

# GRASSLAND BYPASS PROJECT

## MONTHLY DATA REPORT

September 2004

January 5, 2005

### Preliminary Results

A cooperative effort of:

U.S. Bureau of Reclamation  
Central Valley Regional Water Quality Control Board  
U.S. Fish and Wildlife Service  
California Department of Fish and Game  
San Luis & Delta-Mendota Water Authority  
U.S. Environmental Protection Agency  
U.S. Geological Survey

compiled by San Francisco Estuary Institute





**GRASSLAND BYPASS PROJECT**  
**MONTHLY DATA REPORT**

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**Table 1. Continuous water monitoring at Station A (inflow to San Luis Drain), September 2004.**

See Table 27 for explanation of footnotes and agency abbreviations.

<b>PARAMETER</b>	<b>Flow</b>	<b>Specific Conductance</b>
<b>DATA SOURCE</b>	<b>SLDMWA</b>	<b>SLDMWA</b>
<b>UNITS</b>	<b>cfs</b>	<b>µS/cm</b>
Sep-01-2004	38	4,090
Sep-02-2004	34	3,950
Sep-03-2004	33	4,200
Sep-04-2004	32	3,810
Sep-05-2004	25	4,490
Sep-06-2004	27	4,640
Sep-07-2004	32	3,870
Sep-08-2004	27	4,320
Sep-09-2004	29	4,180
Sep-10-2004	23	4,540
Sep-11-2004	21	4,810
Sep-12-2004	22	4,700
Sep-13-2004	23	4,190
Sep-14-2004	21	4,080
Sep-15-2004	19	3,970
Sep-16-2004	21	3,900
Sep-17-2004	18	3,940
Sep-18-2004	17	4,250
Sep-19-2004	18	3,730
Sep-20-2004	19	3,990
Sep-21-2004	14	4,100
Sep-22-2004	12	4,540
Sep-23-2004	11	4,580
Sep-24-2004	12	4,660
Sep-25-2004	13	4,620
Sep-26-2004	16	3,950
Sep-27-2004	16	3,750
Sep-28-2004	16	3,900
Sep-29-2004	15	3,930
Sep-30-2004	13	4,280
.	.	.
Mean	21	4,200

Table 2a. Continuous water monitoring at Station B (discharge from San Luis Drain), September 2004.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Boron	Specific Conductance	Selenium (total)	Selenium (total) Load
DATA SOURCE	USGS	USGS	CVRWQCB	CVRWQCB	CVRWQCB	Computed
UNITS	cfs	°C	mg/L	µS/cm	µg/L	lbs
Sep-01-2004	34	25.6	P	4,660	36.5	6.7
Sep-02-2004	42	25.7	P	4,760	43.5	9.9
Sep-03-2004	45	22.4	P	4,780	45.6	11.1
Sep-04-2004	37	21.2	P	4,710	44.8	8.9
Sep-05-2004	35	22.5	P	4,150	40.7	7.7
Sep-06-2004	28	23.8	P	3,830	34.5	5.2
Sep-07-2004	29	24.5	P	4,080	35.6	5.6
Sep-08-2004	33	25.2	P	4,050	36.8	6.5
Sep-09-2004	30	25.5	P	3,720	31.8	5.1
Sep-10-2004	31	25.4	8.4	4,730	48.5	8.1
Sep-11-2004	27	25.0	7.5	4,290	40.9	6.0
Sep-12-2004	24	24.9	5.9	3,970	35.4	4.6
Sep-13-2004	24	24.2	7.4	4,300	40.0	5.2
Sep-14-2004	28	23.1	6.8	4,140	34.2	5.2
Sep-15-2004	26	22.2	6.6	4,270	39.5	5.5
Sep-16-2004	23 e	22.6	7.4	4,700	42.5	5.3
Sep-17-2004	24	23.5	8.8	4,750	43.4	5.6
Sep-18-2004	22	22.7	8.2	4,290	36.9	4.4
Sep-19-2004	22	20.6	7.5	4,030	32.0	3.8
Sep-20-2004	24	19.5	6.9	3,860	29.6	3.8
Sep-21-2004	23	19.2	6.6	3,730	27.6	3.4
Sep-22-2004	20	19.3	6.0	3,670	28.8	3.1
Sep-23-2004	18	20.4	6.0	3,580	27.6	2.7
Sep-24-2004	17	21.0	P	3,950	30.5	2.8
Sep-25-2004	18	21.6	P	3,810	29.2	2.8
Sep-26-2004	18	21.9	P	3,500	25.6	2.5
Sep-27-2004	20	22.2	P	3,590	26.0	2.8
Sep-28-2004	20	21.8	P	3,510	24.4	2.6
Sep-29-2004	21	21.2	P	3,660	24.4	2.8
Sep-30-2004	21	20.4	P	3,780	27.9	3.2
Mean	26	22.6	7.1	4,100	34.8	5.1
Total Acre-feet	1,560					
Total (lbs)						153

Load Limitation for September 2004 (lbs)	297
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Table 2b. Continuous water monitoring at San Luis Drain Outlet, September 2004.

