Pacific Advocates

April 13, 2011

Charles Hoppin, Chair and Board Members
State Water Resources Control Board
1001 I Street
Sacramento, CA 95814

Re: The San Luis Delta Mendota Water Authority (SLDMWA) April 6, 2011 Correspondence Regarding EPA's Advanced Notice of Proposed Rulemaking on Bay Delta Water Quality Issues, Selenium Waivers and Grasslands Photo Tour.

Dear Mr. Hoppin and Board Members:

On February 25, 2011, Pacific Advocates distributed an informal email to you and Francis Spivy-Weber, including some photos from a tour of the San Luis Delta Mendota Water Authority (SLDMWA) Grasslands Bypass Project. They sent a letter dated April 6, 2011, to correct what they perceived as misstatements. Their detailed responses to my email helped to clear up a few issues, but most significantly, help to clarify some of the areas where we have disagreements regarding the facts and their significance.

Pacific Advocates joins a broad coalition of 27 fishing, public health, conservation, environmental justice, and tribal in opposing the use of the San Joaquin River and its tributaries as a de-facto drain for agricultural wastewater from the SLDMWA's Westside districts causing downstream users and the Delta Estuary to bear the burden for this pollution.

Below, we address the most critical points of disagreement. In addition, separately attached is a corrected Grasslands Photo Tour, modified per SLDMWA's Comments.

The following specific comments outline our disagreements:

1. Using the San Joaquin River as a De-Facto Drain sends the problems and costs downstream to utilities, farmers, businesses and communities who rely on a healthy ecosystem.

2. An Interim "2 Year" project to discharge selenium pollution to Mud Slough & the San Joaquin River has grown to almost 25 Years.

3. Admirable efforts to curb the toxicity of this Westside pollution nevertheless have failed to meet water quality standards—how long will the standards be waived and the pollution spread downstream?

4. Finding and funding a cost effective treatment solution has not materialized in 25 years.

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5. Monitoring should not be reduced because the project has not demonstrated success.

6. Time's up—we need an exit strategy to end all the compliance extensions and protect our water quality. The San Joaquin River should not be a de-facto drain.

There is no reasonable, substantive basis for expecting success within the re-set timeframe of success. I urge the SWRCB to work with EPA and the Delta Stewardship Council to establish a clear and legally binding exit strategy from seemingly unending compliance extensions. Extensive data have been collected, but standards are not enforced. A legally binding moment of "Time's up" is what has always been missing from this project. There has been almost a quarter of a century of "promising" to meet compliance dates. A quarter century of moving the compliance date line sure looks like an open-ended license to pollute. It is true the dischargers are trying and perhaps poisoning things less, and yet downstream users and the Delta Estuary continue to bear the burden.

I appreciate the opportunity to clarify these points, and hope this discussion has been fruitful.

Sincerely,

Patricia Schifferle
Director
Pacific Advocates[1]

[1] Author of State Assembly Office of Research Publications:
Leaching Fields—A Threat to Groundwater (1985)
Toxic Ponds—Antiquated Methods and Unacceptable Dangers (1984)
Is Our Water Safe to Drink Assembly Office of Research (1983)
Protecting Public Drinking Water—A Program to Combat Toxic Contamination (1983)

Attachments: Sierra Club California, Planning and Conservation League, Pacific Coast Federation of Fishermen's Associations and Friends of the River-- Irrigated Lands Testimony, April 7, 2011.
Modified Grassland Photo Tour
Map Excerpt Westside Salt Assessment Study Area USBR 2010.

Using the San Joaquin River as a De-Facto Drain sends the problems and costs downstream to utilities, farmers, businesses and communities who rely on a healthy ecosystem.

It is no surprise that SLDMWA views the discharge of their agricultural wastewater—with high concentrations of selenium and other contaminants—from their drainage project area to Mud Slough and the San Joaquin River, and ultimately the Delta Estuary and San Francisco Bay, as a good project. They argue that collecting this wastewater and discharging it into the San Luis Drain and then to Mud Slough and San Joaquin River provides benefits to wetland channels and Salt Slough. Indeed it does—by transferring the contamination to Mud Slough and then the River. It also provides significant benefits to them—they are able to send their wastewater downstream, in essence passing the costs on to others and potentially damaging the Estuary's ecological resources.

Although SLDMWA is correct that shifting the pollution from the wetlands and Salt Slough to Mud Slough has resulted in improvements to the wetland water supply channels and Salt Slough[2], their maps show that this toxic drainage flows next to and through wetland areas, including National and State Wildlife Refuges. This direct discharge of wastewater started in 1987 when the Bureau built a connection from the terminus of the San Luis Drain to Mud Slough in order to discharge to the San Joaquin River.[3] See Figures 2-3 in the attached testimony of the Sierra Club, Planning and Conservation League, Pacific Coast Federation of Fishermen's

[2] *"Mud Slough (North) is one of the major west-side tributaries of the San Joaquin River, and also conveys drainage water from the Grasslands Drainage Area to the San Joaquin River. Flows are highly variable throughout the year, ranging from high flow during the wet season and during periods of wetland releases to very low flow during the summer and early fall. Agricultural drainage from the selenium-affected area of the Grasslands Basin, conveyed through San Luis Drain, is discharged into Mud Slough at a point about 6 miles upstream from the slough's confluence with the San Joaquin River. Flow in Mud Slough upstream from this discharge point consists of wetland releases from Grasslands Water District and Volta Wildlife Management Area, operational spills from the Delta-Mendota Canal and the Central California Irrigation District Main Canal, and storm water runoff from Los Banos Creek. Mud Slough downstream from the San Luis Drain discharge point is often dominated by water originating from the Grasslands Drainage Area. Flow from San Luis Drain accounts for 20 to 40 percent of the annual flow in Mud Slough (North)."* [pg 30 of PDF]
http://www.swrcb.ca.gov/rwqcb5/water_issues/tmdl/central_valley_projects/vernalis_salt_boron/usbr_west_wtrbdgt_meth_draft.pdf

[3] See State Water Resources Control Board Order # 87-201 and NPDES CA 0082171.

Association and Friends of the River (Attachment 1: Irrigated Lands Testimony). Waterfowl swimming and feeding in wastewater adjacent to wetland areas do not know that the wastewater is toxic.

As you can tell from the photos and note sent to you on February 25, 2011, there are concerns about discharging agricultural drainage contaminated with selenium, boron, and salt into Mud Slough and the San Joaquin River—the side channels, seasonally flooded areas and wetland areas along Mud Slough, the San Joaquin River—and ultimately to the Delta Estuary.[4] There is fundamental disagreement over the potential impacts of transporting this concentrated drainage through conveyance channels, the Slough, and the River, next to wetland areas, and through State and Federal wildlife refuges. The waterfowl and fish still forage in and use these waters, as seen in the photos.

EPA testified to the Stewardship Council on February 2, 2011, regarding the need to review the role played by selenium contamination and the role that Westside irrigators play in using the San Joaquin River and tributaries as a wasteway and the resultant loading to the Delta Estuary and Suisun Bay.[5] Water Board staff have also confirmed the primary source of selenium in the Lower San Joaquin River Basin and the Grasslands Watershed is from the drainage project area.[6] Although portions of the Lower San Joaquin River were removed from the TMDL list for selenium, the portion between the SLDMWA discharge and Crows Landing is still listed as impaired, along with areas within the Grasslands Watershed Basin.

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[4] The dischargers suggest in their response that references for the downstream impacts of these levels of selenium are not available or misinterpreted. The literature by government scientists is clear: "*Selenium concentrations in agricultural drainwater from this area reach levels that, when bioaccumulated through food chains, cause adverse effects on aquatic and aquatic-dependent wildlife. Where such drainwater is applied to uplands, as in reuse areas, strictly terrestrial wildlife may be impacted as well……Downstream from the San Luis Unit, any drainwater from the Project area is diluted by relatively low-selenium water from rivers that drain the Sierra Nevada Mountains. However, as the San Joaquin River reaches the San Francisco Bay/Delta estuary, flow velocities decrease and salinity increases. In these slow-moving, saline waters, with abundant introduced filter-feeding invertebrates, ecosystems have developed that evidently are much more effective than riverine ecosystems at bioconcentrating water-borne selenium. Therefore, potential downstream effects must be considered." Pg 2-4.* http://wwwrcamnl.wr.usgs.gov/Selenium/Library_articles/Beckon_and_Maurer_Effects_of_Se_on_Listed_Species_SLD_2008.pdf

[5] http://pubs.usgs.gov/fs/2004/3091/
http://www.swrcb.ca.gov/rwqcb5/water_issues/tmdl/central_valley_projects/san_joaquin_se/se_tmdl_rpt.pdf
http://www.cal-span.org/cgi-bin/archive.php?owner=DSC&date=2011-02-24
http://pubs.usgs.gov/pp/p1646/pdf/pp1646.pdf
http://wwwrcamnl.wr.usgs.gov/tracel/people/robin_stewart.html

[6] http://www.swrcb.ca.gov/rwqcb5/water_issues/tmdl/central_valley_projects/san_joaquin_se/se_tmdl_rpt.pdf

An interim "2 year" project to discharge selenium pollution to Mud Slough & the San Joaquin River has grown to almost 25 years.

Originally this use of the San Luis Drain was an "interim" project to last only 2, possibly 5 years.[7] Then it was extended for an additional ten years to December 2009, when the discharger—SLDMWA—promised to have a treatment method in place to eliminate the need to discharge into Mud Slough and the San Joaquin River.[8] The Basin Plan Amendment approved in 1998 required that the SLDMWA would meet federal water quality standards, and federal aquatic standards to protect waterfowl, fish and aquatic ecosystems in Mud Slough (North) and the San Joaquin River (upstream of the Merced River) in all water-year types after October 2010. As you know, on October 5, 2010, another extension of the Grassland Bypass Project was granted for approximately another decade, providing an extension of the exemption from complying with water quality objectives in Mud Slough (North) and the San Joaquin River. Thus, the project and the contaminated discharges could continue for almost a quarter century. It is true the SLDMWA and its members are trying to comply and trying to meet federal water quality standards for Mud Slough and portions of the San Joaquin River. It is equally true, as they state, that they do meet the federal water quality standards in the river downstream from the Merced River, thanks to dilution of the selenium and other contaminants with those flows. It is

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[7] First Use Agreement: # 6-07-20-w1319, November 1995. "*The original Use Agreement, dated November 3, 1995, allowed the Authority to use a portion of the San Luis Drain (the Drain) to convey agricultural drain water through adjacent wildlife management areas to Mud Slough, tributary to the San Joaquin River…. The 1995 Use Agreement and its extension in 1999 allowed for use of the Drain for a 5-year period that concludes September 30, 2001.*" http://www.usbr.gov/mp/grassland/documents/eis_eir_rpt_overview.pdf pg 2.

