



July 23, 2008

Hon. Dianne Feinstein  
331 Hart Senate Building  
United States Senate  
Washington, D.C. 20510

**Subject: Grasslands Bypass Project and Irrigation Drainage in the San Joaquin Valley**

Dear Senator Feinstein:

The California Water Impact Network (C-WIN) and the California Sportfishing Protection Alliance (CSPA) finds that the letter Karl Longley, ScD, P.E., chair of the Central Valley Regional Water Quality Control Board (CVRWQCB), wrote in reply to a letter from you concerning western San Joaquin Valley irrigation drainage proposals provides too rosy a picture of the Grasslands Bypass Project (GBP).<sup>1</sup>

We respectfully disagree with his characterization of the GBP as "very successful" management of agricultural drainage water. His letter contains no documented specifics or scientific data related to its positive assessment. By what performance standards, benchmarks, and outcome measures does GBP qualify as successful agricultural drainage management? How is an active adaptive management program applied that it might succeed? Seven years later, success of the GBP is hardly certain. It should at least be measured against existing water quality standards and TMDLs, as C-WIN and CSPA do in Attachment 1 to this letter. Because water quality standards in the Grasslands, San Joaquin River Basin, and the Delta continue to be exceeded, we believe that the GBP cannot be viewed as an unqualified "success."<sup>2</sup>

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<sup>1</sup> The Grasslands Bypass Project (GBP) is a regional drainage facility undertaken by the San Luis and Delta Mendota Water Authority (SLDMWA, of which participating irrigation and drainage districts are members of the GBP) that shunts selenium and salt-laden subsurface irrigation drain water from agricultural lands in the west side of the San Joaquin Valley around national wildlife refuges (also known as Grassland Marshes) and the Grassland Water District into a 19-mile reach of the San Luis Drain that subsequently empties into Mud Slough (North). Mud Slough (North) then drains into the San Joaquin River just upstream of the River's confluence with the high-quality waters of the Merced River. The GBP was initiated in 1996 as a four-year project, and then was extended through 2009 when SLDMWA and the US Bureau of Reclamation executed in 2001 a use agreement for a 19-mile reach of the Bureau's San Luis Drain.

<sup>2</sup> Letter of Karl Longley, ScD, P.E., Chair California Regional Water Quality Control Board, Central Valley Region, to Senator Dianne Feinstein, June 30, 2008, p.1. In particular, Mr. Longley asserts,

*We currently regulate drainage management projects being conducted by the Grassland Bypass Project, Tulare Lake Drainage District and others. The Grassland Bypass Project specifically involves an adaptive management program to address high concentrations of salts and selenium in the drainage, and has been a very successful regulatory program for the Board. The drainage project being proposed by Westlands Water District and the other San Luis Unit Contractors would be subject to similar regulation by the Regional Water Board.*

*The Regional Water Board uses a variety of regulatory tools and measures, such as benchmarks, performance standards, limitations, provisions, and prohibitions required in its WDRs [waste discharge requirements] or Water Quality Plans to ensure our regulatory programs are successful and achieve full protection of water quality and beneficial uses. We require extensive monitoring and reporting to ensure our regulatory standards and measures are met. Therefore, we agree with you that the Contractors should be held accountable through*

The US Geological Survey's initial comments on the 2001 EIS/EIR for the Grasslands Bypass Project questioned its long-term viability, noted that the GBP's "*control activities are largely a redistribution of a constant load among groundwater, surface water, and land disposal. It remains to be seen how long selenium sequestration can be continued without significantly limiting farming capability or returning to surface water disposal of drainage.*"

We encourage you and your staff to examine relevant facts in the agencies' literature and online monitoring data, and you will see that by the CVRWQCB's own measures, and those of other federal agencies, the GBP is closer to failure than success. From recent GBP monitoring data analyzed by C-WIN and CSPA, you should note that:

- While limitations on Se loads are decreasing, they do so only slowly because the water year classifications in this decade have been largely wet or above normal, thereby allowing higher overall fate and transport through dilution of Se loads. Only since January of 2007 have critical or below normal water year Se load thresholds been applied to the GBP.
- Even with these generous water year classifications, *the GBP's actual selenium loads **increased significantly** in 2005 in relation to its load limitations from 2001 to 2007, with 2007 being reduced primarily because of dry conditions and resulting lower drainage flows.*
- Heavy rainfall and runoff in the Grasslands watershed led to exceedences of Se load limits in the GBP during January through March 2005, resulting in the GBP exceeding its 2005 annual Se load. The use agreement between SLDMWA and the Bureau of Reclamation requires monetary penalties (payment into a "drainage incentive fee") when exceedences occur, with loopholes, which we discuss below.