Note: This is unofficial data reported for comparison with Station B.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	San Luis Drain Outlet Flow	Selenium (total) *	Selenium (total) Load
DATA SOURCE	USGS	CVRWQCB	Computed
UNITS	cfs	µg/L	lbs
Sep-01-2004	33	36.5	6.4
Sep-02-2004	39	43.5	9.2
Sep-03-2004	34	45.6	8.5
Sep-04-2004	36	44.8	8.6
Sep-05-2004	35	40.7	7.7
Sep-06-2004	27	34.5	5.1
Sep-07-2004	28	35.6	5.4
Sep-08-2004	33	36.8	6.6
Sep-09-2004	30	31.8	5.1
Sep-10-2004	31	48.5	8.0
Sep-11-2004	26	40.9	5.8
Sep-12-2004	23	35.4	4.4
Sep-13-2004	23	40.0	5.1
Sep-14-2004	25	34.2	4.6
Sep-15-2004	25	39.5	5.2
Sep-16-2004	23	42.5	5.2
Sep-17-2004	23	43.4	5.5
Sep-18-2004	22	36.9	4.3
Sep-19-2004	22	32.0	3.7
Sep-20-2004	23	29.6	3.6
Sep-21-2004	23	27.6	3.4
Sep-22-2004	21	28.8	3.3
Sep-23-2004	19	27.6	2.9
Sep-24-2004	18	30.5	2.9
Sep-25-2004	19	29.2	2.9
Sep-26-2004	19	25.6	2.7
Sep-27-2004	21	26.0	3.0
Sep-28-2004	21	24.4	2.8
Sep-29-2004	22	24.4	2.8
Sep-30-2004	21	27.9	3.2
Mean	25	34.8	4.9
Total Acre-feet	1,520		
Total (lbs)			148

The US Geological Survey determines flow at Station B through continuous measurements of stage that is rated for a known cross-section. These flow data, listed in Table 2a, are verified with frequent current meter measurements.

Monitoring and Reporting Program No. 5-101-234 states:

"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)."

Accurate flow measurements are necessary to determine compliance with selenium load limits specified in Waste Discharge Requirement Order No. 5-101-234.

The accumulation of sediments, as documented in the 2001 Annual Report, have caused irregularities in flow measurements at Station B, resulting in "shifts" in the relationship between stage and discharge.

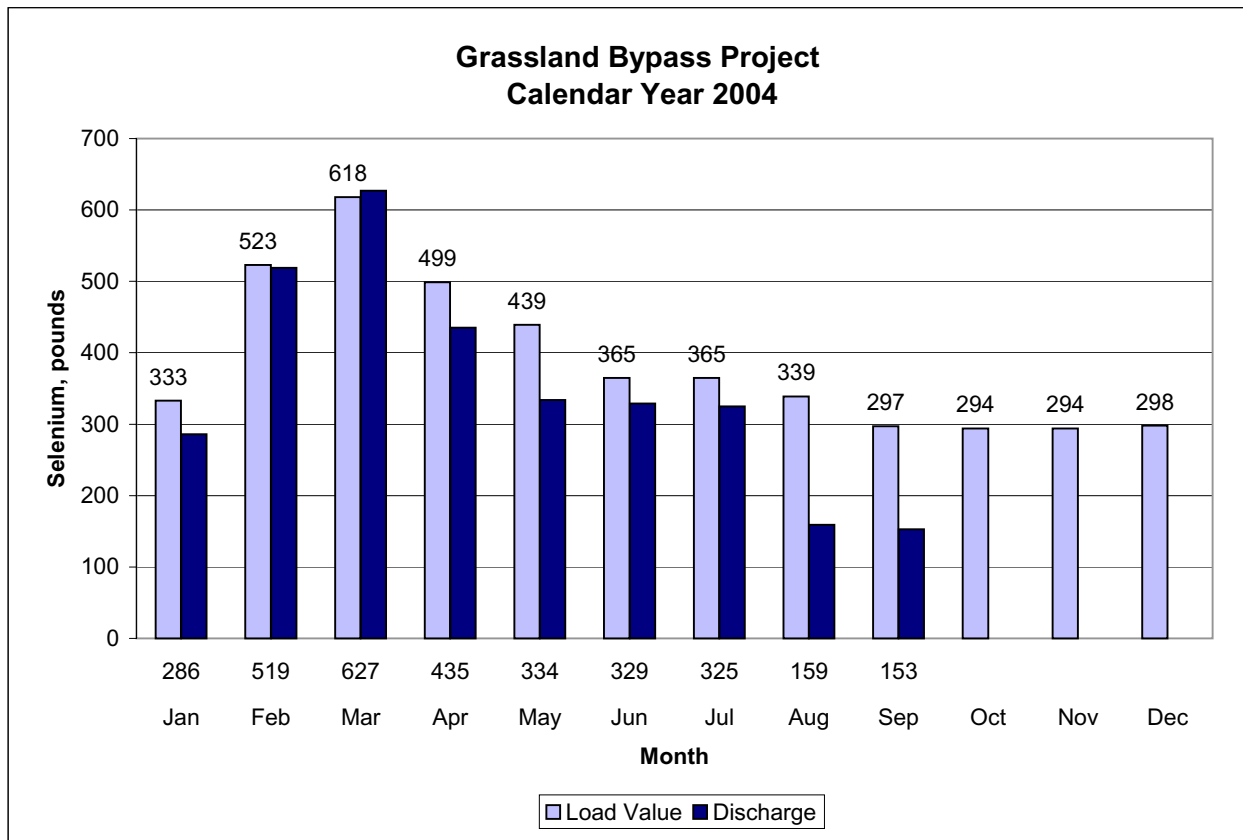
To improve the accuracy of flow measurements, Reclamation and the San Luis & Delta-Mendota Water Authority, with technical assistance from the USGS, are measuring flow at the San Luis Drain Outlet. The Outlet is located two miles from Station B. Discharge will be measured as stage over a sharp-crested weir, identical to Station A. This is a simpler and more accurate method that will not be altered by sediment accumulation.