[8] NPDES # CA 0082171 Order # 87-201 (USBR connects San Luis Drain to Mud Slough and San Joaquin River. Discharge of Agricultural Wastewater. December 1987.

·NPDES # CA0082368 Order # 90-027 (USBR Discharge of Agricultural Wastewater and Selenium Contaminated water in SLD to Mud Slough and San Joaquin River. March 1996.

·NPDES #CA0083917 (USBR and SLDMWA discharge of Selenium Contaminated Groundwater & Subsurface Drainage to Mud Slough and San Joaquin River) (SLDMWA notifies Board of completion April 23, 1996 also "blending of agricultural subsurface drain water with the accumulated groundwater." March 1996.

·Basin Plan Amendment #96-147-Prohibits Subsurface Drainage Discharges in the San Joaquin Basin with exceptions. SWRCB # 96-078; September 19, 1996. EPA May 24, 2000.

·Order # 98-171, (USBR & SLDMWA discharge of agricultural wastewater to San Joaquin River via SLD and Mud Slough), July 1998.

·Order # 5-01-234, (USBR & SLDMWA extended compliance waiver to allow discharge of agricultural wastewater to San Joaquin River via SLD and Mud Slough), September 2001.

·Basin Plan Amendment No R5-2010-0046 waives compliance for selenium as specified. 5-27-2010 & SWRCB # 2010-0046, October 5, 2010.

also true, however, that their wastewater discharges cause concentrations to exceed water quality standards in the San Joaquin River from Mud Slough to the Merced River. Good intentions, as this situation demonstrates, do not necessarily result in compliance and protection of the public's water resources.

Admirable efforts to curb the toxicity of this Westside pollution nevertheless have failed to meet water quality standards—how long will the standards be waived and the pollution spread downstream?

It is true that the selenium levels measured in the San Joaquin River at Crows Landing, after dilution from the Merced River, are in compliance with the Clean Water Act standard of 5 ppb. It is equally true, however, that the 5 ppb standard is exceeded in the San Joaquin River between Mud Slough and the Merced River. (See Sierra Club et.al. Figure 5, Irrigated Lands Testimony). For these water bodies SLDMWA has consistently failed to keep promises made to meet protective standards.[9]

In addition, since 1995 and after the first use agreement, there have been promises to dispose of the sediments in the San Luis Drain. SLDMWA provides a useful clarification that these sediments will be disposed of on agricultural lands rather than housing or industrial sites. These sediments, which measured some 58,000 cubic yards at the start of the project and now have grown to more than 200,000 cubic yards, are a reservoir of selenium that needs to be disposed of where it will not pose a threat to wildlife or water or it needs to be sent to a proper disposal site in a responsible manner. Certainly that appears to be the intent of the SLDMWA. For more than a decade, they have declared this intent in the various use agreements. My point is simply that waste discharge requirements would be an important step to ensure the safe disposal of these selenium tainted sediments that all are in favor of ensuring. Further delay risks these sediments and contaminants being discharged to the river.

Finding and funding a cost effective treatment solution has not materialized in 25 years.

[9] *"Based on a review of the available scientific literature, the Regional Board determined that a 2 ppb monthly mean selenium objective would be protection of waterfowl (CRWQCB, Central Valley Region 1996; pg. 61). Consideration was given to translating the selenium water quality objective into a load limit, but water quality data collected in Salt Slough in the late 1980's through early 1990's showed little change in concentration even in response to significant load reductions. (CRWQCB, Central Valley Region; 1995 pp. 5-7)" http://www.waterboards.ca.gov/rwqcb5/water_issues/tmdl/central_valley_projects/salt_slough_se/salt_slough_se_tmdl.pdf*

Finding a long term solution to this complex problem is critically important. As yet a treatment option that is economically and technically viable has not been determined nor has the funding been identified. Everyone is hopeful that federal funding and some cost-effective treatment option can be found in order to stop the discharge of selenium and other contaminants into the San Joaquin River and the Delta Estuary. The disagreement is over the enforcement of water-quality standards. We believe the law should be enforced. Further, the pollution should not be transferred to other downstream users and ecological resources while waiting for some treatment process that has yet to materialize after more than 20 years.

State or federal funds have been a 'promise' of the project now for some time. Some grants and funds have been provided, but no economically successful treatment method has been found. It is great that SLDMWA is working to obtain those funds. As SLDMWA points out, it is equally true that the funding for redirection of the unregulated sumps discharging selenium into the Delta Mendota Canal, the increased monitoring costs, and the federal funding for yet to be determined In-Valley treatment solutions, are pending and not secured. On April 1, 2011, the Declaration of Donald Glaser, Regional Director, Mid-Pacific Region United States Department of the Interior, Bureau of Reclamation indicated that the Bureau is still operating under a series of continuing resolutions or temporary spending measures. Moreover, all of this funding is subject to Congressional appropriation, which is not a reliable assumption in this day and age.

The essential point, which is confirmed by SLDMW, is that funding at the federal and State levels is not guaranteed either for sufficient monitoring or for a treatment technology that is reliable and cost-effective.

Monitoring should not be reduced because the project has not demonstrated success.

The latest draft monitoring plan proposes reductions in the extent of monitoring (Draft for the Technical Data Team the "Draft Monitoring Program for the Grassland Bypass Project January 1, 2010-December 31, 2019."). Although not yet adopted, you can see from the proposed monitoring program that there are numerous changes and reductions contemplated. For example, at Crows Landing, the compliance point just below the Merced River, there is a change proposed from weekly to a monthly monitoring schedule. The Clean Water Act requires a total "daily" maximum load measurement or assessment of concentrations measured across a 4 day average. Changing to a monthly grab will make reliable load and concentration measurements impossible. The frequency and sites on the San Joaquin River from the discharge to the Merced River are slated to be reduced or eliminated. As USGS has pointed out on numerous occasions regarding the inadequacy of the monitoring to assess the full impacts to biological resources, the river and bioaccumlative impacts in the ecosystem and Delta Estuary.[10]

[10] See http://wwwrcamnl.wr.usgs.gov/Selenium/Library_articles/Presser_etal_GBP_monitoring_plan_1996.pdf

Also, it appears that key biological monitoring would not be collected consistently to assess the cumulative impacts from this discharge of selenium into the river and estuary.[11] As mentioned by SLDMWA, this monitoring program and waste discharge requirements will be the subject of public review and USBR has cautioned all that the monitoring proposal is in draft form. Monitoring should not be reduced.

The SLDMWA response recognizes that storm water and unregulated flows do enter into the wetland channels. We agree. We disagree, however, over the potential impacts and control of these unregulated discharges. In 2000, the Regional Water Quality Control Board Staff Report confirmed that discharges from unregulated sumps, ground water, and flood events cause the wetland channels within the project to be subject to elevated levels of selenium above the federal aquatic life protective standard.[12] Municipal storm water comingled with irrigated drainage is also discharged from the City of Los Banos.[13]USFWS also raised objections to unregulated discharges of selenium to the wetland supply channels in November 2002. [14] These

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Theresa S. Presser Memorandum to Michael Delamore and Joseph McGahan. Subject Comments on Draft EIS/EIR for the nine year renewal of the Grassland Bypass Project. February 26, 2001.

[11] Toxicity response curves for sensitive species of fish and birds are extremely steep. This means there is almost no room for error once toxicity thresholds are crossed; once the threshold is crossed increasing food chain Se concentrations by just one or two parts per million can mean the difference between a relatively low level effect (10% embryo toxicity) and a catastrophic effect (90% embryo toxicity). As demonstrated by researchers from UC Davis working in the Sierra Nevada on a selenium fertilization project, aquatic food chains are sometimes more sensitive to the short-term peak pulse of Se that moves through a system than to longer-term "average" exposure. This work was published in: Maier, K.J., C.R. Nelson, F.C. Bailey, S.J. Klaine, and A.W. Knight. 1998. "Accumulation of selenium by the aquatic biota of a watershed treated with seleniferous fertilizer." Bulletin of Environmental Contamination and Toxicology, 60:409-416. This environmental behavior of selenium was noted in the first comprehensive review of the environmental toxicology of selenium by Professor Charles Wilber 30 years ago and led him to write... "Toxicologists especially should be sensitive to the biology of extremes as being more realistic than is the biology of means." Wilber, C.G. 1980. "Toxicology of selenium: a review." Clinical Toxicology, 17:171-230.

Also See http://menlocampus.wr.usgs.gov/50years/accomplishments/agriculture.html

[12] http://www.swrcb.ca.gov/rwqcb5/water_issues/water_quality_studies/2ppbrpt.pdf
Also See: http://www.swrcb.ca.gov/rwqcb5/water_issues/water_quality_studies/sjr9900.pdf

[13] See: CCID Agreement with the City of Los Banos11-11-87 and new agreement May 4, 2005, allowing municipal storm water discharges comingled with agricultural drainage to be discharged into wetland channels and Mud Slough for 25 years.

[14] Ibid. USFWS at 7 and See http://www.swrcb.ca.gov/rwqcb5/water_issues/grassland_bypass/usfws_att_c.pdf

.....Part of Monitoring and Reporting Program No. SJR027 has demonstrated that, at least on an annual basis, discharges from one of the Firebaugh sumps has exceeded hazardous waste levels for selenium. Further, discharge of agricultural subsurface drainage water to the DMC (source waters of the Grassland wetland supply channels) continues even though exceedances of water quality objectives in the Grassland wetland supply channels are occurring. We concur with the CVRWQCB's previous finding (Pierson et a], 1987) that these discharges are a management problem capable of control.....

The issue of selenium contamination in the DMC was discussed in the Grasslands Bypass Project

impacts are further confirmed in the USFWS scoping comments for the extension of discharge for almost another decade.[15] Without adequate monitoring, the sources and biological impacts of the project will remain unknown.