While the GBP reduced selenium discharges directly through the Grassland Marshes since the 1980s, the bypass channel continues to pour selenium and salts into the San Luis Drain, rerouting problem waters while continuing to burden water bodies downstream in several ways:

- In 2006 the State Water Resource Control Board continued listing as impaired the Grassland Marshes, Salt Slough, and the San Joaquin River (from the Merced River to Delta Boundary) for selenium and electrical conductivity. Downstream, Carquinez Strait and Suisun Bay were also designated as impaired for selenium in their 2006 CWA Section 303(d) List of Water Quality Limited Segments.<sup>3</sup>
- Carquinez Strait and Suisun Bay are also listed as impaired for selenium. (See Attachment 2, below.)<sup>4</sup>
- Waters of the Grasslands and San Joaquin River listed as impaired by the State Board from chlorpyrifos, diazinon, and Group A Pesticides.
- Excessive concentrations of salt and boron enter the San Joaquin River from the Grassland Subarea in.

Dr. Longley also stated in his letter that the CVRWQCB supports adaptive management as described by the USGS in its recent Technical Report on in-valley drainage in the western San Joaquin Valley. He states that

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*performance standards, benchmarks, and other requirements as appropriate for their proposed program. The success of the Grasslands Bypass Project was achieved through the implementation of performance standards, benchmarks, and other requirements established in the WDRs and we would use a similar approach with the Contractors.*

<sup>3</sup> Available at: [http://www.waterboards.ca.gov/tmdl/303d\\_lists2006approved.html](http://www.waterboards.ca.gov/tmdl/303d_lists2006approved.html).

<sup>4</sup> As the 303(d) list noted with respect to impairment in Carquinez Strait and Suisun Bay for selenium: "*Affected use is one branch of the food chain; most sensitive indicator is hatchability in nesting diving birds, significant contributions from oil refineries (control program in place) and agriculture (carried downstream by rivers); exotic species may have made food chain more susceptible to accumulation of selenium; health consumption advisory in effect for scaup and scoter (diving ducks)...*"

adaptive management “*would ensure that [the GBP] is based on the best information available while providing for prompt response to unanticipated or unacceptable impacts from any future drainage management efforts.*”

Adaptive management proceeds within a regulated context. C-WIN and CSPA believe the GBP achieved limited success primarily because its parties to its operation use adaptive management in the context of the CVRWQCB’s 2001 WDRs, despite the laxity of these requirements. The GBP’s adaptive management practice is compromised when it comes to monetary incentives to avoid selenium pollution. A requirement of monetary penalties is written into the San Luis Drain use agreement between SLDMWA and the Bureau of Reclamation to induce SLDMWA to keep Grassland Drainage Area discharges below WDR thresholds. Discharged flows are just barely below lax Se load thresholds (see Attachment 1). CSPA and C-WIN believe this is because the penalties—referred to as “drainage incentive fees” in the agreement—are weak at best (see Attachment 4). Like the Regional Board’s WDRs for the GBP, clearly the “incentive fees” are insufficient to motivate the Grassland Area Farmers to reduce selenium loads well below established thresholds. *This is a holding pattern at best, hardly an environmental management best practice, especially in light of the impaired status of downstream water bodies and the large contribution the Grasslands Area makes to their condition. The GBP’s WDRs need to tie discharge requirements to outcomes that include delisting of impaired water bodies for the criteria elements and toxins we described above.*

CSPA and C-WIN acknowledge that the GBP improved water quality in the Grassland Wetland Channels compared with pre-project conditions when wetlands water supplies were routinely commingled with agricultural drainage discharges. But C-WIN and CSPA believe the impaired status of downstream water bodies can and must be improved much further, which means tightening WDRs and adaptive management practices beyond what little has been achieved to date. *We urge you to press USBR, the EPA, and the US Fish and Wildlife Service to collaborate with the CVRWQCB and the State Board to apply the precautionary principle when revising the GBP’s WDRs and adaptive management activities, and to regulatory programs for other drainage-impaired lands in the western San Joaquin Valley as soon as possible.* After all, the drainage problems in the Grasslands Area originates in the drainage-impacted irrigated lands on the west side of the San Joaquin Valley, which ultimately contaminates water supplies used by State and federal wildlife refuges and private wetlands in the Grasslands. Dealing effectively with those lands will help deal with Grasslands’ drainage issues.