This change is subject to approval by the California Regional Water Quality Board and modification of the Waste Discharge Requirement Order and Monitoring and Reporting Program. It is anticipated that flow will be measured solely at the Outlet works for determination of GBP flow discharge.

Unofficial flow data for the Outlet works are presented in Table 2b for comparison and are not used to determine compliance with the Waste Discharge Requirement Order.

\*Selenium (total) concentrations from Site B (San Luis Drain)

Figure 2c. Monthly selenium discharges from the terminus of the San Luis Drain into Mud Slough compared to load values.



**Table 3. Continuous water monitoring at Station D  
(Mud Slough North downstream of drainage discharges), September 2004.**

See Table 27 for explanation of footnotes and agency abbreviations.

<b>PARAMETER</b>	<b>Flow</b>	<b>Temperature</b>	<b>Specific Conductance</b>
<b>DATA SOURCE</b>	<b>usgs</b>	<b>usgs</b>	<b>usgs</b>
<b>UNITS</b>	<b>cfs</b>	<b>°C</b>	<b>µS/cm</b>
Sep-01-2004	43	25.7	3,500
Sep-02-2004	53	25.4	3,510
Sep-03-2004	54	21.8	3,550
Sep-04-2004	57	21.2	3,360
Sep-05-2004	62	22.8	2,950
Sep-06-2004	59	24.2	2,510
Sep-07-2004	54	24.9	2,680
Sep-08-2004	44	25.5	3,230
Sep-09-2004	39	25.6	2,910
Sep-10-2004	40	25.4	3,250
Sep-11-2004	38	25.0	3,280
Sep-12-2004	40	24.8	2,490
Sep-13-2004	46	23.9	2,270
Sep-14-2004	41	22.7	2,710
Sep-15-2004	42	22.0	2,640
Sep-16-2004	36	23.2	2,920
Sep-17-2004	37	24.0	3,020
Sep-18-2004	37	22.2	2,820
Sep-19-2004	47	19.5	2,200
Sep-20-2004	60	19.1	1,870
Sep-21-2004	52	19.1	2,070
Sep-22-2004	37	20.2	2,310
Sep-23-2004	36	21.0	2,210
Sep-24-2004	41	21.6	2,040
Sep-25-2004	45	22.0	2,060
Sep-26-2004	44	22.0	2,010
Sep-27-2004	48	21.8	2,030
Sep-28-2004	45	21.6	2,080
Sep-29-2004	40	21.1	2,320
Sep-30-2004	46	20.1	2,170
.	.	.	.
Mean	45	22.6	2,630



Table 4. Continuous water monitoring at Station F (Salt Slough at Highway 165), September 2004.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Specific Conductance
DATA SOURCE	usgs	usgs	usgs
UNITS	cfs	°C	µS/cm
Sep-01-2004	68	25.6	1,480
Sep-02-2004	74	25.1	1,380
Sep-03-2004	70	21.4	1,320
Sep-04-2004	83	21.3	1,260
Sep-05-2004	105	23.1	1,110
Sep-06-2004	136	24.1	987
Sep-07-2004	116	24.9	971
Sep-08-2004	92	25.4	1,110
Sep-09-2004	112	25.3	1,120
Sep-10-2004	104	25.0	1,080
Sep-11-2004	90	24.4	1,170
Sep-12-2004	101	24.4	1,110
Sep-13-2004	104	23.1	1,040
Sep-14-2004	94	22.2	1,050
Sep-15-2004	98	21.6	1,070
Sep-16-2004	96	23.1	1,070
Sep-17-2004	88	23.8	1,110
Sep-18-2004	86	21.6	1,120
Sep-19-2004	90	18.5	1,100
Sep-20-2004	108	18.0	1,060
Sep-21-2004	102	18.7	1,030
Sep-22-2004	78	19.9	1,080
Sep-23-2004	71	21.0	1,120
Sep-24-2004	68	21.8	1,130
Sep-25-2004	63	22.1	1,180
Sep-26-2004	69	21.9	1,180
Sep-27-2004	67	21.8	1,150
Sep-28-2004	62	21.2	1,150
Sep-29-2004	62	20.5	1,250
Sep-30-2004	66	19.7	1,320
.	.	.	.
Mean	87	22.4	1,140