The discussion of monitoring biological conditions and photographic data on impacts on wildlife and waterfowl is important to the scientific record. These are important public records to retain and must be made available to the scientific community to further our understanding of the project.[16]

Reference to "Kesterson Effects" is a term used in the scientific community to describe the particular biological impact of selenium.[17] Attached are the references for the photos of the Kesterson- like deformities found near Five Points California taken by the USFWS. The monitoring data on selenium in eggs and embryos in the Grasslands drainage reuse area document concentrations greater than those that caused deformities at Kesterson. The

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Biological Opinion (Service File No., 1 - 1-0 1 -F-0 153), a copy of which was sent to both the CVRWQCB and SWRCB. The Service also provided both Boards with a copy of a memo from the Service to Reclamation on the Water Quality Monitoring Program for the Delta Mendota Canal dated July 11, 2002, (Service File No., 1-1-02-1-1880). In this memo, the Service recommended that Reclamation include more intensive sampling of DMC waters just upstream and downstream of the Firebaugh sumps, and systematic, direct sampling of discharges from the Firebaugh sumps. The Service stated that relative to selenium contamination in the DMC, "Past data are adequate to justify implementing preventative measure(s) now." http://www.swrcb.ca.gov/rwqcb5/water_issues/grassland_bypass/usfws_att_c.pdf

[15] http://wwwrcamnl.wr.usgs.gov/Selenium/Library_articles/san_luis_articles/USFWS_CEQA_Scoping_Comments_CVRWQCB_GBP_Extension_3-19-09.pdf

[16] See: Theresa S. Presser to Michael Delamore, USBR and Joe McGahan, *Comments on Draft EIS/EIR for the nine-year renewal of the Grassland Bypass Project*. February 26, 2001. *"Concern remains for control of loads during wet years and the overall effectiveness of planned actions because of the basin-wide nature of ground water degradation in the western San Joaquin Valley….Mitigation calls for a Sediment Management Plan. …..Among these is the fact that samples of bed sediment from the SLD contain elevated concentrations of SE that approach hazardous waste levels (100pp, wet weight)..As noted above, concern remains that long-term drainage management planning…will continue to be limited without development of information relating to groundwater conditions and to concentrations of SE in the regional system that influence SE discharges…A systematic long-term monitoring program is crucial to understanding the fate and impact of the management changes in regards to protection of ecosystems receiving SE discharges…Little is known about SE concentrations in the Delta, yet this is the system that could be most impacted by SE discharges from the San Joaquin Valley."* Pgs 4-8
Luoma and Presser, 2000. "Monitoring of vulnerable foodwebs specific to water bodies, such as the San Joaquin River ecosystem, affect by the GBP would enable site-specific measures of SE bioaccumulation."
United States Fish and Wildlife Service Comments to Central Valley RWQCB Mary 8, 2010
http://www.swrcb.ca.gov/rwqcb5/water_issues/grassland_bypass/usfws_com.pdf

[17] http://menlocampus.wr.usgs.gov/50years/accomplishments/agriculture.html

concentrations found in these samples are consistent with the types of effects shown in the photos and monitoring near Five Points, California.[18]

Time's up—we need an exit strategy to end all the compliance extensions and protect our water quality. The San Joaquin River should not be a de-facto drain.

There is no reasonable, substantive basis for expecting success within the re-set timeframe of success. I urge the SWRCB to work with EPA and the Delta Stewardship Council to establish a clear and legally binding exit strategy from seemingly unending compliance extensions. Extensive data have been collected, but standards are not enforced. A legally binding moment of "time's up" is what has always been missing from this project. There has been almost a quarter of a century of "promising" to meet compliance dates. A quarter century of moving the compliance date line sure looks like an open-ended license to pollute. It is true the dischargers are trying and perhaps poisoning things less, and yet downstream users and the Delta Estuary continue to bear the burden.

[18] "San Joaquin River Water Quality Improvement Project, Phase 1 Wildlife Monitoring Report, 2008." H.T. Harvey and Associates. July 2009. Page 22. http://www.sfei.org/sites/default/files/sjrip_2008.pdf The geometric mean, egg selenium concentration in recurvirostrid eggs collected at the SJRIP Phase I area in 2008 (50.9 µg/g) exceeded all geometric mean selenium concentrations in recurvirostrid eggs collected at Kesterson Reservoir from 1983 to 1985.

See: http://www.c-win.org/content/c-win-letter-delta-stewardship-council-toxic-lands.html

April 7, 2011

Ms. Katherine Hart, Chair
Regional Water Quality Control Board, Central Valley Region
11020 Sun Center Drive, #200
Rancho Cordova, CA 95670

Re: Irrigated Lands Regulatory Program Framework Comments

Dear Chairperson Hart and Board Members:

In America we hold a value that each of us must not foul downstream water supplies with our waste, just as we expect those upstream of us to do the same. The problem is, the proposed irrigated lands program falls short of this value and falls short of enforcing laws that require our waste to not degrade our neighbors' water or create a nuisance.

Some give praise to the program governing discharges from irrigated agricultural of polluted groundwater waste from the Grasslands Watershed Basin to the San Joaquin River. Since 1995, the San Luis Delta-Mendota Water Authority (SLDMWA) and United States Bureau of Reclamation (USBR) have been discharging polluted groundwater with high levels of selenium and other contaminants using the federal San Luis Drain for discharge to the San Joaquin River at levels lethal to fish and wildlife. Dilution flows downstream of the Merced River have been the method used to meet water standards downstream. From Mud Slough down to the Merced River, because of this discharge of polluted water, the river often has concentrations that exceed Clean Water Act standards. (See Figures 3-4).

The program where dischargers consolidate and concentrate these wastes toxic to fish and waterfowl, and then discharge them under a permit with some monitoring, is considered exemplary by the polluters. But it has relied on waivers of water quality rules and dilution to meet the law. (See Figure 1) Not enforcing water quality standards has its costs. But in this case the costs are passed along to others downstream. It is a case study of how irrigating toxic soils is proceeding largely unchecked, consolidating pollution and damaging downstream uses.

Selenium is a metalloid that can be very dangerous under some circumstances. Most significantly, it bio-accumulates in the food chain, concentrating as it moves up the food chain. This is what happened to Merced County cattle ranchers Jim and Karen Claus 30 years ago when selenium-tainted drainage water leaked from ponds at the Kesterson National Wildlife Refuge. The Claus's cattle,

along with that of other nearby cattle ranchers, started getting sick and dying, after consuming the tainted drainage water and eating tainted grasses.

Kesterson was ordered cleaned up and closed as a public nuisance in 1985, yet for a quarter of a century, some Westside irrigation districts have been permitted to continue draining their selenium-laced waste waters directly to the San Joaquin River where it flows to the Delta.[1]

Monitoring the impacts of this essentially unregulated drainage has been sparse.[2] Chinook fry and splittail who feed in the San Joaquin River sloughs and floodplains and intermittent flooded wetlands are exposed to lethal doses. Bottom fish along with white and green sturgeon are particularly threatened as they feed on aquatic life that collects selenium and further concentrates the impacts in these fish. Dungeness crabs were recently added to the list. The lethal deformities in waterfowl and migratory birds at Kesterson and the Tulare Basin caused by selenium have been well documented.[3]

We know the costs of spreading this contamination in sloughs, wetlands, estuaries and slow moving water is costly to clean up (if that is even possible) and if the selenium buildup and accumulation cannot be halted the consequences may be catastrophic to the downstream biosphere. And yet, we continue with a regulatory program that transfers these dangers to downstream users, both human and wildlife.[4]

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[1] USFWS November 8, 2002 Exceedances of Water Quality Objective for Grassland Wetland Supply Channels. http://www.swrcb.ca.gov/rwqcb5/water_issues/grassland_bypass/usfws_att_c.pdf & http://www.pcl.org/files/USGSDrainageMgmt.pdf pg 26.
Selenium removal from agricultural drainage from the western San Joaquin Valley is hampered by the large amounts of associated salt in any waste stream subjected to treatment. Extensive testing of technologies for removal of selenium from the water-column utilizing chemical and biological processes as part of the SJVDP achieved little operational success or cost-effectiveness (SJVDP, 1990c). Drainage treatment to remove selenium was not one of the strategies recommended by the SJDVP (1990a). In the *Preface* to the San Joaquin Valley Drainage Program final report (1990a), Edgar Imhoff, head of the program, wrote that "*…hopes for a master drain and expectations of a technological breakthrough in drainage water treatment are the reasons that the drainage problem has grown to nearly 500,000 acres and is adversely affecting the environment*."

[2]See http://www.swrcb.ca.gov/rwqcb5/water_issues/grassland_bypass/usfws_att_c.pdf

http://pubs.usgs.gov/pp/p1646/pdf/pp1646.pdf pg 26. ... "*monitoring was not sufficiently frequent to accurately characterize loads during variable flows."…annual data are not available from individual farm-field sumps to help qualify source-area shallow groundwater conditions and determine long-term variability in selenium concentrations…compliance monitoring sites are 50 and 130 miles downstream from the agricultural discharge. Pg 118-119.*

http://wwwrcamnl.wr.usgs.gov/Selenium/Library_articles/Presser_etal_GBP_monitoring_plan_1996.pdf

[3] http://pubs.usgs.gov/pp/p1646/pdf/pp1646.pdf pg 2.

[4] http://pubs.usgs.gov/fs/2004/3091/ U.S. Department of the Interior U.S. Geological Survey Fact Sheet 2004-3091 August 2004

At the same time state and federal budgets are being cut.[5] The hodge podge of treatment methods to stop this discharge of selenium pollution to downstream neighbors is unlikely to succeed. Monitoring budgets are being cut. In February 2011, Central Valley Regional Water Quality staff announced they would no longer conduct monitoring for the project at 12 sites and Fish and Game representatives indicated they also would no longer conduct biological monitoring. The Bureau promises to pick up the costs and yet, the proposed draft monitoring program suggests significant cuts in both water quality and biological monitoring, despite promises to the contrary.[6] Compliance monitoring for loads is very different from monitoring for water contaminants, sediment movements and biological impacts both for aquatic and wildlife. Cutting the days, time periods and parameters *can render the analysis from the monitoring useless in terms of analyzing the impacts from the spread of this pollutant and the synergistic impacts with other contaminants.* Averages minimize the peak exposures which are often lethal and stay in the aquatic system long after the discharge recedes.[7]

Relying on load measurements is a misleading measurement for compliance with Clean Water Act standards and pollution controls.[8] For example over more than a ten-year life of the discharges from the Grasslands Watershed to the San Joaquin River from Mud Slough, U.S. Geological Survey scientists estimate a cumulative hazard of 6.6 Kestersons (ksts) as the cumulative hazard load.[9] Uncontrolled discharge of selenium-tainted groundwater and storm water exceeding protective standards is

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" The dry years and low flow seasons will be the ecological bottleneck (the times that will drive impacts) with regard to Se. Surf scoter, greater and lesser scaup, and white sturgeon are present in the estuary during the low flow season and leave before high flows subside. Animals preparing for reproduction, or for which early life stages develop in September through March, will be vulnerable."