Successful adaptive management of irrigation drain water is driven by waste discharge requirements. But WDR enforcement takes money and personnel. The State Water Resources Control Board acknowledges that the state budget process deprives the CVRWQCB of sufficient resources to control discharges of toxic and other pollutants into the state’s waters (see Attachment 5). Given serious staffing shortages, the water boards have embraced more intractable stakeholder or voluntary programs such as the Grasslands Bypass Project, an administrative strategy it plans to use even more in its recently adopted Bay Delta Estuary Strategic Workplan. Ironically, stakeholder driven voluntary programs like GBP require far more staff resources and considerably longer timeframes to assess performance than direct regulatory permit issuance and enforcement. Despite this institutional under-achievement, our organizations nonetheless believe the water boards—properly staffed and renewed of purpose—are still the institutions to meet these challenges.

Ultimately, C-WIN and CSPA believe that the only sustainable solution is land retirement of the 379,000 acres of drainage-impaired lands in the San Luis Unit upstream of the GBP. The USEPA, US Fish and Wildlife Service, and various citizen and environmental groups acknowledge that full land retirement is the only

feasible and cost-effective alternative, as does the analysis of the Bureau of Reclamation's newly released *San Luis Drainage Feature Re-Evaluation Feasibility Report*. However, the Bureau's report inexplicably recommends a \$2.7 Billion *In-Valley/Water Needs Land Retirement Alternative* drainage scheme that would rely on expensive and unproven drain water treatment technology for keeping impaired lands in production. Unfortunately, the federal agencies' ambiguous and contradictory comments and recommendations contribute to governmental and public inaction by confusion. This allows the San Luis Contractors to operate in a business-as-usual mode, yet the salt and selenium-laden environmental degradation grows worse as a result.

In sum, we urge you to undertake these actions:

- Insist the EPA and the US Fish and Wildlife Service work with the CVRWQCB and the State Board to tie discharge requirements to larger regional outcomes of GBP management that include delisting of impaired downstream water bodies for the criteria elements and toxins we described above.
- Urge the EPA and the US Fish and Wildlife Service to collaborate with the CVRWQCB and the State Board to apply the precautionary principle through GBP's waste discharge requirements and adaptive management activities to managing irrigation drain water in the Grasslands Area, and apply this approach to the 379,000 acres of drainage-impaired lands southwest of the Grasslands Area too.
- Urge US Bureau of Reclamation to retire all of the 379,000 acres of drainage-impaired lands of the San Luis Contractors to end the upstream and upslope discharge of highly concentrated selenium and salt-laden waters into the San Joaquin River system. This would be the single most important action that would have the most direct benefit to all presently impaired downstream water bodies, including the troubled Bay-Delta Estuary.

We hope you find our analyses and opinions of use as you reach a position on permanent retirement of the drainage-impaired lands in the western San Joaquin Valley. We urge you to resist the temptation to look at instances of highly questionable outcomes as examples of success in this region of California.

Sincerely,



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Attachments

cc: Karl Longley, ScD, P.E., Chair, Regional Water Quality Control Board, Central Valley Region  
Environmental Water Caucus  
Senator Barbara Boxer  
Interested parties  
Interested media

**Attachment 1**  
**Water Discharge Requirements and Performance**  
**Grasslands Bypass Project**

The water quality objectives and compliance time schedule that apply to the waste discharge requirements established for the Grasslands Bypass Project in September 2001 by the California Regional Water Quality Control Board, Central Valley Region (Mr. Longley's agency), are shown in the table below:

**Compliance Time Schedule for Meeting the 4-day Average  
 and Monthly Mean Water Quality Objectives for Selenium**

Selenium Water Quality Objectives (in **bold**) and Performance Goals (in *italics*)

Water Body/Water Year Type	10 January 1997	1 October 2002	1 October 2005	1 October 2010
Salt Slough and Wetland Water Supply Channels listed in Appendix 40 of the Basin Plan	<b>2 µg/L monthly mean</b>			
San Joaquin River below the Merced River. Above Normal and Wet Water Year types <sup>1</sup>		<i>5 µg/L monthly mean</i>	<b>5 µg/L 4-day average</b>	
San Joaquin River below the Merced River; Critical, Dry and Below Normal Water Year types		<i>8 µg/L monthly mean</i>	<i>5 µg/L monthly mean</i>	<b>5 µg/L 4-day average</b>
Mud Slough (north) and the San Joaquin River from Sack Dam to the Merced River				<b>5 µg/L 4-day average</b>