Table 5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), September 2004.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Specific Conductance	Selenium (total)
DATA SOURCE	USGS	USGS	CVRWQCB	CVRWQCB
UNITS	cfs	°C	µS/cm	µg/L
Sep-01-2004	411	24.6	NA	NA
Sep-02-2004	318	24.1	NA	NA
Sep-03-2004	333	21.6	1,790	P
Sep-04-2004	344	21.0	1,800	P
Sep-05-2004	380	22.8	1,610	P
Sep-06-2004	398	23.9	1,440	P
Sep-07-2004	435	24.5	1,210	P
Sep-08-2004	403	24.8	1,080	P
Sep-09-2004	365	24.8	1,240	P
Sep-10-2004	380	24.3	1,420	P
Sep-11-2004	362	23.9	1,330	P
Sep-12-2004	346	23.7	1,360	P
Sep-13-2004	383	22.7	1,380	P
Sep-14-2004	416	22.0	1,090	P
Sep-15-2004	378	21.6	1,120	P
Sep-16-2004	358	22.7	1,250	P
Sep-17-2004	355	23.3	1,240	P
Sep-18-2004	316	21.4	1,310	P
Sep-19-2004	361	18.8	1,350	P
Sep-20-2004	447	18.3	1,210	P
Sep-21-2004	464	18.5	1,020	P
Sep-22-2004	432	19.6	1,040	P
Sep-23-2004	407	20.6	1,050	P
Sep-24-2004	383	21.3	NA	NA
Sep-25-2004	367	21.6	NA	NA
Sep-26-2004	363	21.5	1,210	P
Sep-27-2004	374	21.4	1,220	P
Sep-28-2004	374	21.0	1,190	P
Sep-29-2004	346	20.9	1,210	P
Sep-30-2004	293	20.7	1,380	P
.	.	.	.	.
Mean	380	22.1	1,290	P

Table 6a. Weekly water quality monitoring at Station A (inflow to San Luis Drain), taken from grab samples.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	Total Suspended Solids	.	.	.
DATA SOURCE	SLDMWA	.	.	CVRWQCB	CVRWQCB	.	.	.
UNITS	cfs	.	.	µS/cm	mg/L	.	.	.
Jul-07-2004	52	.	.	4,230	130	.	.	.
Jul-14-2004	46	.	.	4,400	150	.	.	.
Jul-21-2004	52	.	.	3,660	110	.	.	.
Jul-28-2004	38	.	.	3,460	120	.	.	.
Aug-04-2004	43	.	.	3,660	NA	.	.	.
Aug-11-2004	38	.	.	3,940	130	.	.	.
Aug-18-2004	43	.	.	3,430	130	.	.	.
Aug-25-2004	45	.	.	3,840	180	.	.	.
Sep-01-2004	38	.	.	4,130	130	.	.	.
Sep-08-2004	27	.	.	4,500	75	.	.	.
Sep-15-2004	19	.	.	4,210	52	.	.	.
Sep-22-2004	12	.	.	4,670	19	.	.	.
Sep-29-2004	15	.	.	4,080	P	.	.	.

Table 6b. Weekly water quality monitoring at Station A (inflow to San Luis Drain), taken from composite samples.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	.	Selenium (total)	.	Boron
DATA SOURCE	SLDMWA	.	.	CVRWQCB	.	CVRWQCB	.	CVRWQCB
UNITS	cfs	.	.	µS/cm	.	µg/L	.	mg/L
Jul-06-2004	59	.	.	4,090	.	40.7	.	P
Jul-13-2004	49	.	.	4,290	.	36.8	.	P
Jul-20-2004	55	.	.	3,910	.	31.9	.	P
Jul-27-2004	40	.	.	3,710	.	32.3	.	P
Aug-03-2004	43	.	.	3,830	.	NA	.	P
Aug-10-2004	40	.	.	3,550	.	24.6	.	P
Aug-19-2004	39	.	.	3,470	.	24.1	.	P
Aug-24-2004	49	.	.	3,740	.	26.4	.	P
Aug-31-2004	31	.	.	4,520	.	37.9	.	P
Sep-07-2004	32	.	.	4,260	.	40.8	.	P
Sep-15-2004	19	.	.	4,470	.	P	.	P
Sep-22-2004	12	.	.	4,140	.	37.7	.	7.5
Sep-28-2004	16	.	.	4,390	.	41.2	.	P

Table 7. Weekly water quality monitoring at Station B (discharge from San Luis Drain), taken from grab samples.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Total Suspended Solids	Selenium (total)	Boron
DATA SOURCE	USGS	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C	.	µS/cm	mg/L	µg/L	mg/L
Jul-01-2004	57	22.8	8.0	3,750	43	30.3	P
Jul-08-2004	53	24.9	7.8	4,380	54	48.2	P
Jul-15-2004	48	25.2	7.9	4,160	42	42.8	P
Jul-22-2004	53	27.4	8.3	3,980	53	42.0	P
Jul-29-2004	40	23.4	8.4	3,490	56	31.4	P
Aug-05-2004	45	24.1	8.3	3,900	37	NA	P
Aug-12-2004	41	26.4	8.4	3,510	46	23.8	P
Aug-19-2004	46	25.4	8.2	3,250	53	20.6	P
Aug-26-2004	51	23.9	8.5	3,800	60	26.6	P
Sep-02-2004	42	25.0	8.1	4,570	46	39.9	P
Sep-09-2004	30	24.7	7.8	3,870	39	30.7	P
Sep-16-2004	23	21.7	8.2	4,690	46	P	P
Sep-23-2004	18	20.0	8.4	3,580	45	27.8	P
Sep-30-2004	21	19.7	8.1	3,760	P	P	P