[5] http://www.assembly.ca.gov/acs/committee/c26/hearings/03012011/030111%20hearing%20materials%20-%20fed%20program%20cuts.pdf

http://www.nwf.org/News-and-Magazines/Media-Center/News-by-Topic/General-NWF/2011/02-22-11-House-Continuing-Resolution-Passes.aspx

http://wwwrcamnl.wr.usgs.gov/tracel/references/pdf/Estuaries_v26n4Ap956.pdf

[6] Third Supplemental Declaration of Donald R. Glaser, CV-F-88-634-OWW/DLB, CV-F-91-048-OWW/DLB, Document 865 Filed 04/-1/11 Firebaugh Canal Water District et.al. v US at page 7

[7] http://pubs.usgs.gov/pp/p1646/pdf/pp1646.pdf
http://water.epa.gov/scitech/swguidance/standards/criteria/aqlife/pollutants/selenium/fs.cfm
http://wwwrcamnl.wr.usgs.gov/Selenium/library.htm

[8] http://pubs.usgs.gov/pp/p1646/pdf/pp1646.pdf pg 18 and 152.
"The selenium loads measured as the input to the system (drainage canals) are perpetually different from those measured as the outputs from the system (downstream in wetland sloughs or the San Joaquin River)" pg 153.
[9] http://pubs.usgs.gov/pp/p1646/pdf/pp1646.pdf pg 119.

permitted in wetland areas during periods of wet weather. [10] (See Figure 2) In periods of low flows selenium concentrations increase, but loads typically go down.[11]

Under the proposed irrigated lands regulatory program upstream selenium waste water stored in ground water aquifers in the Westlands subarea will measure only electrical conductivity and elevation.[12] Previous USGS and USBR studies show vast ground water areas with selenium contamination that exceeds hazardous waste levels. (See Figure 8) There is no requirement to monitor the spread of this pollution to downstream neighbors and to the San Joaquin River where eventually it accumulates in the Delta estuary, sloughs, wetlands, and temporal floodplains. State and federal scientists predict this pollution from irrigated agriculture unless halted, will harm beneficial use.[13] Mobilization of selenium by irrigation and contamination of ground water has resulted in concentrations of groundwater greater than hazardous waste levels. (See Figure 8) This pollution violates federal (40 CFR 131.12) and state anti-degradation regulations.[14] Under worse case scenarios government scientists conclude that selenium contamination could create an ecological crisis in the Bay-Delta similar to that created at Kesterson National Wildlife Refuge in the 1980s.[15]

Scientists and water board staff estimate that more than 85% of the pollutant loads of selenium in the San Joaquin River that reach the Delta Estuary are from the west side irrigators.[16] They estimate the daily discharges of selenium to the Delta Estuary from the San Joaquin River is 10 to 30 times the combined total of selenium discharges from the combined Sacramento River sources and the Bay Area oil refineries.[17]

Selenium is also being exported to southern California's water supplies through the California Aqueduct threatening drinking water quality and likely is accumulating in fish and reservoirs in Southern California as a result.[18]

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[10] Ibid pg 17.

[11] Ibid pg 70-90.
"During the first two years of the project, loads were above load targets. It is notable that drain water discharged to the San Joaquin River through the San Luis Drain is more consistently concentrated than were historic discharges to the wetlands channels system." pg 121

[12] See proposed Waste Discharge Requirements for Westlands Water District &
Ibid. pg 25.

[13] http://pubs.usgs.gov/pp/p1646/pdf/pp1646.pdf pg 15 & 25.
http://www.pcl.org/files/USGSDrainageMgmt.pdf

[14] Ibid pg 14.

[15] Ibid. pg 18.

[16] http://esd.lbl.gov/files/about/staff/nigelquinn/comp_model.pdf
see also http://www.swrcb.ca.gov/rwqcb5/water_issues/water_quality_studies/sjr9900.pdf

[17] http://pubs.usgs.gov/of/2000/ofr00-416/#pdf ; pp 1-2.

[18] http://calitics.com/tag/Selenium Napolitano, Garamendi, et al., November 26, 2010.

Do we have enough water in California to continue to pollute it and expect dilution to meet clean water standards while clean up costs are passed on to downstream users? No. It is time to clean up the source of the pollution and enforce the law. It is time to enforce the law, including the State Board 1985 Kesterson cleanup or, WQ 85-1, which addressed San Joaquin River drainage pollution. Clean Water Act standards and state laws designed to protect water quality from unreasonable use, nuisance, and degradation need to be enforced. The proposed Irrigated Lands Regulatory program falls short of protecting water supplies and the public from contamination caused by irrigated agriculture.

Thank you for the opportunity to comment. Attached are the charts and figures referenced herein.

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Attachments Charts and Slides 1-9.

Selenium Contamination of Groundwater & Surface Waters:

A case history in the failure to enforce water quality standards

Irrigated Lands Framework
Agenda Item #7
April 7, 2011

Permit History for Selenium Discharges From Grasslands Basin to Mud Slough and San Joaquin River:

A Case History in the Failure to Enforce Water Quality Standards

1989 — EPA Disapproves SWRCB 8 ug/L Standard for SJR

1990 — EPA adopts 5 ug/L standard for SJR and 2 ug/L for Wetlands

1998 — State waives 5 ug/L Se Standard to allow USBR & SLDMWA Discharge to SLD and to Mud Sl and SJR

2001 — State waives 5 ug/L Se Standard to allow USBR & SLDMWA Discharge to SLD and to Mud Sl and SJR

2010 — State waives 5 ug/L Se Standard to allow USBR & SLDMWA Discharge to SLD and to Mud Sl and SJR

1987 — NPDES: USBR Reopens SLD to Mud Sl and SJR

1990 — NPDES: USBR GW Seepage to SLD and to Mud Sl and SJR

1995 — SLDMWA Unpermitted discharge to SLD and to Mud Sl and SJR

1996 — NPDES: USBR & SLDMWA GW&Subsurface Drainage to SLD and to Mud Sl and SJR

SLDMWA-San Luis Delta Mendota Water Authority
USBR- United States Bureau of Reclamation
SLD- San Luis Drain
Mud Sl-Mud Slough
SJR-San Joaquin River

Figure 1

Toxic Levels of Selenium Flowing Through:

- State & Federal Wildlife Refuges
- Wetlands
- San Joaquin River

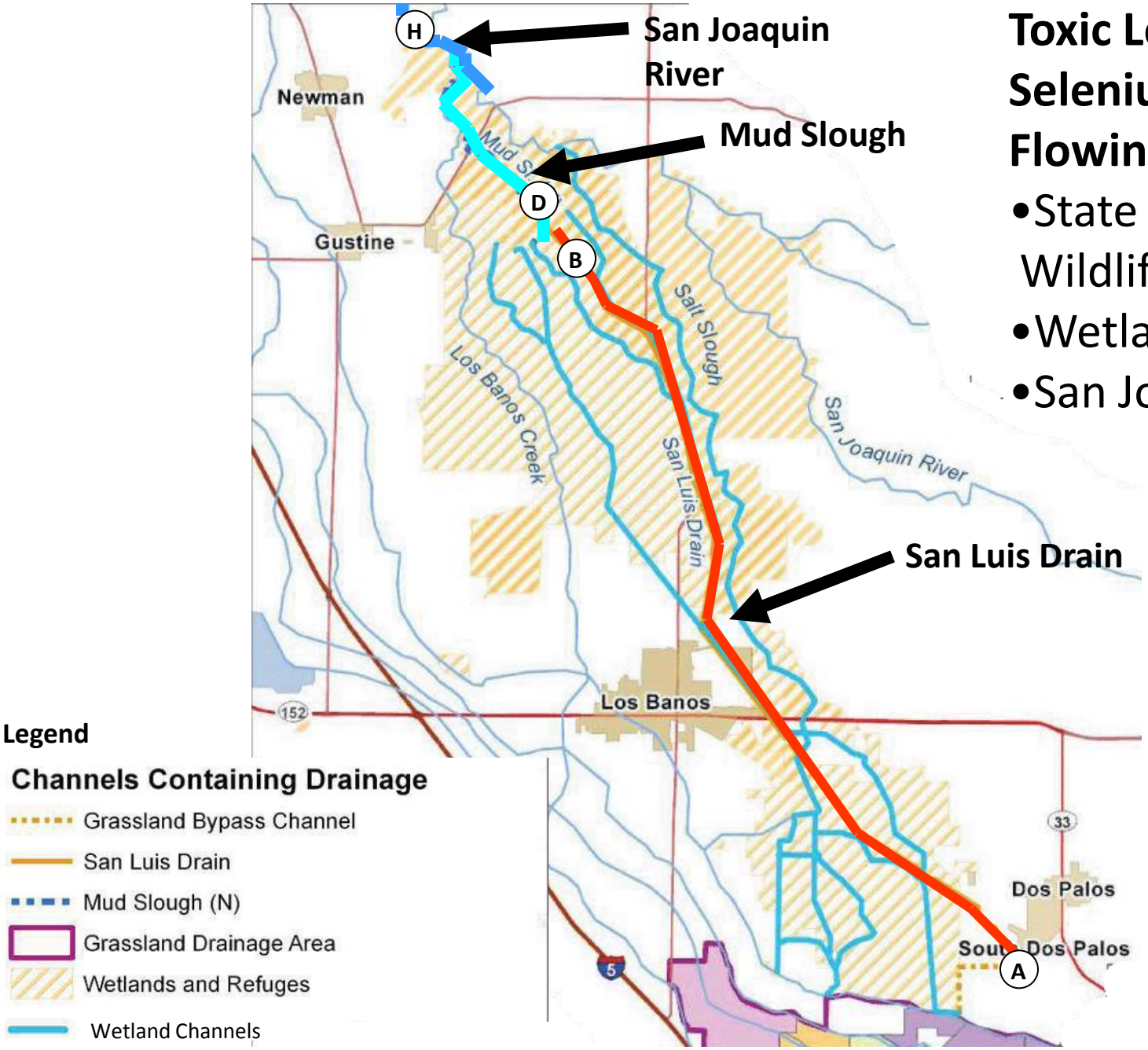


Figure 2

Lethal Concentrations of Selenium in Irrigation Drainage Discharged from the San Luis Drain (Site B)