<sup>1</sup> The water year classification will be established using the best available estimate of the 60-20-20 San Joaquin Valley water year hydrologic classification (as defined in Footnote 17 for Table 3 in the State Water Resources Control Board's *Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary*, May 1995) at the 75% exceedance level using data from the Department of Water Resources Bulletin 120 series. The previous year's classification will apply until an estimate is made of the current water year.

The Central Valley Basin Plan Amendment for the control of Agricultural Drainage Discharges in the 1990s prohibited discharge of selenium in amounts exceeding 8,000 pounds per year for all water year types for the Grasslands Watershed (an area reaching south to the northern edge of the Westlands Water District).<sup>5</sup> The CVRWQCB's 2001 WDR treated this as an overly generous threshold, observing that in Water Year 2000 (October 1, 1999 to September 30, 2000) only 4,595 pounds of selenium were discharged from the San Luis Drain to Mud Slough. The Regional Board, recognizing the need for a more fine-grained approach to regulating selenium discharge for the Grassland Drainage Area established monthly thresholds in the 2001

<sup>5</sup> California Regional Water Quality Control Board, Central Valley Region, 1996, *Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins for the Control of Agricultural Subsurface Drainage Discharges; Staff Report*; March, 1996.

WDR, and varied them by the type of water year (i.e., wet to critically dry), in recognition that selenium waste discharge is significantly determined by how much water passes through the Grasslands area:

**Monthly Load Allocations (pounds of selenium) for the Grassland Drainage Area  
 Based on Applicable Selenium Water Quality Objectives  
 for the San Joaquin River at Crows Landing**

Month	Effluent Limits which apply no later than					
	1 October 2005			1 October 2010		
	Above Normal <sup>1</sup>	Wet	Critical	Dry/Below Normal	Above Normal	Wet
October <sup>2</sup>	260	328	55	233	260	328
November	260	328	55	233	260	328
December	398	211	152	319	398	211
January	398	211	151	319	398	211
February	472	488	93	185	472	488
March	472	488	92	184	472	488
April	490	506	101	193	490	506
May	497	512	105	197	497	512
June	212	354	69	130	212	354
July	214	356	70	131	214	356
August	225	366	75	137	225	366
September	264	332	57	235	264	332
<b>Total</b>	<b>4162</b>	<b>4480</b>	<b>1075</b>	<b>2496</b>	<b>4162</b>	<b>4480</b>

- 1 The water year classification will be established using the best available estimate of the 60-20-20 San Joaquin Valley water year hydrologic classification (as defined in Footnote 17 for Table 3 in the State Water Resources Control Board's *Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary*, May 1995) at the 75% exceedance level using data from the Department of Water Resources Bulletin 120 series. The previous year's classification will apply until an estimate is made of the current water year.
- 2 The monthly load limits are based on the water year classification for October through September applied to the following calendar year, January to December. For example, the October through December 2005 load limits are based on the water year classification for October 2004 through September 2005.

The GBP is the object of an ongoing and continuous water quality monitoring effort. Reports are readily available online, as the San Francisco Estuary Institute (SFEI) has been retained to conduct and report on the monitoring results on a monthly basis at <http://www.sfei.org/reports/index.htm>. The table to the right is based on data from this website. Since 2001, when the Regional Board's waste discharge requirement took effect, the following is occurring through the GBP:

Water Year	Selenium Load Limitation	Selenium Load Calculated	Gap Between Actual Load and Load Limit	Water Year Type	Percent of Calculated to Limitation
2001	5,661	4,377	1,284	Wet	77%
2002	5,360	3,939	1,421	Wet	73%
2003	5,027	4,029	998	Above Normal	80%
2004	4,696	3,871	825	Above Normal	82%
2005	4,585	4,284	301	Above Normal	93%
2006	3,088	3,563	475	Wet	115%
2007	3,489	2,295	1,194	Wet	66%
2008 (partial)	3,662	NA	NA	Dry to Critical	NA
<b>Totals</b>	<b>35,568</b>	<b>26,358</b>	<b>NA</b>		<b>NA</b>
<b>Averages</b>	<b>4,446</b>	<b>3,765</b>	<b>928</b>		<b>84%</b>

Source: Grassland Bypass Program, U.S. Bureau of Reclamation, online at <http://www.sfei.org/reports/index.htm>; California Water Impact Network.