Table 8. Weekly water quality monitoring at Station C (Mud Slough North upstream of drainage discharges).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	.	Selenium (total)	Boron
DATA SOURCE	calculated **	CVRWQCB	CVRWQCB	CVRWQCB	.	CVRWQCB	CVRWQCB
UNITS	cfs	°C	.	µS/cm	.	µg/L	mg/L
Jul-01-2004	14	22.5	8.1	1,530	.	0.6	P
Jul-08-2004	30	24.7	7.9	1,250	.	1.0	P
Jul-15-2004	40	25.5	7.9	1,150	.	1.4	P
Jul-22-2004	18	29.1	8.2	1,280	.	0.9	P
Jul-29-2004	16	25.8	8.0	1,200	.	0.6	P
Aug-05-2004	12	22.9	8.0	979	.	NA	P
Aug-12-2004	-1	NA	NA	NA	.	NA	P
Aug-19-2004	-3	27.7	8.2	2,460	.	<0.4	P
Aug-26-2004	-1	23.1	8.0	1,520	.	<0.4	P
Sep-02-2004	11	23.2	7.8	755	.	0.5	P
Sep-09-2004	9	25.9	7.7	807	.	0.4	P
Sep-16-2004	13	22.7	7.7	847	.	P	P
Sep-23-2004	18	22.3	7.7	981	.	0.4	P
Sep-30-2004	25	18.2	7.8	899	.	P	P

\*\* Calculated flow value. Flow at Station C = flow at Station D - flow at Station B.

**Table 9. Weekly water quality monitoring at Station D (Mud Slough North downstream of drainage discharges).**

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	USGS	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C	.	µS/cm	µg/L	mg/L
Jul-01-2004	71	22.8	8.4	3,400	25.4	P
Jul-08-2004	83	24.7	8.1	3,480	31.2	P
Jul-15-2004	88	25.0	8.0	2,940	24.4	P
Jul-22-2004	71	27.6	8.3	3,120	21.1	P
Jul-29-2004	56	25.2	8.2	2,830	20.4	P
Aug-05-2004	57	23.5	8.3	3,280	NA	P
Aug-12-2004	40	26.3	8.3	3,580	23.9	P
Aug-19-2004	43	26.2	8.4	3,140	19.3	P
Aug-26-2004	50	23.6	8.5	3,660	24.4	P
Sep-02-2004	53	24.1	8.1	3,520	25.5	P
Sep-09-2004	39	24.8	7.5	2,820	19.4	P
Sep-16-2004	36	22.3	8.1	2,960	P	P
Sep-23-2004	36	21.5	7.9	2,220	11.5	P
Sep-30-2004	46	18.9	7.8	2,170	P	P

**Table 10. Weekly water quality monitoring at Station I2 (Mud Slough backwater downstream of Station D).**

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER		pH	Specific Conductance	Turbidity	Selenium	Boron
DATA SOURCE		USBR	USBR	USBR	USBR	USBR
UNITS		.	µS/cm	NTU	µg/L	mg/L
Jul-01-2004	.	8.5	3,610	22	26.4	5.8
Jul-09-2004	.	7.9	3,340	15	29.8	5.4
Jul-15-2004	.	8.4	3,010	17	23.6	4.8
Jul-20-2004	.	8.3	3,400	20	23.6	5.7
Jul-27-2004	.	8.1	3,100	14	22.0	5.3
Aug-02-2004	.	7.2	3,550	15	22.9	6.3
Aug-12-2004	.	8.0	3,620	19	22.0	6.3
Aug-20-2004	.	8.1	3,290	12	20.8	5.5
Aug-27-2004	.	8.8	4,020	13	24.5	7.0
Sep-01-2004	.	8.8	3,570	15	21.9	5.9
Sep-07-2004	.	8.4	2,610	26	17.0	3.7
Sep-14-2004	.	8.4	2,860	10	16.6	4.2
Sep-22-2004	.	7.7	2,420	50	10.9	3.0
Sep-28-2004	.	7.3	2,260	24	10.5	2.7

Table 11. Weekly water quality monitoring at Station F (Salt Slough at Lander Avenue).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	USGS	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C	.	µS/cm	µg/L	mg/L
Jul-01-2004	112	21.4	7.9	1,220	0.5	P
Jul-08-2004	135	22.0	7.8	1,110	0.7	P
Jul-15-2004	141	23.7	7.9	1,090	1.0	P
Jul-22-2004	164	26.1	8.1	966	0.7	P
Jul-29-2004	102	23.4	7.8	1,150	0.5	P
Aug-05-2004	125	23.2	7.4	1,000	NA	P
Aug-12-2004	116	24.9	7.9	1,100	0.5	P
Aug-19-2004	145	25.3	7.9	955	0.4	P
Aug-26-2004	103	22.7	8.1	1,160	0.4	P
Sep-02-2004	74	23.1	7.8	1,480	<0.4	P
Sep-09-2004	112	23.5	7.9	1,130	0.5	P
Sep-16-2004	96	21.5	8.0	1,170	P	P
Sep-23-2004	71	18.4	8.1	1,110	0.4	P
Sep-30-2004	66	17.3	7.7	1,190	P	P

Table 12. Weekly water quality monitoring at Station J (Camp 13 Ditch).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA <sup>††</sup>	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Jul-07-2004	15	.	.	596	0.7	P
Jul-14-2004	5	.	.	523	0.7	P
Jul-21-2004	5	.	.	428	0.7	P
Jul-28-2004	5	.	.	581	0.8	P
Aug-04-2004	5	.	.	670	NA	P
Aug-11-2004	20	.	.	459	0.6	P
Aug-18-2004	40	.	.	474	0.7	P
Aug-25-2004	10	.	.	641	NA	P
Sep-01-2004	40	.	.	533	0.6	P
Sep-08-2004	50	.	.	730	0.8	P
Sep-15-2004	60	.	.	563	0.8	P
Sep-22-2004	85	.	.	473	0.5	0.2
Sep-29-2004	125	.	.	506	P	0.2

