

# GRASSLAND BYPASS PROJECT

## MONTHLY DATA REPORT

**July 2003**

October 2, 2003

### 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





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## MONTHLY DATA REPORT

## LIST OF TABLES FOR MONTHLY REPORT

**Continuous Monitoring**

1. Continuous water monitoring at Station A (inflow to San Luis Drain), July 2003.
- 2a. Continuous water monitoring at Station B (discharge from San Luis Drain), July 2003.
- 2b. Continuous water monitoring at San Luis Drain Outlet, July 2003.
- 2c. Monthly selenium discharges from the terminus of the San Luis Drain into Mud Slough compared to load values.
3. Continuous water monitoring at Station D (Mud Slough North downstream of drainage discharges), July 2003.
4. Continuous water monitoring at Station F (Salt Slough at Highway 165), July 2003.
5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), July 2003.

**Weekly Monitoring**

- 6a. Weekly water quality monitoring at Station A (inflow to San Luis Drain), taken from grab samples.
- 6b. Weekly water quality monitoring at Station A (inflow to San Luis Drain), taken from composite samples.
7. Weekly water quality monitoring at Station B (discharge from San Luis Drain).
8. Weekly water quality monitoring at Station C (Mud Slough North upstream of drainage discharge).
9. Weekly water quality monitoring at Station D (Mud Slough North downstream of drainage discharge).
10. Weekly water quality monitoring at Station I2 (Mud Slough backwater downstream of Station D).
11. Weekly water quality monitoring at Station F (Salt Slough at Lander Avenue).
12. Weekly water quality monitoring at Station J (Camp 13 Ditch).
13. Weekly water quality monitoring at Station K (Agatha Canal).
14. Weekly water quality monitoring at Station L2 (San Luis Canal at splits).
15. Weekly water quality monitoring at Station M2 (Santa Fe Canal at weir).
16. Weekly water quality monitoring at Central California Irrigation District Main Canal at Russell Avenue (MER510).
- 16a. Weekly water quality monitoring at Central California Irrigation District Main Canal at Russell Avenue (MER510).  
Historic Overview.
17. Weekly water quality monitoring at Station G (San Joaquin River at Fremont Ford).
18. Weekly water quality monitoring at Station H (San Joaquin River at Hills Ferry).
19. Weekly water quality monitoring at Station N (San Joaquin River at Crow's Landing).

**Monthly Monitoring**

20. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from August 2002 to July 2003.
21. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from August 2002 to July 2003.
22. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from August 2002 to July 2003.
23. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from August 2002 to July 2003.
24. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from August 2002 to July 2003.
25. Summary of selenium concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, May 2003 to July 2003.
26. Summary of total suspended solids concentrations in grab water samples collected from May 2003 to July 2003.
27. Explanations of footnotes and agency abbreviations.

**Table 1. Continuous water monitoring at Station A (inflow to San Luis Drain), July 2003.**

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>
Jul-01-2003	54	4,400
Jul-02-2003	56	4,500
Jul-03-2003	59	4,590
Jul-04-2003	59	4,460
Jul-05-2003	57	4,580
Jul-06-2003	55	4,690
Jul-07-2003	54	4,520
Jul-08-2003	57	4,360
Jul-09-2003	54	4,240
Jul-10-2003	47	4,220
Jul-11-2003	38	4,300
Jul-12-2003	35	4,260
Jul-13-2003	36	4,080
Jul-14-2003	37	4,060
Jul-15-2003	37	3,850
Jul-16-2003	50	4,150
Jul-17-2003	45	3,760
Jul-18-2003	44	3,910
Jul-19-2003	48	4,040
Jul-20-2003	48	3,900
Jul-21-2003	49	4,040
Jul-22-2003	57	3,950
Jul-23-2003	58	3,810
Jul-24-2003	57	3,640
Jul-25-2003	55	3,540
Jul-26-2003	56	3,610
Jul-27-2003	53	3,540
Jul-28-2003	55	3,610
Jul-29-2003	53	3,590
Jul-30-2003	59	3,380
Jul-31-2003	56	3,560
Mean	51	4,040

Table 2a. Continuous water monitoring at Station B (discharge from San Luis Drain), July 2003.