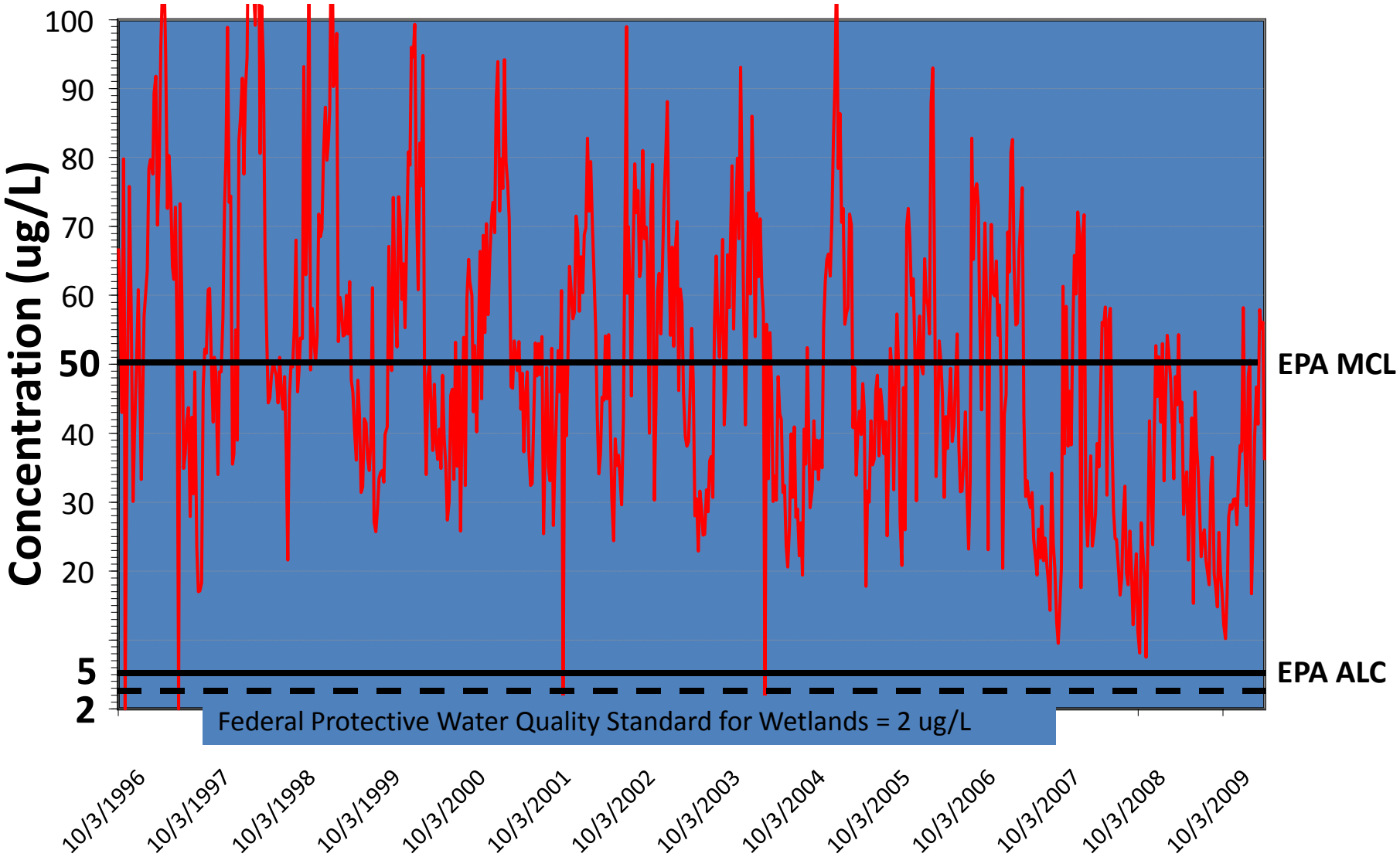


Figure 3

Data from USBR MCL=Maximum Contaminant Level for Drinking Water ALC=Aquatic Life Criterion

Lethal Concentrations of Selenium in Mud Slough (Site D) Through State and National Wildlife Refuges

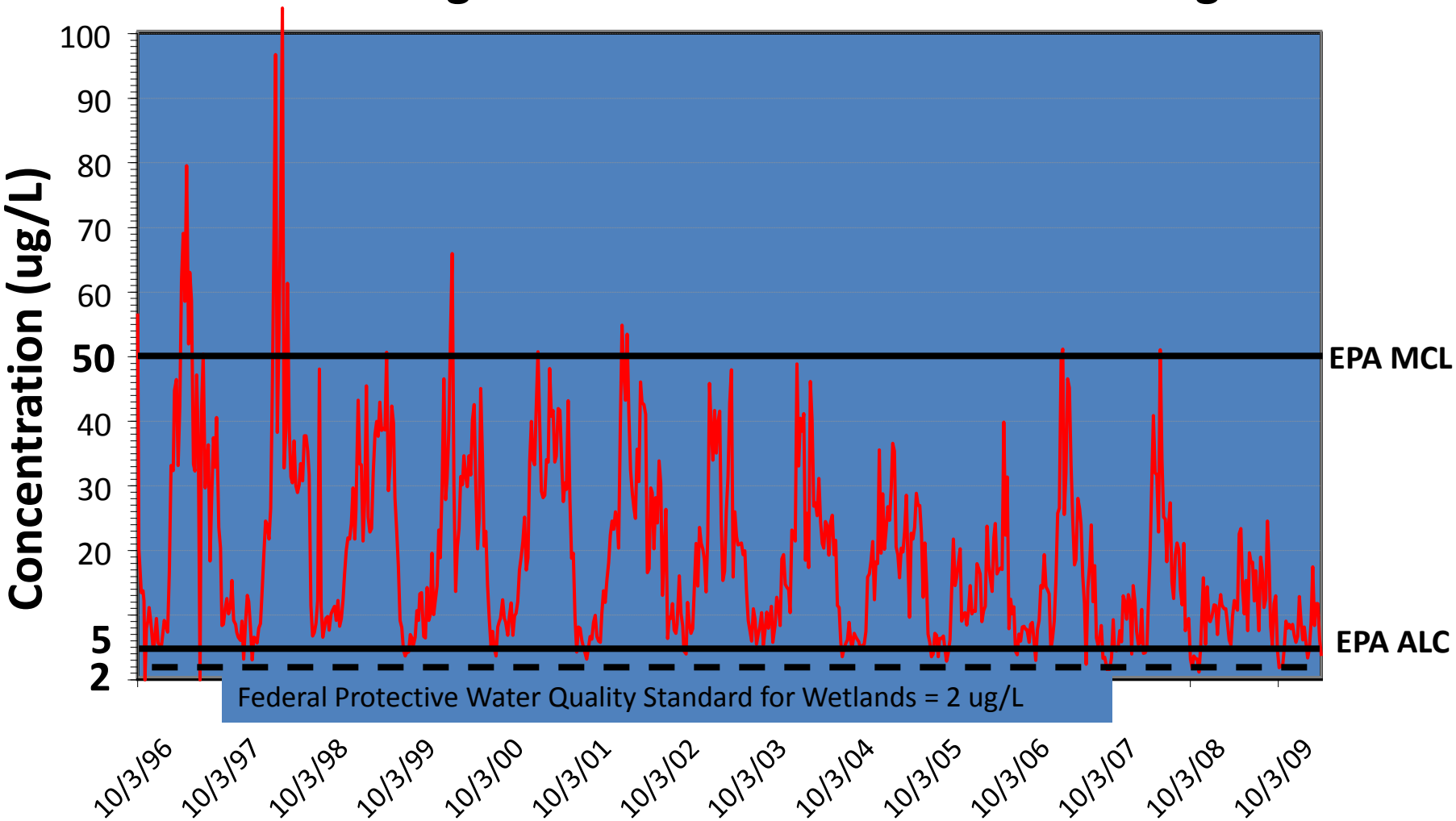


Figure 4

Data from USBR MCL=Maximum Contaminant Level for Drinking Water ALC=Aquatic Life Criterion

Lethal Concentrations of Selenium in San Joaquin River (Site H) Downstream of Mud Slough

