CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. 98-171

WASTE DISCHARGE REQUIREMENTS FOR SAN LUIS & DELTA-MENDOTA WATER AUTHORITY AND UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF RECLAMATION GRASSLAND BYPASS CHANNEL PROJECT FRESNO AND MERCED COUNTIES

The California Regional Water Quality Control Board, Central Valley Region, (hereafter Board) finds that:

1. The San Luis and Delta-Mendota Water Authority [Authority] submitted a Report of Waste Discharge dated 25 August 1997 for the Grassland Bypass Channel Project [Project]. This project transports subsurface agricultural drainage, tailwater and stormwater runoff via the Grassland Bypass Channel and a portion of the San Luis Drain [Drain] and discharges it to Mud Slough (north). The Drain is owned by the United States Department of the Interior, Bureau of Reclamation [Bureau], and is operated by the Authority. Hereafter, the Authority and Bureau will be jointly referred to as the Discharger.

2. Within the Authority, a Drainage Activity Agreement has been set up for the purpose of implementing the Project. This agreement includes six irrigation and drainage districts and one unincorporated entity within the Grassland Watershed, a tributary basin to the San Joaquin River. The districts are: Charleston Drainage District, Pacheco Water District, Panoche Drainage District, Broadview Water District, Firebaugh Canal Water District, Widren Water District and the Camp 13 Drainage Area. The other areas that are eligible for participation in the Project are described in Attachment 1. This group is known as the Grassland Area Farmers. The Project service area is shown as the "Drainage Area" on the map included as Attachment 2.

3. The Project, which went into operation on 23 September 1996, serves approximately 97,400 acres of farmland and is designed to route subsurface agricultural drainage containing high levels of selenium and other constituents around wetlands in the Grassland Watershed. This drainage had previously flowed through a variety of wetland channels to Salt Slough and Mud Slough (north), both of which are tributary to the San Joaquin River.

4. The Grassland Bypass Channel is a four-mile long earthen ditch that links the combined discharges from the Grassland Area Farmers to the Drain.

5. The Drain is an 85-mile long, trapezoidal concrete canal that starts near Five Points in Fresno County and generally runs northwest to its terminus at the northern end of Kesterson Reservoir near Gustine in Merced County in SE 1/4, SE 1/4, SE 1/4 Section 6 of T8S, R10E, MDB&M (See map, Attachment 3). Built to transport agricultural drainage water, it had not been used since Kesterson Reservoir was closed in 1986 and converted to upland habitat. Only the lower 28 miles of the Drain, starting at the point where it intersects the Grassland Bypass Channel approximately one half mile west of Russell Avenue, are being used as part of The Project. The Drain has been

blocked above this point and the Authority is operating the system to keep other drainage from entering the portion of the Drain being used by the Project.

6. The Project primarily transports and discharges subsurface agricultural drainage flows. Approximately 38,700 acres of the service area have subsurface drains that collect shallow groundwater that is generally characterized as being high in salts, boron, selenium and other constituents. Tailwater also enters the drainage system.

7. The primary source of irrigation water for the Project service area is the Federal Central Valley Project, which imports water from the Sacramento-San Joaquin Delta through the Delta-Mendota and San Luis Canals. This supply is augmented by wells.

8. The Project also serves as an outlet for stormwater runoff from both inside and outside of the service area. During the winters of 1997 and 1998, flood flows from Panoche Creek, other west side creeks and local rainfall entered the service area drainage system and contributed to the discharge. When flows exceeded the capacity of the Project, commingled storm and subsurface drainage water was released from the service area to Camp 13 Slough and/or Agatha Canal. Flood flows from Panoche Creek contain sediment with high selenium levels and the Dischargers are preparing an analysis of data from the 1998 storm season in an effort to determine the sources of the selenium discharged.

9. The *Agreement for Use of the San Luis Drain* (Use Agreement) between the Bureau and Authority, contains a number of terms and conditions that address Project longevity and water quality. First, this is a short term or interim project that will operate for a maximum of five years. In fact, the agreement will terminate after two years (September 1998) if certain conditions, including the adoption of waste discharge requirements, are not met. Monthly limits were placed on the loads of selenium that could be discharged and an extensive, multi-agency monitoring program has been established. Details of the monitoring program are provided in the September 1996 document titled *Compliance Monitoring Program for Use and Operation of the Grassland Bypass Project,* which was prepared by the U.S. Bureau of Reclamation, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, U.S. Geological Survey, Central Valley Regional Water Quality Control Board, California Department of Fish and Game, and the San Luis and Delta-Mendota Water Authority. The ongoing monitoring will assess the impacts of the Project and develop the information needed for the environmental impact report for any long-term use of the Drain to convey drainage from the Grassland Watershed.

10. The Bureau has established an Oversight Committee consisting of the Regional Directors of the Bureau, U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency, the Director of the California Department of Fish and Game and the Board's Executive Officer. The role of this Committee is to review the progress of the Project and make recommendations regarding all aspects of the project. The Bureau has also established teams of representatives from agencies involved with the Project to discuss monitoring efforts, as well as technical and policy issues, on a regular basis.

11. The Authority, Bureau, U.S. Environmental Protection Agency and U.S. Fish and Wildlife Service sent a letter to the Board's chairman in November 1995 containing consensus recommendations regarding the control of selenium discharges from agricultural subsurface drainage systems in the Grassland Watershed. (This letter is commonly referred to as the Consensus Letter.) The letter recommends that the Board adopt a Basin Plan amendment which develops a long-term strategy by which to achieve compliance with the selenium water quality objectives for the San Joaquin River and its tributaries and that the Board issue waste discharge requirements to implement the strategy. The Consensus Letter also contains a number of recommendations regarding what should be in the WDRs, including specific numerical monthly and annual effluent limitations which would provide for measurable reductions in selenium loads. The monthly load limits in the Consensus Letter have been incorporated as effluent limits in this Order. The goal of the monthly load limits is to obtain a 15% reduction in the amount of selenium discharged by the fifth year of operation as compared to the mean of the nine years (water years 1986-1994) prior to the Consensus Letter.

12. The Consensus Letter recommends a fee system to provide incentives to meet the monthly and annual effluent limits for selenium contained in the letter and notes that the Bureau will establish such a system as part of the Project. A table of proposed financial liability associated with exceedance of the limits is provided. Under the terms of the Use Agreement, the Bureau has established the Drainage Incentive Fee Account and, after consultation with the Oversight Committee, charged the Authority for exceedances over the limits during Water Year 1997. The Use Agreement allows for waiver of the fees when the excess discharges were the result of circumstances that were "unforeseeable and uncontrollable." The fees collected will be used to fund local source control and drainage management activities not otherwise funded, with the Oversight Committee providing recommendations as to which projects receive the funds. The Discharger and others have recommended that this fee system be used by the Board as the mechanism for enforcing the selenium load limits in this Order. This approach is not allowed by the Water Code, but the Board may consider the existence of the fee system when evaluating the appropriate enforcement action related to any violations.