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
Jul-01-2003	54	26.8	8.1	4,350	51.4	15.0
Jul-02-2003	55	26.3	7.3	4,490	51.4	15.2
Jul-03-2003	56	26.2	7.6	4,580	62.9	19.0
Jul-04-2003	59	26.0	9.5	4,850	49.8	15.8
Jul-05-2003	59	26.2	9.5	4,890	50.7	16.1
Jul-06-2003	56	26.3	9.7	5,030	55.8	16.9
Jul-07-2003	55	26.0	9.8	4,970	52.7	15.6
Jul-08-2003	56	25.1	9.7	4,970	45.7	13.8
Jul-09-2003	57	25.5	9.7	5,010	56.9	17.5
Jul-10-2003	55	26.2	9.5	4,830	52.1	15.5
Jul-11-2003	48	26.4	8.9	4,660	56.7	14.7
Jul-12-2003	39	26.9	8.4	4,390	45.4	9.5
Jul-13-2003	34	27.0	8.4	4,420	46.6	8.5
Jul-14-2003	34	26.9	8.4	4,310	41.2	7.6
Jul-15-2003	37	27.4	8.7	4,400	34.8	6.9
Jul-16-2003	42	27.6	8.9	4,400	30.6	6.9
Jul-17-2003	49	27.9	8.9	4,290	29.6	7.8
Jul-18-2003	47	28.5	8.4	4,420	36.1	9.2
Jul-19-2003	46	28.7	8.1	4,400	33.6	8.3
Jul-20-2003	49	28.8	8.0	4,300	35.4	9.4
Jul-21-2003	49	29.5	7.4	3,920	31.2	8.2
Jul-22-2003	50	29.6	7.7	4,170	35.3	9.5
Jul-23-2003	57	29.6	7.5	4,220	34.7	10.7
Jul-24-2003	59	29.4	7.7	4,160	30.0	9.5
Jul-25-2003	58	29.1	7.6	4,090	32.0	10.0
Jul-26-2003	57	28.2	7.3	3,950	30.8	9.5
Jul-27-2003	57	28.0	7.0	3,780	30.3	9.3
Jul-28-2003	55	28.3	6.9	3,720	26.3	7.8
Jul-29-2003	56	28.6	6.6	3,660	26.4	8.0
Jul-30-2003	56	28.6	6.9	3,640	24.6	7.4
Jul-31-2003	59	27.4	6.8	3,590	23.6	7.5
Mean	52	27.5	8.2	4,350	40.1	11.2
<b>Total Acre-feet</b>	<b>3,170</b>					
<b>Total (lbs)</b>						<b>347</b>

<b>Load Limitation for July 2003 (lbs)</b>	<b>397</b>
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Table 2b. Continuous water monitoring at San Luis Drain Outlet, July 2003.

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	SLDMWA	CVRWQCB	Computed
UNITS	cfs	µg/L	lbs
Jul-01-2003	58	51.4	16.0
Jul-02-2003	58	51.4	16.2
Jul-03-2003	60	62.9	20.3
Jul-04-2003	62	49.8	16.6
Jul-05-2003	63	50.7	17.1
Jul-06-2003	60	55.8	18.1
Jul-07-2003	59	52.7	16.6
Jul-08-2003	58	45.7	14.4
Jul-09-2003	61	56.9	18.6
Jul-10-2003	57	52.1	16.1
Jul-11-2003	50	56.7	15.3
Jul-12-2003	40	45.4	9.8
Jul-13-2003	34	46.6	8.7
Jul-14-2003	35	41.2	7.7
Jul-15-2003	38	34.8	7.1
Jul-16-2003	42	30.6	7.0
Jul-17-2003	51	29.6	8.1
Jul-18-2003	48	36.1	9.4
Jul-19-2003	48	33.6	8.7
Jul-20-2003	51	35.4	9.8
Jul-21-2003	52	31.2	8.7
Jul-22-2003	52	35.3	10.0
Jul-23-2003	61	34.7	11.4
Jul-24-2003	62	30.0	10.0
Jul-25-2003	61	32.0	10.5
Jul-26-2003	60	30.8	9.9
Jul-27-2003	60	30.3	9.8
Jul-28-2003	58	26.3	8.2
Jul-29-2003	59	26.4	8.4
Jul-30-2003	58	24.6	7.7
Jul-31-2003	61	23.6	7.8
Mean	54	40.1	11.7
Total Acre-feet	3,320		
Total (lbs)			364

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.