Table 13. Weekly water quality monitoring at Station K (Agatha Canal).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA <sup>††</sup>	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Jul-07-2004	10	.	.	431	0.6	P
Jul-14-2004	5	.	.	439	0.8	P
Jul-21-2004	5	.	.	402	0.8	P
Jul-28-2004	5	.	.	415	0.7	P
Aug-04-2004	5	.	.	381	NA	P
Aug-11-2004	5	.	.	428	0.6	P
Aug-18-2004	30	.	.	369	1.1	P
Aug-25-2004	35	.	.	422	NA	P
Sep-01-2004	65	.	.	481	0.7	P
Sep-08-2004	75	.	.	530	0.6	P
Sep-15-2004	75	.	.	611	0.5	P
Sep-22-2004	90	.	.	530	0.5	0.2
Sep-29-2004	110	.	.	495	P	0.2

Table 14. Weekly water quality monitoring at Station L2 (San Luis Canal at splits).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA <sup>††</sup>	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Jul-07-2004	30	.	.	955	1.5	P
Jul-14-2004	30	.	.	1,090	2.0	P
Jul-21-2004	50	.	.	798	1.5	P
Jul-28-2004	40	.	.	715	1.3	P
Aug-04-2004	40	.	.	641	NA	P
Aug-11-2004	65	.	.	870	1.4	P
Aug-18-2004	85	.	.	583	0.8	P
Aug-25-2004	85	.	.	528	NA	P
Sep-01-2004	85	.	.	756	0.8	P
Sep-08-2004	60	.	.	860	0.8	P
Sep-15-2004	125	.	.	531	0.6	P
Sep-22-2004	150	.	.	553	0.6	0.2
Sep-29-2004	150	.	.	555	P	0.3

**Table 15. Weekly water quality monitoring at Station M2 (Santa Fe Canal at weir).**

See Table 27 for explanation of footnotes and agency abbreviations.

<b>PARAMETER</b>	<b>Flow</b>	.	.	<b>Specific Conductance</b>	<b>Selenium (total)</b>	<b>Boron</b>
<b>DATA SOURCE</b>	<b>SLDMWA<sup>††</sup></b>	.	.	<b>CVRWQCB</b>	<b>CVRWQCB</b>	<b>CVRWQCB</b>
<b>UNITS</b>	<b>cfs</b>	.	.	<b>µS/cm</b>	<b>µg/L</b>	<b>mg/L</b>
Jul-07-2004	33	.	.	1,190	1.2	P
Jul-14-2004	35	.	.	926	1.0	P
Jul-21-2004	16	.	.	1,380	1.3	P
Jul-28-2004	7	.	.	1,310	1.0	P
Aug-04-2004	7	.	.	1,200	NA	P
Aug-11-2004	4	.	.	939	0.7	P
Aug-18-2004	4	.	.	1,070	0.7	P
Aug-25-2004	2	.	.	1,340	NA	P
Sep-01-2004	14	.	.	1,110	0.8	P
Sep-08-2004	22	.	.	849	0.6	P
Sep-15-2004	1	.	.	948	0.5	P
Sep-22-2004	15	.	.	693	1.0	0.4
Sep-29-2004	60	.	.	659	P	0.4

**Table 16. Weekly water quality monitoring at Central California Irrigation District Main Canal at Russell Avenue (MER510).**

See Table 27 for explanation of footnotes and agency abbreviations.

<b>PARAMETER</b>	.	.	.	<b>Specific Conductance</b>	<b>Selenium (total)</b>	<b>Boron</b>
<b>DATA SOURCE</b>	.	.	.	<b>CVRWQCB</b>	<b>CVRWQCB</b>	<b>CVRWQCB</b>
<b>UNITS</b>	.	.	.	<b>µS/cm</b>	<b>µg/L</b>	<b>mg/L</b>
Jul-07-2004	.	.	.	408	0.6	P
Jul-14-2004	.	.	.	416	1.1	P
Jul-21-2004	.	.	.	341	0.8	P
Jul-28-2004	.	.	.	359	0.6	P
Aug-04-2004	.	.	.	369	NA	P
Aug-11-2004	.	.	.	434	0.7	P
Aug-18-2004	.	.	.	365	0.7	P
Aug-25-2004	.	.	.	412	NA	P
Sep-01-2004	.	.	.	556	0.8	P
Sep-08-2004	.	.	.	500	0.6	P
Sep-15-2004	.	.	.	460	<0.4	P
Sep-22-2004	.	.	.	456	0.5	0.1
Sep-29-2004	.	.	.	536	P	0.2



Table 17. Weekly water quality monitoring at Station G (San Joaquin River at Fremont Ford).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	USGS	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C	.	µS/cm	µg/L	mg/L
Jul-01-2004	137	23.3	7.5	1,510	0.5	P
Jul-08-2004	164	24.8	7.5	1,310	0.4	P
Jul-15-2004	159	24.8	7.5	833	0.9	P
Jul-22-2004	173	26.5	7.9	1,130	0.6	P
Jul-29-2004	126	24.8	8.1	1,390	0.4	P
Aug-05-2004	151	23.8	7.9	987	NA	P
Aug-12-2004	141	25.9	8.1	1,210	0.4	P
Aug-19-2004	153	25.5	7.9	1,110	<0.4	P
Aug-26-2004	143	23.3	8.2	1,250	<0.4	P
Sep-02-2004	91	23.6	7.5	2,050	<0.4	P
Sep-09-2004	112	23.1	7.9	1,340	0.5	P
Sep-16-2004	102	20.8	7.8	1,310	P	P
Sep-23-2004	96	22.4	8.0	1,510	0.4	P
Sep-30-2004	83	18.8	7.9	1,660	P	P

Table 18. Weekly water quality monitoring at Station H (San Joaquin River at Hills Ferry).