13. The Bureau is the owner of the real property from which the discharge will occur (e.g. the Drain). The Bureau is ultimately responsible for ensuring compliance with these waste discharge requirements. The Authority is responsible for compliance with these requirements, including day-to-day operations and monitoring. Enforcement actions will be taken by the Board against the Bureau only in the event that enforcement actions against the Authority are ineffective or would be futile, or that enforcement is necessary to protect public health or the environment. In addition, since the Bureau is a public agency, enforcement actions will be taken against it only after it is given the opportunity to use its governmental powers promptly to remedy the violations.

14. The design of the outlet structures limits the rate of discharge from the Drain to Mud Slough (north) to 150 cubic feet per second (cfs). During Water Year 1997, the rate of discharge has ranged from 11 to 92 cfs. Just below the discharge point, Mud Slough (north) had flows ranging from 22 to 709 cfs during the same period. The discharge made up 7 to 93 percent of the receiving water downstream. The total volume discharged from the Drain in Water Year 1997 was 37,541 acre feet.

15. The Board has conducted a surface water monitoring program in the Grassland Watershed and San Joaquin River since 1985, to assess the impacts of subsurface agricultural drainage. Since the start of the Project, samples have been collected in the Drain near the discharge point and both upstream and downstream of the discharge, in Mud Slough (north). Results of the monitoring for the period of 23 September 1996 through 23 April 1998 are:

Constituent	Mud Slough (n) Upstream	San Luis Drain Discharge*	Mud Slough (n) Downstream
Electrical Conductivity (µmhos/cm)			
Count	80	571	80
Min	744	2430	1100
Mean	1400	4570	2620
Median	1260	4580	2380
Max	3170	9790	5530
Boron (mg/L)			
Count	70	515	71
Min	0.5	3.8	1.1
Mean	1.2	7.3	3.5
Median	0.97	7.4	2.9
Max	2.9	17	8.7
Selenium (µg/L)			
Count	78	557	79
Min	<0.4	15.2	3.1
Mean	0.8	64.1	24.1
Median	0.7	60.7	15.4
Max	1.7	126	79.6
Molybdenum (µg/L)			
Count	14	16	16
Min	3	22	3
Mean	6	31	15
Median	7	28	17
Max	11	48	24

San Luis Drain data taken from composite daily samples collected by automated sampler.

16. The San Joaquin River at Crows Landing is the compliance monitoring site for the selenium control program in the Grassland Watershed. Results of the monitoring at this site during the period of 23 September 1996 to 8 March 1998 has found:

Constituent	Count	Min	Mean	Median	Max
EC (µmhos/cm)	490	121	942	1000	1790
Boron (mg/L)	486	0.05	0.69	0.71	1.6
Selenium (µg/L)	490	<0.4	2.8	2.2	10
Molybdenum (µg/L)	16	<1	2	6	8

During water year 1997, releases from the Drain contributed 90% of the selenium, 52% of the boron, 31% of the salt and 13% of the volume of water discharged to the San Joaquin River from the Grassland Watershed.

17. The Drain contains sediment that was deposited before the start of the Project. This sediment contains trace elements at concentrations that are higher than those found in average California soils and, if flushed from the Drain, would pose a threat to receiving waters. The Project is being managed to minimize the discharge of sediments and the flow limits in this Order will ensure that the velocity of water in the Drain does not result in scouring of bottom sediments. Any selenium that originates in the sediment and is moved into the water column (either attached to sediment or as a result of movement of this constituent from the sediment to the water in a soluble form) will be detected by the monitoring conducted near the point of discharge. The effluent limits apply to selenium from the sediment as well as selenium from the Project's drainage area.

18. Maintenance activities such as pesticide applications and dredging may have a significant impact on the quality of waters discharged from the Drain. The extent of these impacts has not been determined and additional monitoring or special studies are required to develop this information.

19. The Board adopted a Water Quality Control Plan, Third Edition, for the Sacramento River and San Joaquin River Basins and amendments thereto (hereafter Basin Plan), which designates beneficial uses, establishes water quality objectives and contains implementation plans and policies for waters of the Basin. These requirements implement the Basin Plan.

20. The beneficial uses of Mud Slough (north), as identified in the Basin Plan, are: limited irrigation supply, stock watering, water contact recreation and noncontact water recreation, sports fishing, shellfish harvesting, warm water aquatic habitat, warm water spawning and wildlife habitat.

21. The Basin Plan contains the following timetable for meeting performance goals and water quality objectives for selenium in Mud Slough (north) and the San Joaquin River and indicates that prohibitions of discharge and waste discharge requirements will be used to control agricultural subsurface drainage discharges containing selenium (Table on next page):

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	**2 µg/L monthly mean**			
San Joaquin River below the Merced River. Above Normal an Wet Water Year types [1]		*5 µg/L monthly mean*	***5 µg/L* 4-day average**	
San Joaquin River below the Merced River; Critical, Dry and Below Normal Water Year types		*8 µg/L monthly mean*	*5 µg/L monthly mean*	***5µg/L* 4-day average**
Mud Slough (north) and the San Joaquin River from Sack Dam to the Merced River				***5 µg/L* 4-day average**

[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.

22. The Basin Plan contains the following Prohibition of Discharge: "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 lbs/year for all water year types beginning 10 January 1997." The Drain carries most, but not all, of the subsurface agricultural drainage discharged from the Grassland Watershed and during water year 1997 (1 October 1996-30 September 1997), 6,960 pounds of selenium were discharged from the Drain to Mud Slough.

23. The Regional Board has identified the San Joaquin River as a water quality limited segment with respect to selenium and Section 303(d) of the Federal Clean Water Act requires the development of a Total Maximum Daily Load (TMDL) where existing effluent limitations are not stringent enough to meet water quality standards. The March 1996 Staff Report titled *Amendments to the Water Quality Control Plan for the Sacramento and San Joaquin River Basins for the Control of Agricultural Subsurface Drainage Discharges* contains a Total Maximum Monthly Load (TMML) designed to meet the Clean Water Act requirements. The TMML is the total load that the San Joaquin River can assimilate without exceeding the applicable water quality objective at a specified frequency. The U.S. EPA allows violations of standards at a frequency no greater than once every three years. The TMML is apportioned among background sources of selenium (wetlands, the Merced River, and the San Joaquin River above Salt Slough), a margin of safety (established as 10% of the TMML) and a waste load allocation (discharges from the Project service area). The effluent limits in the following table are based on the calculated waste load allocation needed to meet the performance goals and water quality objectives in the San Joaquin River at Crows Landing. This TMML will serve as part of the technical basis for setting limits on discharges of selenium to the river after the Project unless an alternative approach is developed to achieve compliance with the performance goals and water quality objectives.

