more aggressive implementation schedules both above and below the Merced river confluence.

The staff report notes that a 22-year record of historical flows (1970-1991) at Crows Landing were used to derive effluent limits and goes on to suggest it would be inappropriate to base the actual waste load allocation on historical flow patterns if significant alterations in flow take place. Presumably this would be due to alterations in flow from CVPIA restoration water or changing flows to accommodate future Bay/Delta water rights decisions. The annual selenium load cap in table 1B appears arbitrarily increased above the sum of the monthly limits in table 5C. This results in recommended maximum annual loads which are greater; 13 percent higher in normal and dry years and 32 percent higher in above normal and wet years for the 2005 compliance date. The staff report states "this is done to account for any possible increases in

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allowable load." We feel compelled to point out that all of the load numbers are driven by the current 5 µg/L 4-day average selenium objective for the San Joaquin River. If unquantified potential future increases in flow are given consideration, should not equal consideration be given to the possibility that between now and the implementation date of 2005 the applicable standard may become 2 µg/L rather than 5µg/L? The additional flows in the system, if they occur, may be needed to meet a more stringent objective. Scientific evidence for a lower standard has been mounting. The 2 µg/L standard has already been adopted in Arizona and New Mexico for flowing waters with fish and wildlife beneficial use designations and is currently under evaluation in Colorado, Nevada, and Texas. We, therefore, do not believe it appropriate to raise the annual load target based only on the possibility of increased flows at some future date. We recommend that the annual selenium load numbers in table 5C, which is based on 22 years of flow data and the monthly load numbers necessary to meet the 5µg/L objective, be substituted for table 1B.

The objective of 2 µg/l for Salt Slough and other wetland supply channels in the grasslands are still proposed to be implemented by October 1 1996, a time frame we support. The Grasslands Bypass project which makes these objectives immediately implementable also includes an ongoing collection of biota to evaluate selenium bioaccumulation in Mud Slough and other areas. This data together with water chemistry and flow data will be evaluated by an interagency oversight committee as well as a technical advisory committee. We suggest the biota data should also be considered by the Board in its regulatory capacity. We have previously presented the ecological risk criteria for interpreting selenium body burdens. Should invertebrates, plants, fish and/or bird eggs collected from the Mud Slough corridor show levels of selenium above the well established toxic concentrations to fish and birds during the course of the operation of the grasslands bypass it will be apparent that solutions to drainage will need to be accelerated.

We recommend that specific language be added to Waste Discharge Requirements which takes into consideration the ecological risk criteria for selenium body burdens and the selenium bioaccumulation data collected as part of the monitoring program for the Grasslands Bypass. In addition, we request that WDRs be open to review at any time, if needed, in the event of unacceptably high bioaccumulation of selenium. My staff is available to assist you, the Board and your staff in incorporating selenium body burden components of selenium risk evaluation into any WDRs the Board may seek to issue.

Thank you for allowing this additional opportunity to provide input to the Board's decision making process. If you have any questions regarding this letter, please contact Dr. Steven Schwarzbach or Michael Morse at (916) 979-2110.

Sincerely,

Joel A. Medlin

Joel A. Medlin
Field Supervisor

United States Department of the Interior

FISH AND WILDLIFE SERVICE
San Luis National Wildlife Refuge Complex
P.O. Box 2176
Los Banos, California 93635
(209) 826-3508

IN REPLY REFER TO:

October 4, 1995

Mr. William Crooks
Executive Director
Central Valley Regional Water Quality Control Board
3443 Routier Road, Suite A
Sacramento, California 95827-3098

Subject: Water Quality Objectives and Implementation Plan to be Used for the Regulation of Agricultural Subsurface Drainage Discharges in the San Joaquin River Basin.

Dear Mr. Crooks:

The U.S. Fish and Wildlife Service's San Luis National Wildlife Refuge Complex (San Luis NWRC) appreciates the opportunity to provide comments on the Central Valley Regional Water Quality Control Board's (Regional Board) effort to prepare a Basin Plan amendment addressing agricultural drainage from the Grasslands area of the San Joaquin Valley. The San Luis NWRC is directly affected by the discharge of agricultural subsurface drainage water. This letter provides comments on the Regional Board's second staff report on the water quality objective implementation plan. The Service's Ecological Services Division (Environmental Contaminants) also provided comments during the September 22, 1995 workshop held by the Regional Board.

The San Luis NWRC lands share the following four priorities regarding agricultural drainage in the Grasslands area listed in our Ecological Service's comment letter:

1. Remove agricultural drainage flows from over 90 miles of Grassland channels, including Salt Slough, so as to free them for delivery and appropriation of freshwater to Refuges made available pursuant to the CVPIA.

2. Enact specific monthly and annual load targets which assure that within two years of re-opening the San Luis Drain, a drainage entity or individual drainers will implement actions to reduce selenium loads to the river by at least 5% per year through September 30, 2000.

3. Obtain commitment by the drainers to a long-term regional drainage management plan which incorporates the recommendations of the San Joaquin Valley Drainage Program (SJVDP) and the Environmental Defense Fund's (EDF) report "Plowing New Ground".

4. Require adequate monitoring to document the effectiveness of drainage control actions and to asses impacts to the natural resources of the area and downstream.

The San Luis NWRC agrees that waste discharge requirements (WDR's) are the appropriate tool to obtain compliance with established water quality standards. We have concerns about the Regional Board's proposed time schedule and the uncertain completion of a valley-wide drain as discussed in the most recent report. The Regional Board's extended schedule to meet selenium water quality standards in the San Joaquin River and Mud Slough by the year 2020 is unacceptable! The degradation of the San Joaquin River, Mud Slough, and Salt Slough has been ongoing for over 20 years. The drainage from the Grasslands area has been out of compliance with current objectives for 7 years. As was pointed out by Environmental Defense Fund (EDF) and other representatives at the public workshop September 22, 1995, both the agricultural and environmental communities are doubtful about the sincerity of your intentions. A five to seven year maximum time frame for achieving compliance with the proposed discharge standards is more desirable.

Because of the aforementioned contamination/degradation of Grassland channels and wetlands, the San Luis NWRC does not support the second sentence contained within Table 8 (PROHIBITIONS) item b. Regardless of third party interests that may delay the implementation of the wetland bypass, discharge of agricultural subsurface drainage water to the Grassland system must cease on October 1, 1996.

I appreciate the opportunity to submit comments on this important environmental issue.

Sincerely,

Gary R. Zahm,
Project Leader

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