(Collected data intended for use with biological monitoring.)

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	.	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	.	.	.	SLDMWA	SLDMWA	SLDMWA
UNITS	.	.	.	µS/cm	µg/L	mg/L
Jul-07-2004	.	.	.	1,600	<0.4	0.3
Jul-13-2004	.	.	.	1,910	8.2	2.0
Jul-20-2004	.	.	.	1,620	4.9	1.6
Jul-30-2004	.	.	.	2,050	5.7	1.8
Aug-10-2004	.	.	.	1,700	4.6	1.6
Aug-17-2004	.	.	.	1,710	4.4	1.6
Aug-24-2004	.	.	.	1,700	4.5	1.6
Sep-01-2004	.	.	.	2,020	5.5	1.9
Sep-02-2004	.	.	.	1,800	0.5	0.4
Sep-14-2004	.	.	.	1,730	4.3	1.3
Sep-21-2004	.	.	.	1,480	3.0	1.1
Sep-24-2004	.	.	.	1,980	3.3	1.3

Table 19. Weekly water quality monitoring at Station N (San Joaquin River at Crow's Landing).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	USGS	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C	.	µS/cm	µg/L	mg/L
Jul-01-2004	368	24.3	8.0	1,580	4.3	P
Jul-08-2004	410	25.0	8.0	1,490	4.4	P
Jul-15-2004	385	24.3	8.3	1,520	4.6	P
Jul-22-2004	421	25.1	8.0	1,320	2.1	P
Jul-29-2004	349	24.5	8.2	1,590	3.1	P
Aug-05-2004	408	24.0	8.1	1,310	NA	P
Aug-12-2004	336	25.5	8.0	1,340	2.8	P
Aug-19-2004	404	24.9	7.9	1,280	2.5	P
Aug-26-2004	618	23.8	8.1	1,090	2.3	P
Sep-02-2004	318	23.4	7.8	1,640	2.7	P
Sep-09-2004	365	23.1	7.8	1,290	2.4	P
Sep-16-2004	358	21.2	7.6	1,240	P	P
Sep-23-2004	407	21.4	7.9	1,090	1.5	P
Sep-30-2004	293	19.8	7.8	1,450	P	P

**Table 20. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from October 2003 to September 2004. Each value is the mean of 4 replicates with 10 fish in each replicate.**

See Table 27 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal	Laboratory Control
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	%	%	%	%	%	%
Oct-2003	100	100	93	100	100	100
Nov-2003	100	93	40*	100	75	100
Dec-2003	95	40*	53*	83	88	100
Jan-2004	95	58*	75	93	98	100
Feb-2004	98	93	100	98	100	100
Mar-2004	100	90	53*	85	100	100
Apr-2004	100	100	95	95	90	98
May-2004	100	100	100	100	100	100
Jun-2004	98	93	98	100	88	95
Jul-2004	100	90	93	88	98	98
Aug-2004	98	98	100	95	85	100
Sep-2004	98	93	95	100	93	95

**Table 21. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from October 2003 to September 2004. Each value is the mean of 4 replicates with 10 fish in each replicate.**

See Table 27 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal	Laboratory Control
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	mg	mg	mg	mg	mg	mg
Oct-2003	0.32	0.38	0.32	0.37	0.31	0.29
Nov-2003	0.45	0.43	0.16*	0.45	0.34	0.45
Dec-2003	0.50	0.29*	0.34	0.39	0.43	0.48
Jan-2004	0.60	0.37	0.49	0.58	0.55	0.58
Feb-2004	0.57	0.55	0.56	0.60	0.63	0.63
Mar-2004	0.44	0.39*	0.32*	0.42	0.48	0.46
Apr-2004	0.59	0.57	0.63	0.54	0.56	0.60
May-2004	0.49	0.55	0.53	0.57	0.43	0.49
Jun-2004	0.42	0.42	0.40	0.45	0.36	0.40
Jul-2004	0.55	0.50	0.51	0.54	0.51	0.48
Aug-2004	0.60	0.62	0.62	0.64	0.55	0.59
Sep-2004	0.71	0.60	0.75	0.74	0.62	0.51

**Table 22. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from October 2003 to September 2004. Each value is the mean of 10 replicates with 1 animal in each replicate.**

See Table 27 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal	Laboratory Control
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	%	%	%	%	%	%
Oct-2003	60*	100	100	100	100	100
Nov-2003	90	100	89	100	100	90
Dec-2003	90	90	100	100	90	100
Jan-2004	95	58*	75	93	98	100
Feb-2004	98	93	100	98	100	100
Mar-2004	100	100	90	100	100	100
Apr-2004	100	100	90	90	90	100
May-2004	90	100	90	80	90	90
Jun-2004	90	100	100	90	90	100
Jul-2004	100	100	80	90	90	90
Aug-2004	100	88	88	100	90	100
Sep-2004	80	100	90	100	100	90

**Table 23. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from October 2003 to September 2004. Each value is the mean of 10 replicates with 1 animal in each replicate.**