As noted in the Consensus Letter, at this time there is no agreement on which load limits are appropriate for the period following September 2001.

Monthly Waste Load Allocations (pounds of selenium) for the Project Service Area Based on Applicable Performance Goals and Selenium Objectives for the San Joaquin River at Crows Landing

Month	Effluent Limits which apply no later than 1 October 2002		Effluent limits which apply no later than 1 October 2005		Effluent Limits which apply no later than 1 October 2010
	Dry Years[1]	Wet Years[1]	Dry Years	Wet Years	Dry Years
October	114	328	69	260	41
November	114	328	69	260	41
December	303	461	186	211	131
January	302	461	186	211	131
February	284	432	169	297	99
March	284	432	169	297	98
April	293	450	178	315	107
May	296	457	181	322	111
June	126	262	76	212	64
July	127	264	77	214	65
August	132	274	83	225	70
September	116	332	71	264	43
Total	2,492	4,481	1,515	3,087	1,001

1 As used in the above table, the term Dry Years includes years classified as Critically Dry, Dry and Below Normal and the term Wet Years includes those classified as Above Normal and Wet. 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.

24. The Basin Plan prohibits the discharge of agricultural subsurface drainage water to Salt Slough and specified wetland supply channels unless water quality objectives for selenium are being met. The discharge of commingled storm water and subsurface drainage to wetland channels during flood events threatens to violate this prohibition. During the flood events of 1998, the Authority shut down discharges from most of the subsurface drainage systems, but a formal evaluation of alternative control measures has not been conducted. Additional evaluation is needed to determine the best approach to addressing the water quality impacts of the flood events in this watershed.

25. The Basin Plan also contains numerical objectives for boron and molybdenum that apply to Mud Slough (north) as listed below (next page):

Constituent	Monthly Mean	Maximum
boron (mg/L)	2.0 (15 March-15 September)	5.8
molybdenum (mg/L)	0.019	0.050

26. Subsurface agricultural drainage from the area served by the Drain is high in boron and molybdenum and discharges from the Drain are resulting in violations of these objectives. This drainage has historically flowed to Mud Slough (north) via other channels and the steps taken to meet the load limits in this Order for selenium discharges are expected to result in reductions in boron and molybdenum discharges. These reductions, however, will probably not result in compliance with the objectives.

27. The Basin Plan objective for pH requires that changes in normal ambient pH levels not exceed 0.5 in Mud Slough, which is designated as warm freshwater habitat. In determining compliance with the water quality objective for pH, appropriate averaging periods may be applied provided that beneficial uses will be fully protected. The pH of Mud Slough (north) above and below the discharge from the Drain has varied by more than 0.5 units and additional assessment must be conducted to determine if the discharge is causing violations of the pH objective.

28. The Basin Plan contains objectives for toxicity and other water quality parameters that apply to this discharge.

29. The numerical water quality objectives for salinity in the San Joaquin River at Vernalis are violated frequently. The discharge from the Project is high in salt and one of the Use Agreement conditions is that corrective action be taken if the discharge of salt increases during any month from March through October as a result of the Project.

30. The Project is part of a long term effort to improve the management of agricultural subsurface drainage discharges in the Grassland Watershed. The primary focus of the project has been on the control of the selenium, but the discharge is also causing or contributing to the violations of water quality objectives for other constituents in Mud Slough (north) and the San Joaquin River. Since the Project involves consolidation and rerouting of drainage rather than a new discharge, this Order will address this situation through the development and implementation of short and long-term drainage management plans.

31. The Basin Plan's selenium control program states that all those discharging or contributing to the generation of agricultural subsurface drainage will be required to submit for approval a short-term drainage management plan (STDMP) designed to meet interim milestones and a long-term drainage management plan (LTDMP) designed to meet final water quality objectives. As used in this Order, a STDMP addresses activities that will be taken by the Discharger to comply with this Order through September 30, 2001 and a LTDMP addresses activities related to the management of the drain water after that date. The Authority included a short-term plan with the Report of Waste Discharge and indicated that a long-term drainage management plan would be submitted in September 1998. Both of these plans are designed to meet the needs of the selenium control program. This Order requires that these plans be augmented to address any violations of the Basin

Plan and that the plans be updated annually. The information in the plans will serve as the basis for subsequent Board Orders that set specific deadlines (compliance timetables) for meeting objectives in Mud Slough (north) and the San Joaquin River.

32. A Finding of No Significant Impact (FONSI) was approved by the United States Bureau of Reclamation (USBR) on October 18, 1991 for the interim use of the Drain to convey agricultural drainage water. The FONSI was updated as a result of minor modifications to the project and approved by the USBR on November 3, 1995. An Environmental Assessment and Initial Study pursuant to the California Environmental Quality Act (CEQA) was prepared in November 1990. A Negative Declaration, including mitigation measures was adopted by the Panoche Drainage District (lead agency for the project) on December 26, 1990. An addendum to the Negative Declaration was adopted by the Panoche Water District on July 13, 1995, for the modified project. The Panoche Water District Board of Directors found that the proposed project may pose a significant impact on the environment. However, there would not be a significant impact because mitigation measures would be included.

The environmental analysis for the project finds that water quality and biota in the last six miles of Mud Slough (north) may be adversely impacted by the project. Without the project, agricultural subsurface drainage is intermittently discharged to Mud Slough (north), while with the project it will be continuously discharged to Mud Slough (north). However, the removal of agricultural subsurface drainage from the Project service area should significantly improve water and habitat quality in wetland water supply channels and offset the impacts to Mud Slough (north).