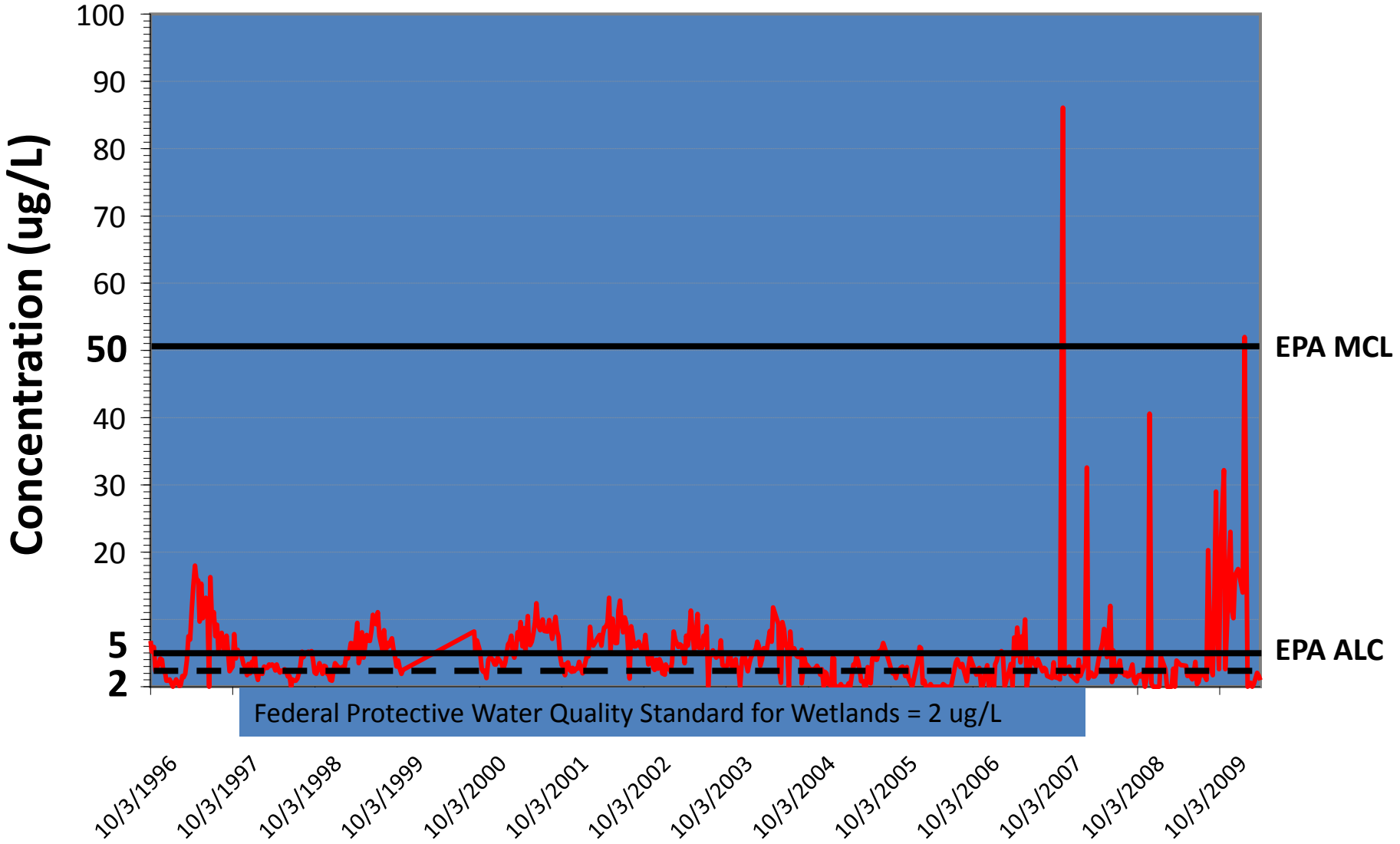
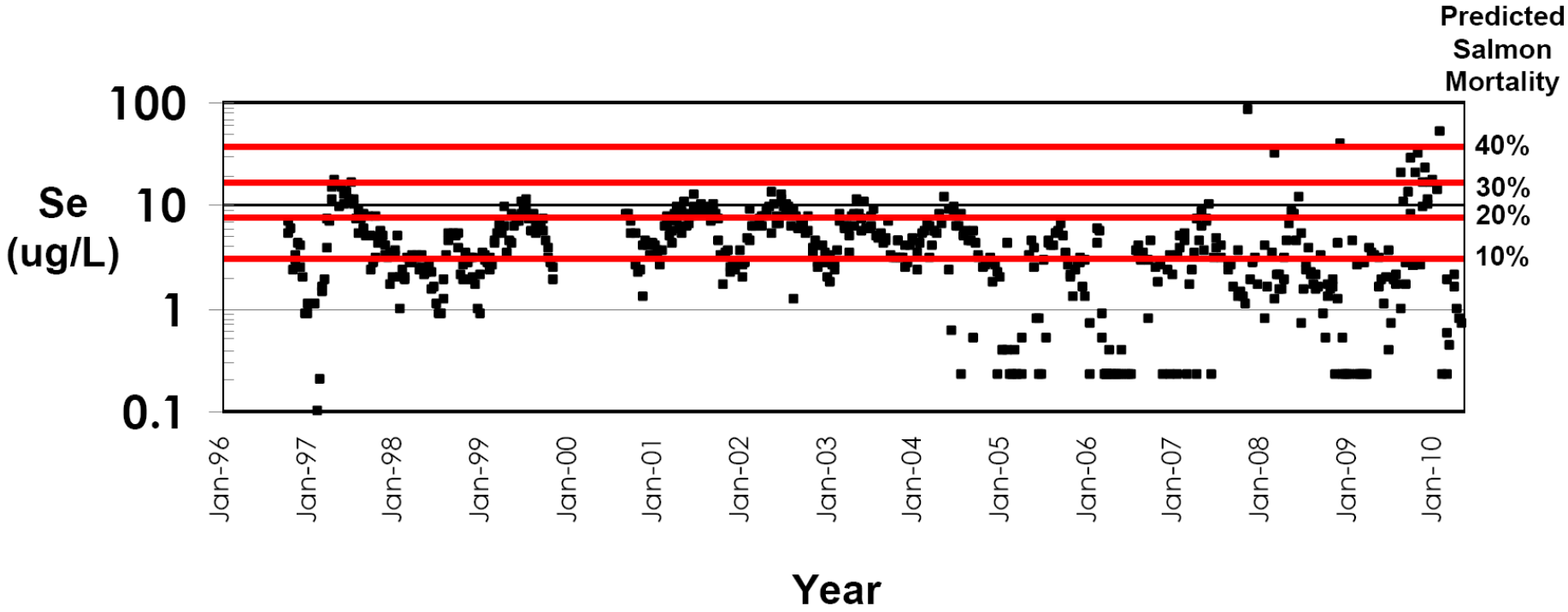


Figure 5

Data from USBR MCL=Maximum Contaminant Level for Drinking Water ALC=Aquatic Life Criterion

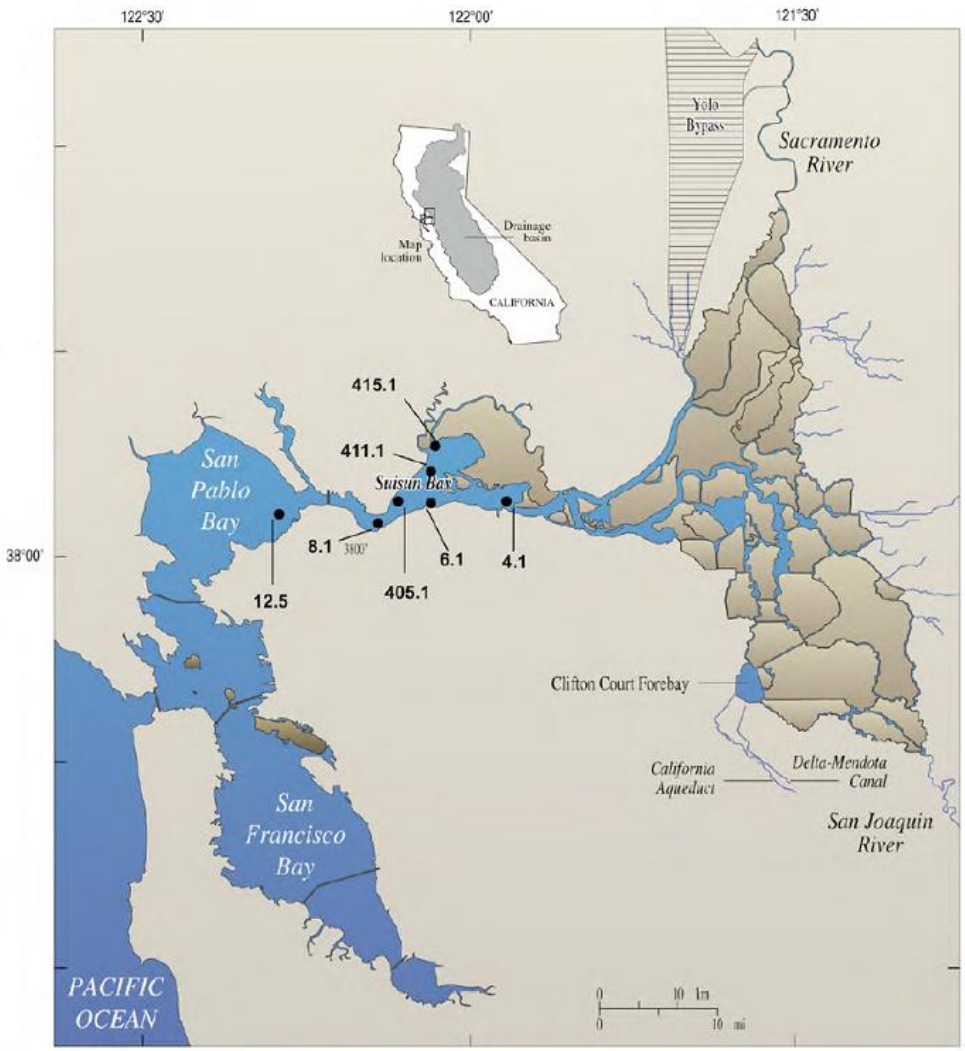
Selenium Levels in the San Joaquin River are not Safe for Salmon



Selenium concentrations measured in the San Joaquin River at Hills Ferry (data from the U.S. Bureau of Reclamation)

Figure 6

Selenium Impacts in Bay-Delta



Unsafe levels of Selenium concentrations found in Suisun Bay and Northern San Francisco Bay.
(2 to 22 ppb)*

Selenium loads per day from Westside irrigators contribute approximately 10 to 30 times daily selenium load compared to the Sacramento and Oil refineries combined.**

* Kleckner, A.E., Stewart, A.R., Elrick, K., and Luoma, S.N., 2010, Selenium and stable isotopes of carbon and nitrogen in the benthic clam Corbula amurensis from Northern San Francisco Bay, California: May 1995b
** http://pubs.usgs.gov/pp/p1646/

Figure 7

Imported irrigation leaches selenium and moves it into aquifers and surface waters. Unregulated and unmonitored, highly toxic Selenium-laden wastewater is being stored in aquifers harming beneficial uses.