See Table 27 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal	Laboratory Control
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	neonates per female	neonates per female	neonates per female	neonates per female	neonates per female	neonates per female
Oct-2003	23.3	48.1	52.8	41.5	33.8	23.0
Nov-2003	54.8	40.7	44.3	54.7	45.3	38.1
Dec-2003	59.0	58.7	64.9	73.6	64.2	68.7
Jan-2004	46.8	45.0	40.7	44.5	54.1	41.5
Feb-2004	59.4	59.0	60.7	54.3	60.0	59.0
Mar-2004	59.7	55.3	58.8	58.6	58.4	51.6
Apr-2004	35.5	34.3	35.9	34.6	21.7	15.7
May-2004	32.4	29.6	37.5	34.9	30.7	24.7
Jun-2004	25.8	29.8	25.6	16.7	19.0	30.0
Jul-2004	51.3	32.4	48.5	36.2	38.8	34.9
Aug-2004	41.9	41.8	46.1	37.4	32.0	33.9
Sep-2004	49.8	48.0	40.4	38.7	41.8	44.3

**Table 24. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from October 2003 to September 2004. Each value is the mean of 4 replicates.**

See Table 27 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal	Laboratory Control
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	10 <sup>5</sup> cells/mL	10 <sup>5</sup> cells/mL	10 <sup>5</sup> cells/mL	10 <sup>5</sup> cells/mL	10 <sup>5</sup> cells/mL	10 <sup>5</sup> cells/mL
Oct-2003	10.0	12.6	12.2	8.6*	9.9††††	8.7††††
Nov-2003	12.3	22.5	21.2	18.9	14.8	15.3
Dec-2003	0.7*	26.6	34.4	21.1*	25.0	18.5
Jan-2004	9.7*	21.1	5.9*	8.8	18.4	20.9
Feb-2004	0.5*	32.5	21.9	0.4*	25.0	23.1
Mar-2004	24.0*	39.2	27.5	33.1	29.9	29.3
Apr-2004	19.9	31.6	20.0	25.5	19.5	26.5
May-2004	19.3*	29.5	25.1	25.1	24.5	14.5
Jun-2004	12.1	25.2	18.1	21.5	15.4	22.4
Jul-2004	3.6*	13.1	16.3	17.5	12.5	10.1
Aug-2004	14.8	17.7	14.2	16.9	12.2	17.6
Sep-2004	12.4*	13.4*	15.6	16.3	16.2	14.6

**Table 25. Summary of selenium concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, July 2004 to September 2004.**

See Table 27 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal
DATA SOURCE	SLDMWA/USBR	SLDMWA/USBR	SLDMWA/USBR	SLDMWA/USBR	SLDMWA/USBR
UNITS	µg/L	µg/L	µg/L	µg/L	µg/L
Jul-19-2004	35	0.9	21	0.5	<0.4
Jul-21-2004	25	0.9	19	0.4	<0.4
Jul-23-2004	35	0.7	21	<0.4	<0.4
Aug-02-2004	27	0.4	19	0.4	<0.4
Aug-04-2004	30	0.5	26	0.5	<0.4
Aug-06-2004	34	<0.4	21	0.4	<0.4
Sep-13-2004	39	<0.4	13	<0.4	<0.4
Sep-15-2004	38	<0.4	17	<0.4	<0.4
Sep-17-2004	39	<0.4	21	<0.4	<0.4

**Table 26. Summary of total suspended solids concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, July 2004 to September 2004.**

See Table 27 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	mg/L	mg/L	mg/L	mg/L	mg/L
Jul-19-2004	48	39	46	115	30
Jul-21-2004	36	57	53	127	19
Jul-23-2004	66	65	56	75	28
Aug-02-2004	46	32	48	84	18
Aug-04-2004	54	31	41	64	25
Aug-06-2004	72	71	59	124	26
Sep-13-2004	55	86	59	92	17
Sep-15-2004	62	86	121	73	32
Sep-17-2004	37	25	40	20	3

Table 27. Explanations of footnotes and agency abbreviations.

Footnote	Explanation
CVRWQCB	California Regional Water Quality Control Board, Central Valley Region
SLDMWA	San Luis & Delta-Mendota Water Authority
USBR	U.S. Bureau of Reclamation
USGS	U.S. Geological Survey
e	Estimated value
.	Not applicable
<	Less than MDL. If needed in calculation, use 1/2 MDL
NA	Not analyzed - operator error, data will not be available in the future
NP	Not Provided. Data may be available in the future.
NT	Not tested
P	Pending, data not available at this time but will be available in the future
*	Significantly reduced from Delta Mendota Canal ( $p < 0.05$ )
**	Sample re-analyzed and result confirmed.
†	DMC water failed to meet the survival (>80%) acceptability criteria.
††	Data from records of the Grassland Water District. Data is not subjected to the criteria documented in the Compliance Monitoring Program for the Use and Operation of the Grassland Bypass Project (1996) nor the Quality Assurance Project Plan for the GBP.
†††	DMC water failed to meet the reproduction (>10 neonates/adult) acceptability criteria.
††††	DMC water failed to meet minimum growth ( $10^6$ cell/mL) acceptability criteria.
‡	Control value exceeds suggested maximum variance (20%) acceptability criteria.
‡‡	Fungal growth observed on test organisms.
‡‡‡	Failed cell density requirement of $1E6$ cells.
#	New testing laboratory with reporting limit of $0.4 \mu\text{g/L}$ as of June 1998.
√	Based on definitive bioassay, NOEC is 50 percent
D	Sample was dechlorinated