Water quality-related mitigation measures identified in the CEQA documents are listed below. Incorporation of these measures should substantially lessen the effects of the discharge as they relate to water quality. Discharge Prohibitions A2, Discharge Specifications C 3 and 4, and Provisions E 4, 9,10,11 and 12 incorporate these mitigation measures.

a. The proposed project is limited to a five year duration. A biological, water quality, and sediment monitoring program will be implemented during the life of the project to evaluate the impact of the project. If unacceptable problems or impacts are identified, appropriate actions will be developed.

b. Drainage from the Project service area will be removed from 6.6 miles of the San Joaquin River (between Salt Slough and Mud Slough (north) confluence) and 93 miles of wetland water supply channels as defined in Appendix 40 of the Basin Plan.

c. The amount of drainage water discharged to the San Joaquin River system will be reduced and/or dilution water provided to meet Basin Plan water quality objectives. A plan will be submitted by the drainage entities to the Regional Board which outlines drainage reduction efforts and the use of the Drain as a drain water conveyance facility as part of the overall program to effectively manage and monitor agricultural drainage discharges. These plans will be submitted on an annual basis

d. Drainage will be maintained north of Check 19, MP 105.72 within the San Luis Drain. Additionally, a spill structure will be maintained at Check 19 to permit the removal of accumulated groundwater and stormwater in the Drain, upstream of the drainage inflow.

e. A fish barrier is presently maintained by the Department of Fish and Game during certain periods of the year on the San Joaquin River just upstream of the Merced River. This barrier prevents the straying of salmon to Mud Slough (north) due to the attractive flows caused by the discharge. The ultimate responsibility for preventing the straying of salmon into Mud Slough (north) lies with the Discharger.

f. The discharge from the Drain to Mud Slough (north) will be operated so as to minimize hydraulic turbulence and erosion within the slough. If necessary, bank stabilization shall be undertaken and an energy dissipation structure operated and maintained.

g. A control structure will be maintained to prevent inflow of drainage from Mud Slough (north) to the Department of Fish and Game China Island Unit.

h. The Drain will be operated such that sediments in the drain are not mobilized. A flow rate not to exceed 1 foot per second has been determined to be the appropriate velocity to achieve this goal. Sediments in the drain will be monitored and will be removed before they exceed hazardous waste levels.

The Board has considered the above CEQA documents in preparing this Order. Since the Grassland Bypass Channel Project is a short term or interim project that will operate for a maximum of five years, any proposal to discharge after the five year period would be considered a different project and will need a new environmental assessment under the California Environmental Quality Act.

33. Prior to the Project, groundwater accumulated in the Drain due to inflow through a series of pressure relief valves at the bottom of the structure. On 22 March 1996, the Board issued Order No. 96-092 (NPDES NO. CA0093917), for the discharge of accumulated groundwater from the Drain to Mud Slough (north). This discharge was completed before the Discharger started releasing agricultural irrigation return flow and stormwater runoff.

34. The discharge of subsurface agricultural drainage, tailwater and stormwater from agricultural lands to surface water does not require an NPDES permit.

35. The Board has notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for this discharge and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

36. The Board, in a public hearing, heard and considered all comments pertaining to the discharge.

37. The Discharger shall implement this Waste Discharge Requirement on the effective date of this Order.

IT IS HEREBY ORDERED that Order No. 96-092 is rescinded, and that the San Luis & Delta-Mendota Water Authority and the U.S. Department of the Interior, Bureau of Reclamation, their agents, successors, and assigns and in order to meet the provisions of Division 7 of the California Water Code and regulations adopted thereunder shall comply with the following:

A. **Discharge Prohibitions:**

1. The discharge of waste classified as 'hazardous' as defined in Section 2521(a) of Title 23, CCR, Section 2510, et sec., is prohibited

2. The discharge of agricultural subsurface drainage water to Salt Slough and the wetland water supply channels identified in Appendix 40 of the Basin Plan is prohibited unless water quality objectives for selenium are being met.

3. 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 lbs/year.

B. **Effluent Limitations (Drain Terminus)**

1. The rate of discharge shall not exceed 150 cubic feet per second.

Discharge of selenium from the Project service area and Drain shall not exceed the monthly or annual loads in the following table:

SELENIUM LOAD LIMITS in pounds				
Month	Water Year 1998	Water Year 1999	Water Year 2000	ater Year 2001
October		348	348	348
November		348	348	348
December		389	389	389
January		506	479	453
February		823	779	736
March		1013	959	906
April		759	719	679
May		633	599	566
June		569	539	509
July		569	539	509
August	533	506	480	453
September	350	350	350	350
Total Annual Load	N/A	6327	5994	5661

3. In the event this Order is not revised or rescinded prior to 1 October 2001, the TMMLs listed in the column titled "Effluent Limits which apply no later than 1 October 2002" from the table in Finding 23 shall apply if the discharge continues. The remaining TMMLs in this table will also apply according to the time schedule in the table.

C. **Discharge Specifications:**

1. The discharge shall not cause a pollution or nuisance as defined by the California Water Code, Section 13050.

2. The Project will be operated to minimize the discharge of sediment.

3. The Project will be operated to minimize erosion in Mud Slough (north). An energy dissipating structure will be operated and maintained at the discharge point to Mud Slough (north) to dissipate the energy caused by the hydraulic drop. Erosion within the stream, including stream bottom and sides will be prevented and bank stabilization will be undertaken, if necessary.

4. The Project will be operated to prevent the mobilization of drain sediments. A maximum flow rate of 1 foot per second will be used to prevent scouring and mobilization of drain sediments.

D. **Receiving Water Limitations:**

1. Receiving water limitations are based upon water quality objectives contained in the Basin Plan. As such, they are a required part of this Order. The discharge from the Project shall not cause to the following in Mud Slough (north):

   a. Oils, greases, waxes, or other materials to form a visible film or coating on the water surface or objects in the water.

   b. Oils, greases, waxes, floating material (liquids, solids, foams, and scums), or suspended material to create a nuisance or adversely affect beneficial uses.

   c. Aesthetically undesirable discoloration.

   d. Fungi, slimes, or other objectionable growths.

   e. Deposition of material that causes nuisance or adversely affects beneficial uses.

   f. Taste or odor-producing substances to impart undesirable tastes or odors to fish flesh other edible products of aquatic origin, or to cause nuisance or adversely affect beneficial uses.

   g. Toxic pollutants to be present in the water column, sediments, or biota in concentrations that adversely affect beneficial uses; that produce detrimental physiological response in human, plant, animal, or aquatic life; or that bioaccumulate in aquatic resources at levels which are harmful to human health.

   h. Chemical constituents, including pesticides, to be present in concentrations that cause nuisance or adversely affect beneficial uses.

E. **Provisions:**

1. The Discharger shall comply with the Standard Provisions and Reporting Requirements for Waste Discharge Requirements, dated 1 March 1991, which are attached hereto and by reference are part of this Order. This attachment and its individual paragraphs are commonly referenced as "Standard Provision(s)."

2. The Discharger shall comply with the attached Monitoring and Reporting Program No. 98-171.

3. This Order is subject to periodic review by the Regional Board.

4. The Discharger shall develop, submit, and follow approved Short-Term and Long-Term Drainage Management Plans as described in Attachment 4. The short-term plan submitted with the Report of Waste Discharge shall be followed until an updated version is approved. The plans and proposed revisions are subject to approval of the Regional Board or the Executive Officer.