- First, while limitations on Se loads are decreasing, they do so only slowly because the water year classifications for the limitations have been generous because of largely wet or above normal classification, thereby allowing higher overall discharges and Se loads. Only since January of 2007 have critical or below normal water year Se load thresholds been applied to the GBP.

- Even with these generous water year classifications, *the GBP's actual selenium loads **increased** in 2005 in relation to its load limitations from 2001 to 2007, with 2007 being reduced because of dry conditions and resulting lower drainage flows.*
- Heavy rainfall and runoff in the Grasslands watershed led to exceedences of Se loads in the GBP during January through March 2005, resulting in the GBP exceeding its year-long Se load for water year 2005. The use agreement between SLDMWA and the Bureau of Reclamation requires monetary penalties (payment into a drainage incentive fee) when exceedences occur, with loopholes, which we discuss below.



## **Attachment 2 Exotic Species and Selenium Bioconcentration**

The State Board's comments in its 303(d) list of impaired water bodies on exotic species and selenium bioconcentration (see footnote 4 of the main letter) are borne out in recent monitoring data from the Grasslands area. The Grasslands Bypass Project Monitoring report for 2004-2005 found that:

*"The overall selenium hazard...to the Salt Slough ecosystem rose from low to moderate. In Mud Slough [further north] below the outfall of the San Luis Drain, selenium concentrations in fish and invertebrates continued generally to exceed thresholds of concern; average concentrations have not dropped as loads and concentrations of selenium in water in Mud Slough have declined.*

*"After dramatically increasing in numbers at some sites in 2003, the invasive Siberian freshwater shrimp (Exopalaemon modestus), became firmly established as a major component of aquatic ecosystems at all monitoring sites in 2004 and 2005. This species evidently bioconcentrates selenium more efficiently than other aquatic invertebrates, and may be contributing to the persistence of elevated concentrations of selenium in the biota as loads of selenium discharged into Mud Slough have been generally declining."*<sup>6</sup>

The recent USGS technical analysis of in-valley drainage management strategies (U.S. Geological Survey Open-File Report 2008-1210, available at <http://pubs.usgs.gov/of/2008/1210/>) speaks to this. Operational problems associated with drainage disposal in the Panoche Drainage District, just south of the public and private wetlands of the Grassland Water District, have resulted in excessive selenium contamination of several bird species' eggs, more than enough to cause deformed chicks. Experience to date reveals technical problems and unacceptable environmental impacts from various aspects of treatment-oriented approaches to agricultural drainage management. *This USGS report expresses concern about elevated levels of selenium in wildlife and cites previous studies with similar solutions as proposed in the Bureau's "In-Valley/Water Needs Land Retirement Alternative" and the "In-Valley/Drainage-Impaired Land Retirement Alternative"*

Over 42 species of birds have been found to use this drainwater reuse pilot area. The average selenium concentration in avocet and stilt eggs was 58 µg/g dry weight, which exceeds the threshold for substantive risk by approximately six fold (a factor of six; high risk is regulated at concentrations of >10 µg/g selenium). A reduction of hatchability and increased deformities of bird embryos would likely occur at these concentrations.<sup>7</sup> (See also Skorupa, 1998.<sup>8</sup>) Concern is also warranted because selenium concentrations in bird eggs from the majority of reference sites sampled were also above the high-risk threshold, suggesting a landscape effect larger than the reuse area as management and storage of concentrated drain water takes place over several years. Selenium concentrations in avocets and stilts in 2006 exceeded 90 µg/g dry weight, a nine-fold rate higher than the substantive risk threshold for bird eggs. Deformed embryos would be expected.

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<sup>6</sup> Grasslands Bypass Project Monitoring Report, 2004-2005, Chapter 7, p. 94.

<sup>7</sup> U.S. Department of the Interior, 1998, Constituents of concern: selenium, in Guidelines for interpretation of the biological effects of selected constituents in biota, water, and sediment, National Irrigation Water Quality Program Information Report No. 3: National Irrigation Water Quality Program, U.S. Department of the Interior, Washington, DC, p. 139-184.