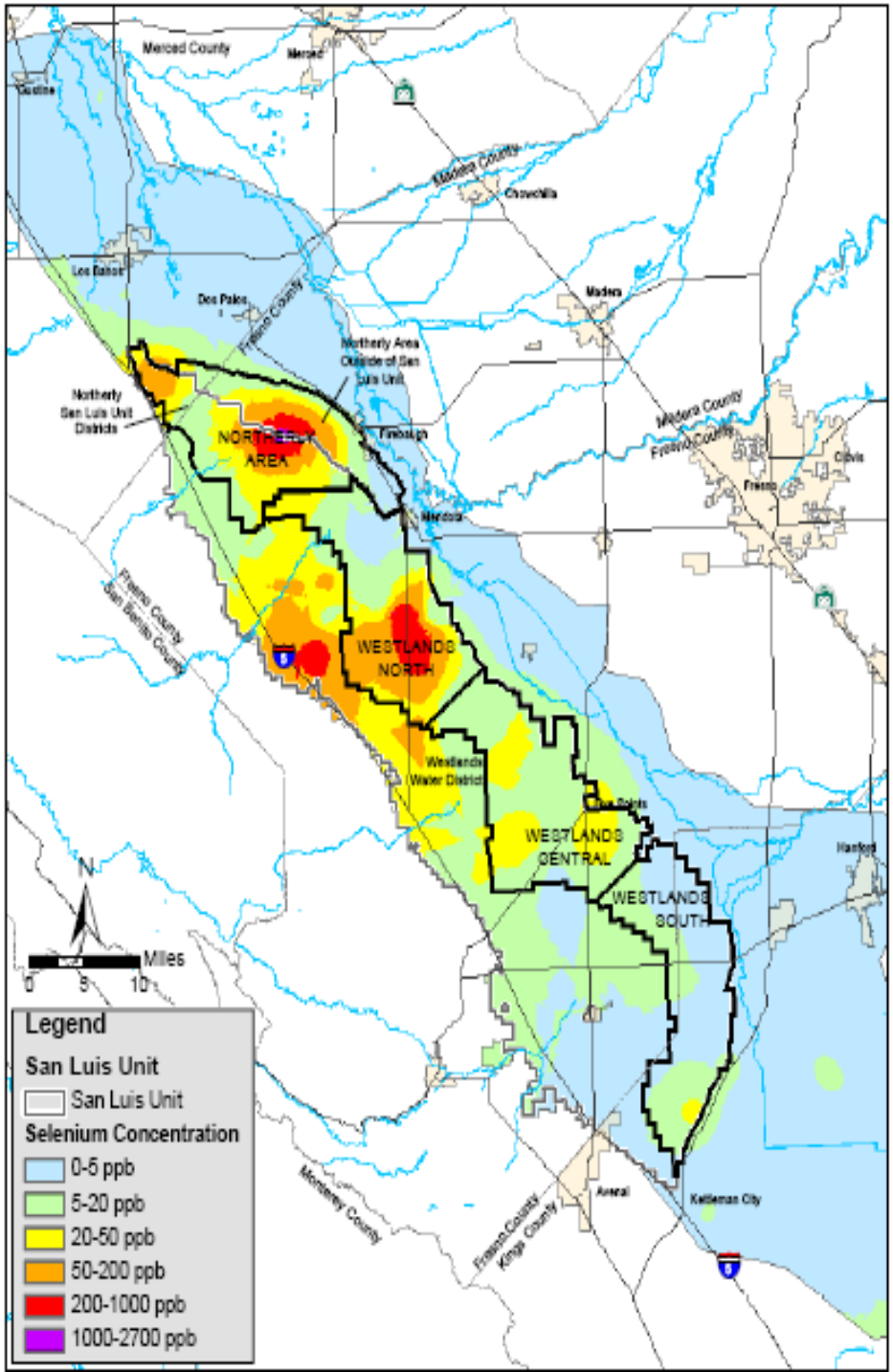


Figure 8

Ecological Threat

Don’t repeat the problems found in the San Joaquin Valley in the Delta

2003 CVRWQCB Measured 1480 ppb Selenium in Shallow Groundwater Near Five Points CA.

2003 University of California Salinity Drainage Program Annual Conference: Drainage Solutions, Joseph Skorupa, U.S. Fish and Wildlife Service Available at: http://wwwrcamnl.wr.usgs.gov/Selenium/Library_articles/joepond.pdf

Figure 9

Modified Grassland Bypass, Drainage & Refuge Photo Tour
11-15-2010

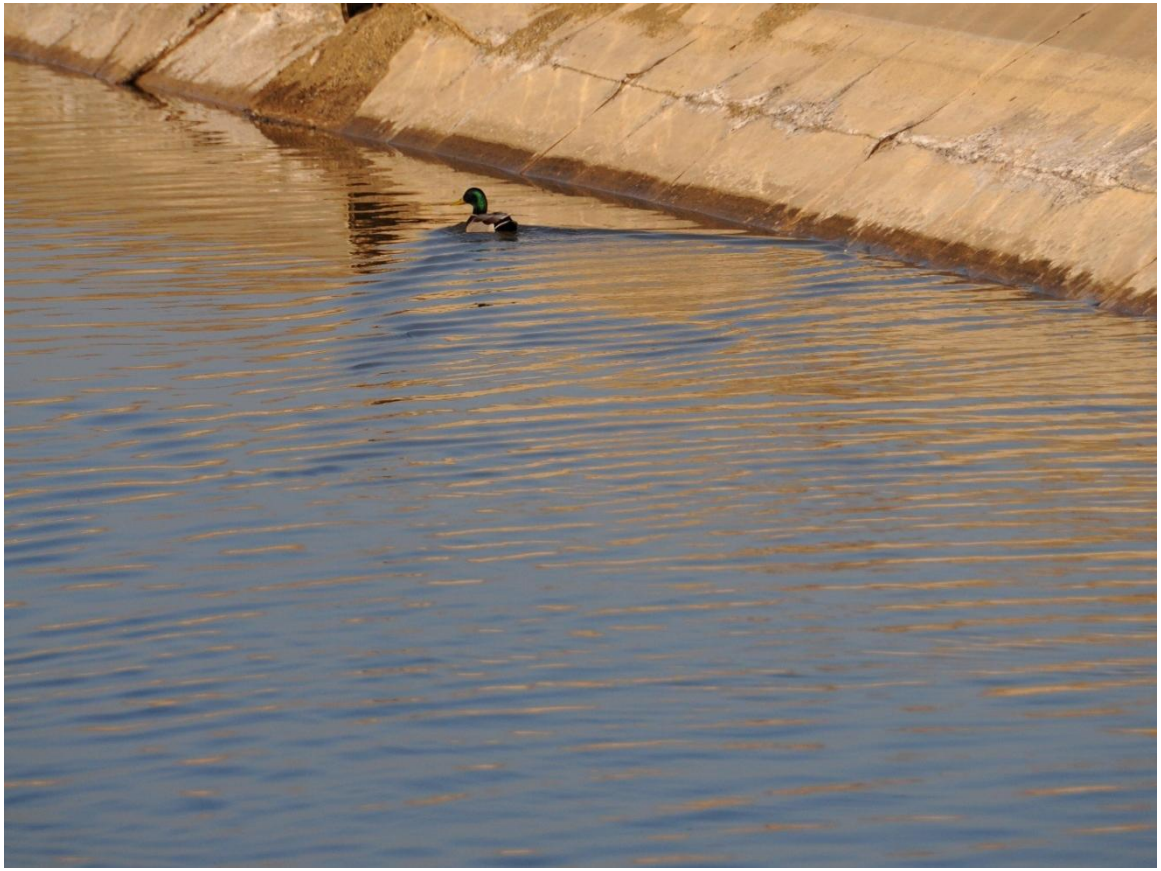
Beginning of the Grasslands Bypass Channel:
Selenium Discharge to a 4- mile earthen ditch next to wetland areas connecting the drainage area to the San Luis Drain

Downstream From Initial GBC Selenium Discharge--
Wildlife Forage in Selenium Tainted Drainage Water

Grasslands Bypass Selenium Drainage Ditch Prior to Discharge Into the San Luis Drain

Grasslands Selenium Drainage after Reuse Area is Foraging for Migratory Birds

Grassland Bypass Channel Selenium Drainage Discharge to the Federal San Luis Drain



Migratory Birds Forage, Feed and Travel in Selenium Tainted Discharges in the San Luis Drain for 28 miles next to Wetland Areas and National and State Wildlife Areas

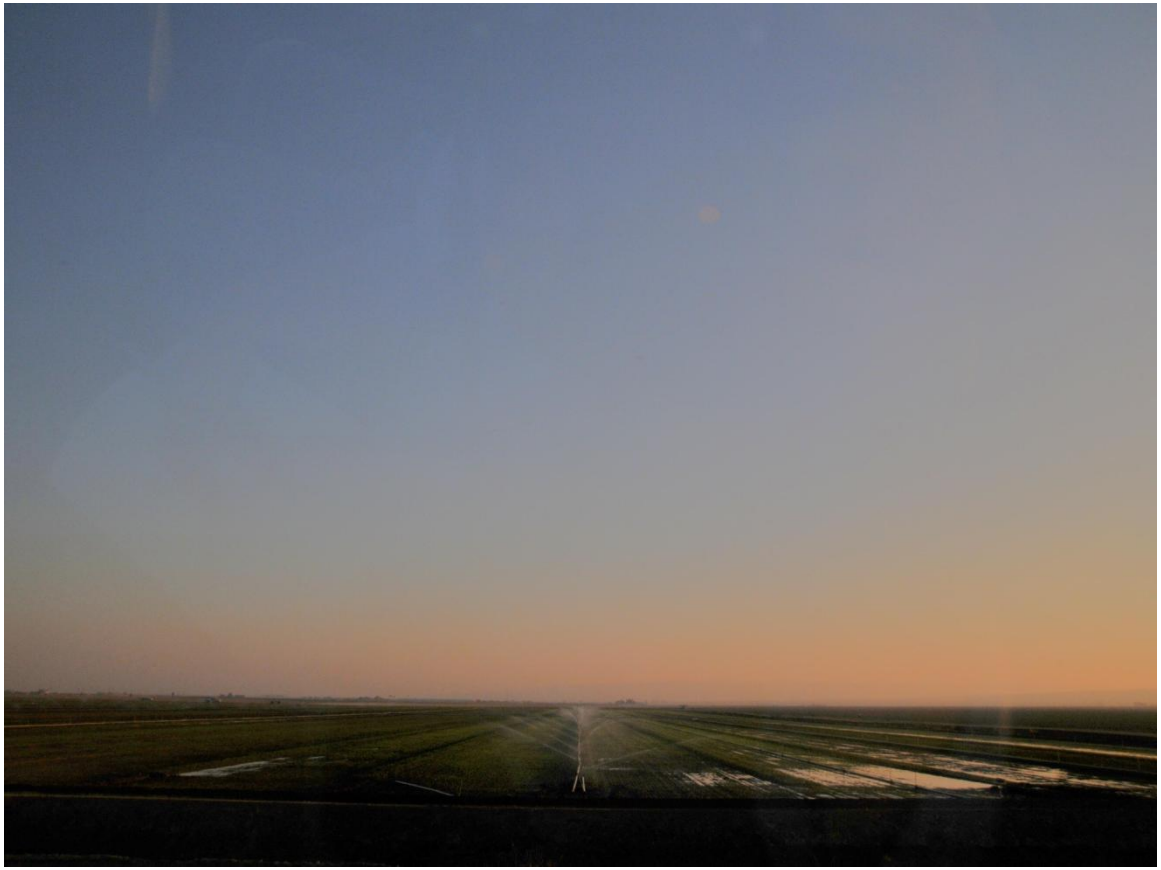
GBP Selenium Drainage in San Luis Drain Before Discharge to Mud Slough