5. By 1 January 1999, the Discharger shall submit a technical report evaluating options for preventing violations of the prohibition of discharge that applies to the discharge of subsurface agricultural drainage to wetland channels. If this report identifies feasible alternatives that are not in place, it will provide a timetable for implementing these alternatives.

6. The Discharger shall notify the Regional Board at least one week prior to conducting routine maintenance on the Project facilities that may impact the quality of waters discharged by the Project. Where maintenance activities are conducted on an emergency basis, the Regional Board shall be notified of the activities as soon as possible. Additional monitoring may be required to assess the impacts of the maintenance activities.

7. In the event flood waters enter the Project service area, the Discharger has the option of monitoring the situation and preparing a technical report showing how much of the selenium discharged came from sources outside of the control of the Discharger. This report is due no later than 60 days following the end of a flood event and will be used to assess compliance with the selenium effluent limits.

8. The Discharger shall conduct the chronic toxicity testing specified in the Monitoring and Reporting Program. If the testing indicates that the discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above the water quality objective for toxicity, the Discharger shall submit a workplan to conduct a Toxicity Reduction Evaluation (TRE) and upon approval conduct the TRE, and this Order will be reopened and a toxicity limitation included and/or a limitation for the specific toxicant identified in the TRE included.

9. In the event that monitoring reveals unacceptable impacts, the discharger, in consultation with the Regional Board, will develop and implement corrective and/or mitigating measures. If the impacts can not be corrected or mitigated to the satisfaction of the Board, this Order will be reopened and appropriate provisions adopted.

10. Agricultural subsurface drainage discharged to the Drain by the Project will be maintained north of Check 19 (Milepost 105.72). The Dischargers will maintain a dam at Check 19 that will prevent the upstream flow of water. At the same time, the Discharger must provide for the discharge of stormwater and groundwater seepage that enters the Drain upstream of Check 19. If necessary, a spill structure will be maintained at Check 19 for the release of this water. A Report of Waste Discharge must be submitted at least 120 days prior to the discharge of water from the section of the Drain upstream of Check 19 to that portion of the Drain being used by the Project.

11. If DFG fails to operate a barrier which prevents the migration of salmon into Mud Slough (north), the Discharger, in consultation with the Board and DFG, will design and operate a fish ladder, collection facility and required facilities (freshwater and electrical supply). This system will be used to capture and spawn adult Chinook salmon that stray into Mud Slough (north) as a result of the attractive flows in the slough caused by the discharge.

12. Sediments in the portion of the Drain used to convey agricultural subsurface drainage shall not exceed hazardous waste levels for any constituent.

13. The velocity of water in the San Luis Drain shall not exceed one foot per second at any location where sediment could be entrained in the flowing water.

14. In the event the Discharger intends to discharge subsurface agricultural drainage water to Mud Slough (north) or any other surface water after 30 September 2001, the Discharger shall submit a complete Report of Waste Discharge to the Board no later than 1 January 2001. This report shall address the steps to be taken to meet the TMML limits in Finding 23 of this Order. The report may also present a technical argument for alternative load limits or an alternative approach to meet the performance goals and objectives for selenium.

15. In the event of any change in control or ownership of land or waste management facilities related to the Project and presently controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be forwarded to this office.

16. To assume operation under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the state of incorporation, if a corporation, the address and telephone number of the persons responsible for contact with the Board and a statement. The statement shall comply with the signatory paragraph of Standard Provision B.3 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code. Transfer shall be approved or disapproved in writing by the Executive Officer.

I, GARY M. CARLTON, Executive Officer, do hereby certify the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region on 24 July 1998.

GARY M. CARLTON, Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. 98-171

FOR
SAN LUIS & DELTA MENDOTA WATER AUTHORITY
AND
UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
GRASSLAND BYPASS CHANNEL PROJECT
FRESNO AND MERCED COUNTIES

Numerous agencies are involved in conducting monitoring and special studies related to the Grassland Bypass Channel Project. The routine monitoring program is described in *Compliance Monitoring Program for Use and Operations of the Grassland Bypass Project*, September 1996, by the U.S. Bureau of Reclamation and others. The Discharger shall be responsible for submitting reports on the monitoring described in this document and any changes thereto approved by the Project Oversight Committee and the Executive Officer. In addition, the following monitoring and reporting shall be conducted:

SAN LUIS DRAIN MONITORING

Samples representative of the discharge shall be collected from the San Luis Drain at the footbridge between Gun Club Road and the terminus (Site B). The time of collection of a grab sample shall be recorded. The following shall constitute the San Luis Drain discharge monitoring program:

Constituent	Unit	Type of Sample	Sampling Frequency
Molybdenum	µg/L	grab	Monthly

RECEIVING WATER MONITORING

Receiving water monitoring shall be conducted when there is a discharge from the San Luis Drain. Except for flow, all receiving water samples shall be grab samples. Receiving water samples shall be taken from the following sites:

Site	Description
C	Mud Slough (north) upstream of the San Luis Drain discharge.
D	Mud Slough (north) at the bridge downstream of the San Luis Drain discharge.

Constituent	Unit	Type of Sample	Station	Sampling Frequency
Molybdenum	µg/L	grab	C,D	Monthly

In conducting the receiving water sampling, a log shall be kept of the receiving water conditions throughout the reach bounded by Sites C and D. Attention shall be given to the presence or absence of:

a. Floating or suspended matter
b. Discoloration
c. Bottom deposits
d. Aquatic life

Notes on receiving water conditions shall be summarized in the monitoring report.

UNUSUAL EVENT MONITORING

During floods or other events that result in the discharge of water at sites other than the terminus of the San Luis Drain, the Discharger shall record the daily average flow of the discharge in cubic feet per second at all discharge sites and collect daily grab samples at these sites for selenium analysis. Daily samples shall also be collected from Salt Slough at Lander Avenue (Site F) and Mud Slough (north) below the San Luis Drain (Site D) during and for three days following these events. These samples shall be analyzed for selenium.

REPORTING

In reporting the monitoring data, the Discharger shall arrange the data in tabular form so that the date, the constituents, and the concentrations are readily discernible. The data shall be summarized in such a manner to illustrate clearly the compliance with waste discharge requirements.

Reports on the monthly monitoring shall be submitted to the Regional Board no later than 45 days following the end of the month. The results of Unusual Event Monitoring shall be submitted to the Regional Board no later than 45 days following the end of the month.

The results of any monitoring done more frequently than required at the locations specified in the Monitoring and Reporting Program shall be reported to the Board.

The Discharger shall submit a water year annual report to the Board by **31 December** of each year. The report shall contain both tabular and graphical summaries of the monitoring data obtained during the previous water year (October 1 through 30 September).