<sup>8</sup> Skorupa, J.P., 1998, Selenium poisoning of fish and wildlife in nature: lessons from twelve real-world examples, in Frankenberger, W.T., Jr., and Engberg, R.A., eds., Environmental Chemistry of Selenium: New York, New York, Marcel Dekker Inc., p. 315-354.



### **Attachment 3 Salt and Boron Discharges**

While the Grassland subarea of the San Joaquin River basin accounts for 6 percent of the river's total discharge (flows) at Vernalis, it contributes 400,000 tons of salt and 490 tons of boron per year to the lower San Joaquin River, about 36 percent of the River's total salt load and 50 percent of its total boron load measured at Vernalis.

### **Attachment 4 “Incentive Fees” for Improving Irrigation Drainage**

A requirement of monetary penalties is written into the use agreement for the San Luis Drain between SLDMWA and the Bureau of Reclamation to induce SLDMWA to keep Grassland Drainage Area discharges below WDR thresholds. As we have shown so far, the discharged flows are just barely below lax Se load thresholds. CSPA and C-WIN believe this is because the penalties—referred to as “drainage incentive fees” in the agreement—are weak at best. According to the Agreement, two fees are called for, an Annual Drainage Incentive Fee and a Monthly Drainage Incentive Fee, both not to exceed \$250,000 per year. The Agreement's Oversight Committee can determine how the funds from these penalties are used, but they must be used by the Grassland Drainers to “assist in meeting Selenium Load Values, Salinity Load Values and Discharge Goals, water quality objectives in the Drainage Area, and/or will enhance wildlife values in the Drainage Area or adjacent areas.”<sup>9</sup> These penalties are to be determined whenever Se loads in GBP drainage flows exceed WDR thresholds, as they did in early 2005. Despite the well-known drought or flood character of California's climate—especially in January 1997, just 8 years prior, when the San Joaquin Valley was raked by massive flooding—the Oversight Committee used the loophole of “unforeseeable and uncontrollable event” to excuse the Grassland Area Farmers from paying the penalties that were otherwise called for.<sup>10</sup> Like the Regional Board's WDRs for the GBP, clearly the “incentive fees” are also weak, and fail to motivate the Grassland Area Farmers to reduce selenium loads well below established thresholds. This is a holding pattern at best, not environmental progress.

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<sup>9</sup> San Luis & Delta Mendota Water Authority and the United States, Department of the Interior, Bureau of Reclamation, September 28, 2001, *Agreement for the Use of the San Luis Drain*, Agreement No. 01-WC-20-2075, Attachment A to Grasslands Bypass Project Technical and Policy Review Team, *Determination of Incentive Fees for Winter 2005 Floods*, March 2, 2006, accessed July 4, 2008, at <http://www.usbr.gov/mp/grassland/documents/index.html>.

<sup>10</sup> Grasslands Bypass Project Technical and Policy Review Team, *Determination of Incentive Fees for Winter 2005 Floods*, March 2, 2006, p. 16; accessed July 4, 2008, at <http://www.usbr.gov/mp/grassland/documents/index.html>.

**Attachment 5**  
**Staffing Shortages at the Central Valley Regional Water Quality Control Board**

The Executive Officer of the Central Valley Board, Ms. Pamela Creedon, acknowledged in a August 2007 presentation to the State Board title *State of the Central Valley Region* that the Board has only: a) 12% of the staff minimally necessary to regulate stormwater discharges (NPDES), b) 37% of those necessary to control municipal wastewater discharges (NPDES), c) 26% of those necessary to issue WDRs and d) 16% of those required to regulate dairies, e) 22% of the staff crucial to enforcing conditions of the controversial agricultural waivers, and f) only 11 of the 38 people necessary for the basin planning unit to update the Basin Plans that are fundamental to all Board actions. The Board's surface water ambient monitoring program has only 2 person-years (PYs), its enforcement unit is assigned only 3.5 PYs, the water quality certification unit has only 2.6 PYs to process more than 400 certifications annually. Further, the underground storage tanks unit has only 17 of 41 staff needed for several thousand cases, the timber harvest unit has only 9.2 PYs to regulate and monitor discharges from thousands of timber projects covering 45% of the state's harvested timber and the Title 27 unit has only 40% of those needed to regulate leaking landfills and surface impoundments. And finally, the Board has only 16 PYs to develop, implement and monitor TMDLs covering over 300 water body/pollutant combinations identified as "impaired" throughout the Central Valley.