GBP Selenium Discharge to Mud Slough from San Luis Drain

GBP Selenium Discharge To Mud Slough Below the San Luis Drain

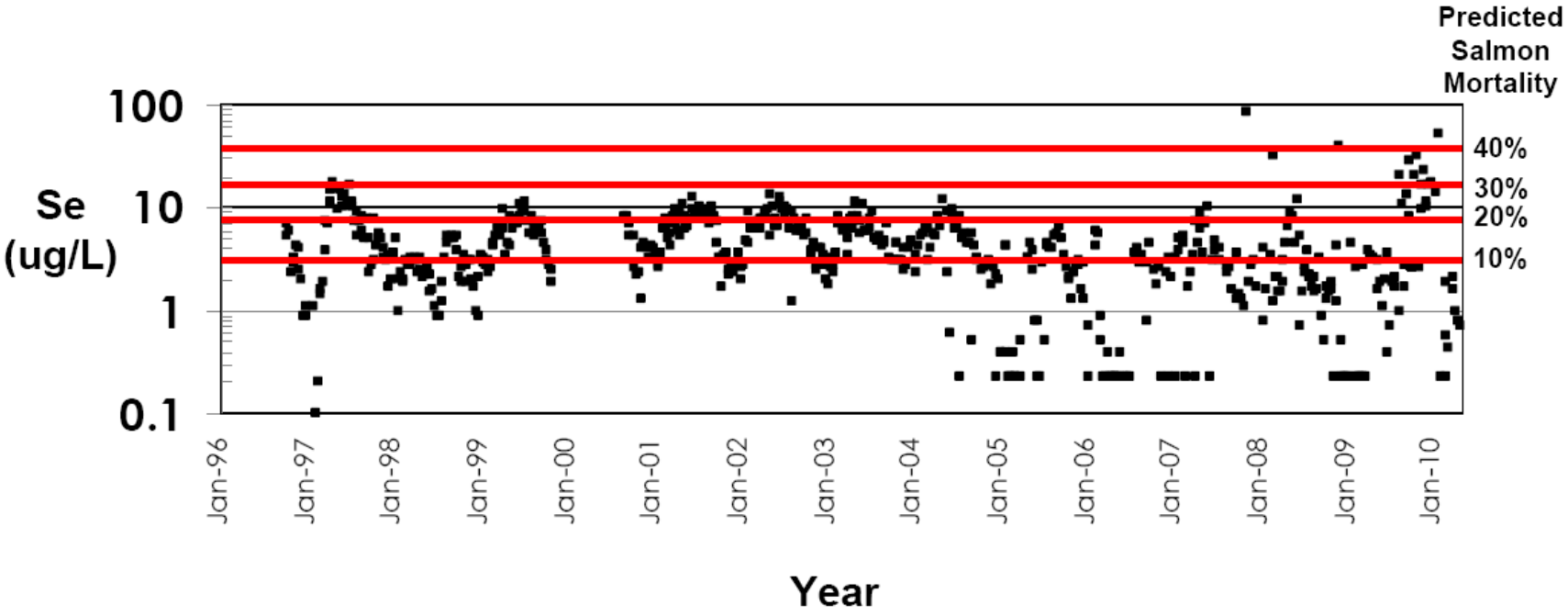
Wetlands Next to Mud Slough Selenium Drainage in the San Luis National Wildlife Area

Selenium Agricultural Drainage Travels Through the San Luis National Wildlife Refuge Before Reaching the San Joaquin River .

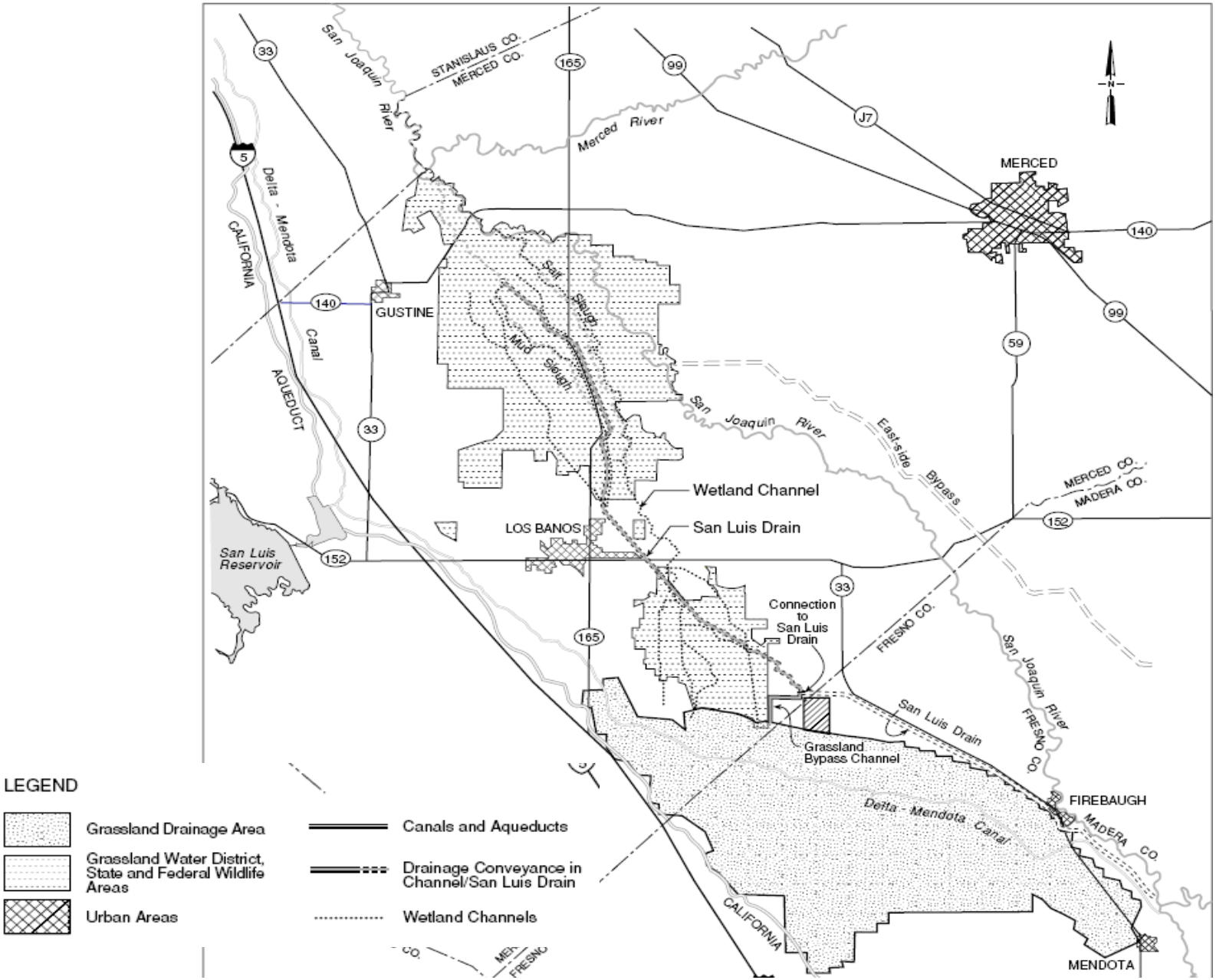


Irrigation Water “Ponding” in Panoche Drainage District-Taken 5:31 pm from Joe McGahan’s Car Traveling From the levy road Near the Main Canal & Grassland Bypass Channel Ditch

Selenium Levels and Predicted Salmon Mortality in the San Joaquin River



Selenium concentrations measured in the San Joaquin River at Hills Ferry (data from the U.S. Bureau of Reclamation)


San Joaquin River
STANISLAUS CO.
MERCED CO.
Merced River
MERCED
GUSTINE
Delta - Mendota Canal
CALIFORNIA AQUEDUCT
Salt Slough
Mud Slough
San Joaquin River
Eastside Bypass
Wetland Channel
San Luis Drain
LOS BANOS
San Luis Reservoir
Connection to San Luis Drain
FRESNO CO.
MERCED CO.
MADERA CO.
San Luis Drain
Grassland Bypass Channel
Delta - Mendota Canal
FIREBAUGH
MENDOTA
LEGEND
Grassland Drainage Area
Grassland Water District, State and Federal Wildlife Areas
Urban Areas
Canals and Aqueducts
Drainage Conveyance in Channel/San Luis Drain
Wetland Channels

CVRWQCB Measured 1480 ppb Selenium in 2003 in Ponded Shallow Groundwater

Drainage Solutions: Homage to the Ponds of Folly, Joseph Skorupa, USFWS 2003 UC Drainage Conf.
Hazardous Waste levels of Selenium found at Cotton Gin Site near Five Points, California Unregulated Discharges Outside of GBP Area. http://wwwrcamnl.wr.usgs.gov/Selenium/Library_articles/joepond.pdf,
Regional Water Board Staff 5-27-10 Testified Areas Upslope Drain Into the Grassland Drainage Area