The Discharger shall implement the above monitoring program on the date of this Order.

Ordered by: 
GARY M. CARLTON, Executive Officer

24 July 1998
(Date)

AMENDED 7.24.98
rjs:lsb\c:\grass.mrp

Waste Discharge Requirements Order No. 98-171
Grassland Bypass Channel Project

ATTACHMENT 1

PROJECT DRAINAGE AREAS OUTSIDE OF THE DISTRICTS LISTED IN THE FINDINGS

In addition to the six districts listed in the findings, the project serves the following areas:

Area 1. All of those portions of Sections 26, 27, 34, 35 and 36 in T. 11 S., R. 11 E., M.D.B. & M., Sections 31, 32, 33 and 34 in T. 11 S., R. 12 E., M.D.B. & M., Section 1 in T. 12 S., R. 11 E., M.D.B. & M., and Sections 2, 3, 4, 5, 6, 9, 10, 11 and 12 in T. 12 S., R. 12 E., M.D.B. & M., bounded on the north by the south right-of way line of the Central California Irrigation District Main Canal, bounded on the east by the boundary of the Central California Irrigation District, bounded on the south by the north right-of-way line of the Central California Irrigation District Outside Canal, and bounded on the west by the Central California District Camp 13 Bypass Canal.

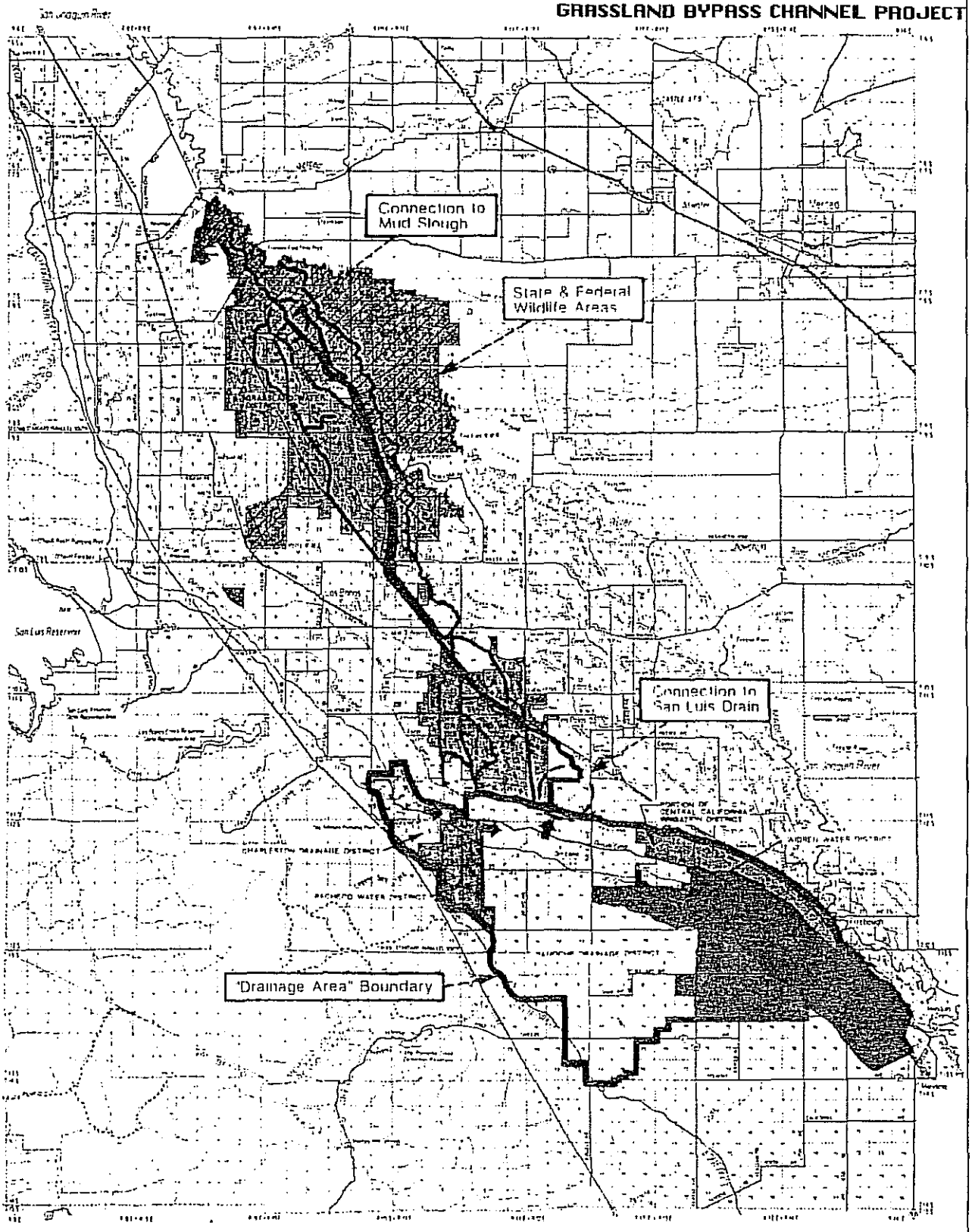
Area 2. All of those portions of Section 13, T. 12 S., R. 12 E., M.D.B. & M., and Sections 7, 17, 18, and 19, T. 12 S., R. 13 E., M.D.B. & M., bounded partially on the north and west by the Panoche Drainage District, bounded partially on the west, south and east by the Firebaugh Canal Water District and the Widren Water District, and bounded partially on the north by the southerly right-of-way line of the Central California Irrigation District Outside Canal.

Area 3. All of those portions of Sections 1 and 12, T. 12 S., R. 12 E., M.D.B & M., Sections 5, 6, 7, 8, 9, 10, 11, 14, 15, 16, 17 and 24, T. 12 S., R. 13 E., M.D.B. & M. and Sections 19, 29, 30, 32 and 33, T. 12 S., R. 14 E., M.D.B. & M. being lands within the Central California Irrigation District, bounded on the north and east by the south right-of-way line of the Central California Irrigation District Main Canal, bounded on the south and west by the north right-of-way line of the Central California Irrigation District Outside Canal, bounded on the west by the boundary line of the Central California Irrigation District and bounded on the east by the Southern Pacific Railroad right-of-way line.

The Use Agreement between the Bureau and the Authority also indicates that the Project service area includes "Lands adjacent to right-of-ways that may be acquired in the future necessary for drainage facilities to serve the Drainage Area."

ATTACHMENT 2

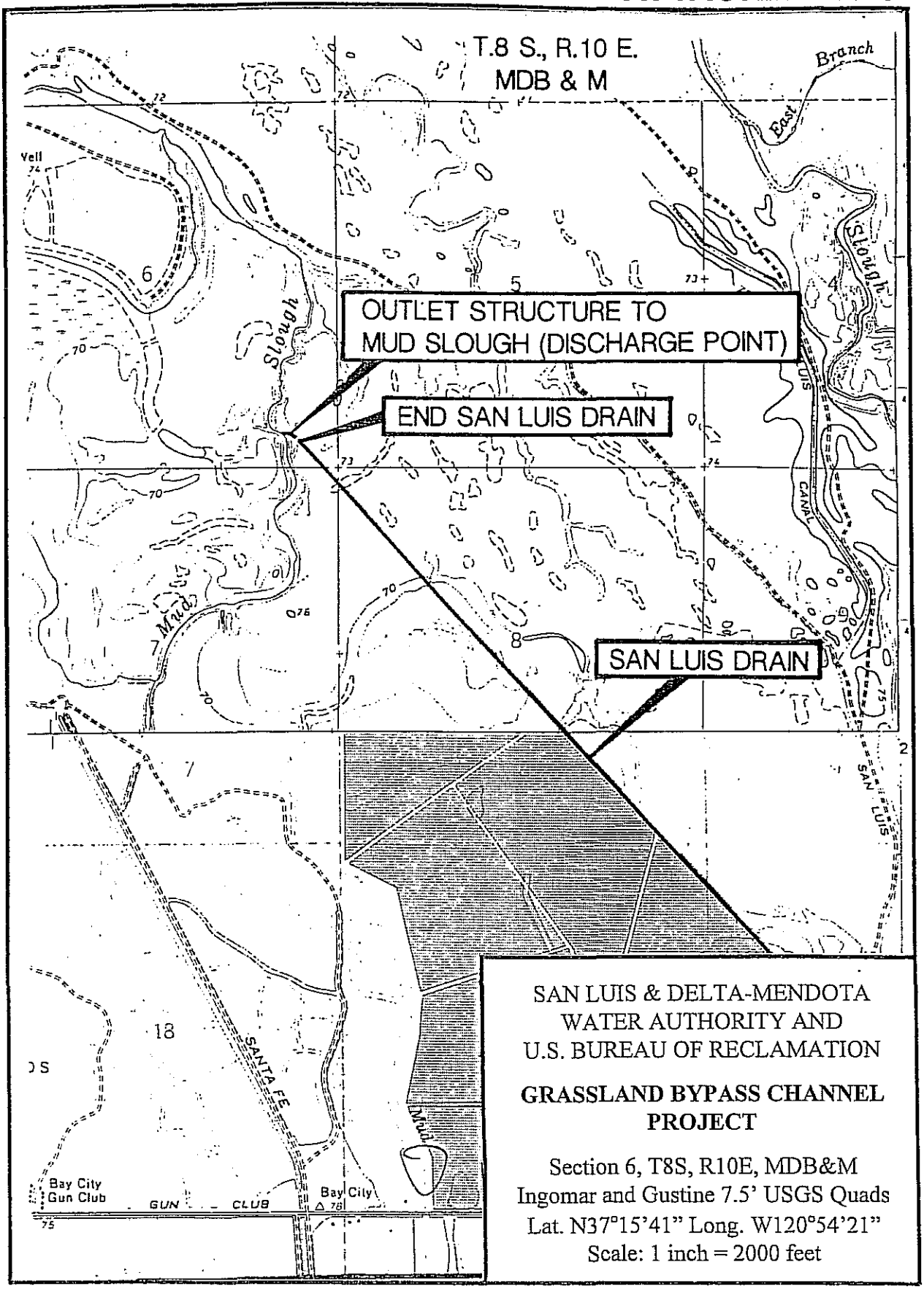
SAN LUIS & DELTA-MENDOTA WATER AUTHORITY AND U.S. BUREAU OF RECLAMATION GRASSLAND BYPASS CHANNEL PROJECT



Proposed Action

- Channels that will no longer have unusable drain water.
- Channels with drain water
- Conveyance of drain water in San Luis Drain.
- Location of project features.

ATTACHMENT 3



SAN LUIS & DELTA-MENDOTA
WATER AUTHORITY AND
U.S. BUREAU OF RECLAMATION

GRASSLAND BYPASS CHANNEL PROJECT

Section 6, T8S, R10E, MDB&M
Ingomar and Gustine 7.5' USGS Quads
Lat. N37°15'41" Long. W120°54'21"
Scale: 1 inch = 2000 feet

Waste Discharge Requirements Order No. 98-171
Grassland Bypass Channel Project

ATTACHMENT 4

SHORT AND LONG-TERM DRAINAGE MANAGEMENT PLANS

The Discharger shall prepare Short and Long-Term Drainage Management Plans. The short-term plan shall address activities to be undertaken through September 30, 2001 to comply with this Order. The long-term plan shall address activities related to management of subsurface drainage from the Project service area from 1 October 2001 to the time the discharges are in compliance with the Basin Plan.

The Board or the Executive Officer may modify the required contents of and due dates for these plans. Approved plans shall remain in use until the augmented or updated plans are approved by the Board or the Executive Officer.

Short-Term Drainage Management Plan (STDMP)

The Discharger submitted a STDMP with the Report of Waste Discharge. This report was prepared as required by the selenium control program and primarily addresses activities related to this constituent.

No later than 1 January 1999, the Discharger shall revise the STDMP to address boron, molybdenum and salt discharges. The revised plan shall:

1. Discuss the projected impacts of the management plan on the discharges of boron, molybdenum and salt from the Project (through September 2001).

2. Evaluate potential control and treatment methods and identify any additional technically and economically feasible control measures that could be implemented before October 2001 to reduce the discharge of boron, molybdenum or salt. For each control measure so identified, provide a time schedule for implementation.

Long-Term Drainage Management Plan (LTDMP)

A LTDMP for the selenium control program shall be submitted no later than 1 September 1998. This plan shall contain the following information:

1. The specific control or treatment methods that will be implemented to comply with the water quality control program for subsurface drainage discharges from the Grassland Watershed as contained in the Board's Basin Plan. The LTDMP shall present the on-farm and district level activities the Discharger will implement to achieve water quality objectives, incorporating, as appropriate, the recommendations of the San Joaquin Valley Drainage Program. Provide a time schedule for implementation.

2. To indicate the relative importance of the various control or treatment measures, describe and list them in the order of significance with respect to the extent to which each is expected to reduce selenium discharges.

3. Identify critical milestones the control program must address. These would include, but are not limited to: the end of the Grassland Bypass Channel Project, the deadlines in the Basin Plan compliance timetable, and the prohibition of discharge of subsurface drainage to Mud Slough.

4. For each milestone, identify the goal of the Grassland Area Farmers and the critical steps that must be taken to continue operations in compliance with the Basin Plan and other limitations. For each critical step, indicate the proposed start and completion dates.

5. Address the long term approach for dealing with storm waters from outside the Project service area. What efforts will be made to reduce the threat of flooding, monitor the impacts on the project, or minimize the "uncontrollable" aspects of these events.

6. In the event the program to gradually reduce selenium discharges is not on schedule to meet water quality objectives as specified in the Basin Plan, identify what options are available to achieve immediate, major reductions in discharges as may be required during dry years after performance goals and water quality objectives are in effect.

No later than 1 July 1999, the Discharger shall revise the LTDMP to specify control or treatment measures to reduce boron, molybdenum and salt discharge. The revised LTDMP shall:

1. Discuss the projected impacts of the management plan on the discharges of boron, molybdenum and salt.

2. Identify any additional technically and economically feasible control measures that could be implemented to reduce the discharge of boron, molybdenum or salt. For each control measure so identified, provide a time schedule for implementation.

3. Provide information on the costs of the control or treatment measures evaluated for use in the control program.

Updates

Both the STDMP and LTDMP shall be updated annually and submitted to the Board for review and approval no later than 1 January of each year, with the first annual update to be submitted no later than 1 January 2000.

INFORMATION SHEET

SAN LUIS & DELTA MENDOTA WATER AUTHORITY
AND UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
GRASSLAND BYPASS CHANNEL PROJECT
FRESNO AND MERCED COUNTIES

The Grassland Bypass Channel Project is operated by the San Luis and Delta Mendota Water Authority (Authority) and uses a portion of the San Luis Drain, which is owned by the U.S. Bureau of Reclamation (Bureau). Within the Authority, a Drainage Activity Agreement has set up a group called the Grassland Area Farmers for the purposes of implementing the project. This group includes seven irrigation and drainage districts and several adjacent areas. The participants are: Charleston Drainage District, Pacheco Water District, Panoche Drainage District, Broadview Water District, Firebaugh Canal Water District, Widrin Water District, and the Camp 13 Drainage Area (which is part of the Central California Irrigation District).

The project has a capacity of 150 cubic feet per second and discharges drainage from approximately 97,000 acres of agricultural land to Mud Slough (north) at a point six miles upstream of the San Joaquin River. Historically, this drainage reached the San Joaquin River via Mud Slough (north) or Salt Slough, but was routed through various channels in the Grassland Water District (GWD). These channels are also used to supply water to wetlands within the GWD and the dual use of the channels as both drainage and supply canals was limiting the ability to provide good quality water to the wetlands. The project removes the subsurface agricultural drainage from the 97,000 acre service area from channels that supply wetlands.

Drainage from the project service area has been routed through a new facility called the Grassland Bypass Channel, to the San Luis Drain. From there, it travels 28 miles to the Drain's terminus and discharges to Mud Slough (north) The San Luis Drain has been blocked above the Grassland Bypass Channel to prevent the introduction of other drainage flows.

Through most of the year, the discharge primarily consists of subsurface agricultural drainage that is high in salts, selenium, boron and other constituents. The system is also designed to handle irrigation tailwater and local stormwater runoff. During the winters of 1997 and 1998, flood waters from Panoche Creek and other west side streams entered the project service area, commingled with local drainage, and were discharged via the project and Grassland Water District channels.

The project, which went into operation in September 1996, is consistent with the Basin Plan program for the control of subsurface agricultural drainage from the Grassland Watershed. This program focuses on selenium and generally prohibits the discharge of subsurface drainage to wetland channels after 10 January 1997. It places a limit on the loads of selenium that can be discharged to the San Joaquin River and states that WDRs will be used to control discharges of agricultural

subsurface drainage from the Grassland Watershed. There is a compliance timetable that gives dischargers until 1 October 2010 to meet the selenium objective in Mud Slough (north). To back this up, there is also a prohibition of discharge that applies to agricultural subsurface drainage discharges effective 1 October 2010 unless selenium water quality objectives are being met.

The monthly selenium load limits for this project were recommended in a November 1995 letter to the Board's chairman from the Authority, Bureau, U.S. Environmental Protection Agency and U.S. Fish and Wildlife Service. This letter recommends that the Board take a number of actions regarding the control of selenium discharges to the San Joaquin River, including the issuance of waste discharge requirements containing specific load limits. The goal of the limits is to obtain a 15% reduction in the amount of selenium discharged during the first five years of operation. This Order is consistent with most of the recommendations in this letter.

While selenium is the primary concern, the drainage also contains boron, molybdenum, high levels of salts and other constituents that can impact receiving waters. The Basin Plan specifies the beneficial uses for Mud Slough (north) and contains numerical objectives for boron and molybdenum as well as narrative water quality objectives that apply to this water body. This Order requires preparation of management plans addressing the steps that will be taken to achieve compliance with these objectives.

The Grassland Bypass Channel Project is a short term or interim project that will operate for a maximum of five years. An extensive, multi-agency monitoring program has been established to evaluate the impacts of the project. Any proposal to discharge drainage after the five year period would be considered a different project and will need a new environmental assessment under the California Environmental Quality Act.

California Regional Water Quality Control Board
Central Valley Region

Peter M. Rooney
Secretary for Environmental Protection

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Ed J. Schnabel
Chair

13 August 1998

CERTIFIED MAIL
NO. P #945 302 276

Mr. Roger Patterson, Regional Director
U.S. Bureau of Reclamation
2800 Cottage Way
Sacramento, CA 95825

CERTIFIED MAIL
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Mr. Daniel G. Nelson, Executive Director
San Luis & Delta-Mendota Water Authority
P.O. Box 2157
Los Banos, CA 93635

TRANSMITTAL OF AMENDED WASTE DISCHARGE REQUIREMENTS NO. 98-171 FOR SAN LUIS & DELTA-MENDOTA WATER AUTHORITY AND UNITED STATES DEPARTMENT OF THE INTERIOR, BUREAU OF RECLAMATION, GRASSLAND BYPASS CHANNEL PROJECT, FRESNO AND MERCED COUNTIES

Enclosed is an official copy of the amended Waste Discharge Requirements Order No. 98-171 as adopted by the California Regional Water Quality Control Board, Central Valley Region, at its 24 July 1998 meeting. The Order was adopted as originally proposed with minor revisions.

If you have any questions, you may call me at (916) 255-3101.

Rudy J Schnagl

RUDY J. SCHNAGL, CHIEF
Agricultural Regulatory and Planning Unit

Enclosures: *Adopted Order*
Standard Provisions (Discharger only)

cc: Interested Parties