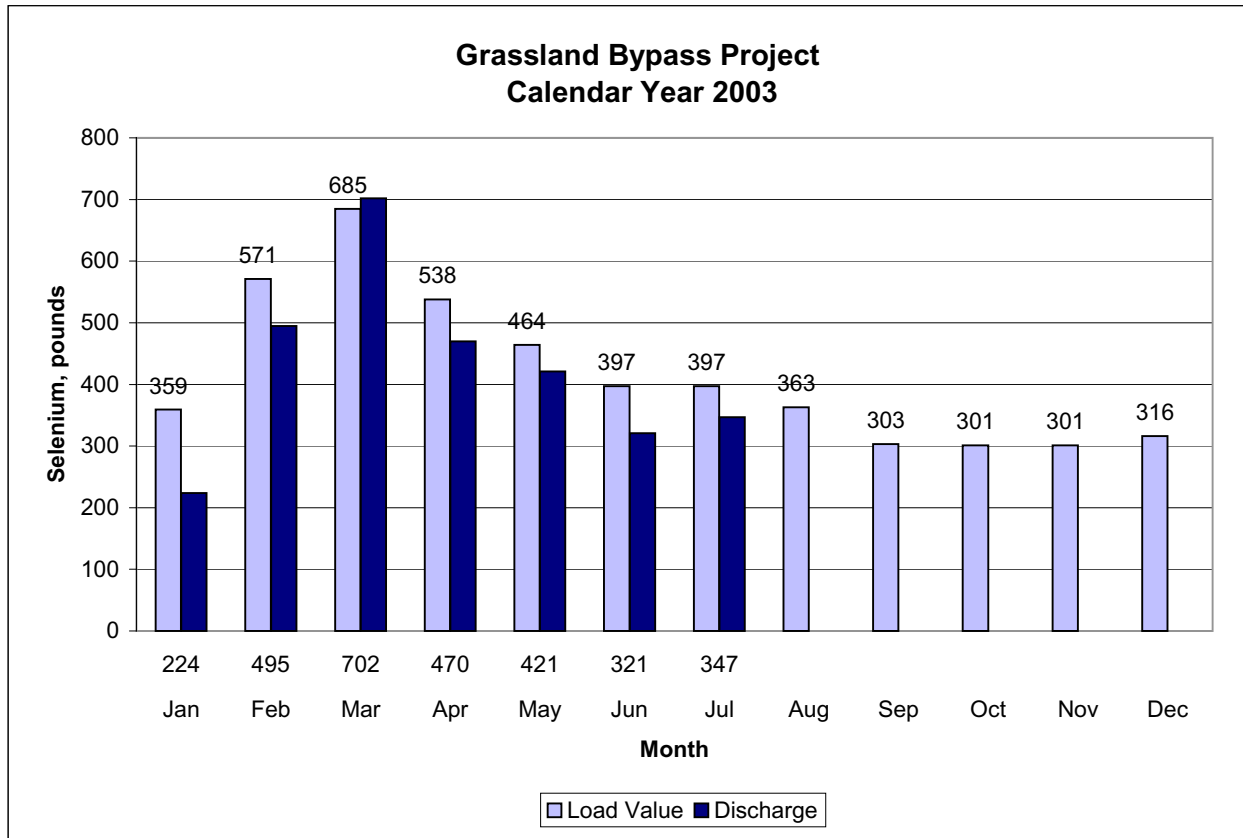
To improve the accuracy of flow measurements, Reclamation and the San Luis & Delta-Mendota Water Authority, with technical assistance from the USGS, propose to measure flow at the San Luis Drain Outlet. The Outlet is located two miles from Station B. Discharge will be measured as stage over a sharp-crested 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 as of October 1, 2003, 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)  
 Note: SLD Terminus weir under construction, flows are estimated.

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), July 2003.**

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>
Jul-01-2003	57	26.7	3,640
Jul-02-2003	58	26.4	3,920
Jul-03-2003	68	26.2	3,710
Jul-04-2003	64	25.9	3,830
Jul-05-2003	66	26.0	3,810
Jul-06-2003	63	26.3	3,850
Jul-07-2003	62	26.2	3,410
Jul-08-2003	69	25.1	3,470
Jul-09-2003	63	25.6	4,080
Jul-10-2003	52	26.2	4,230
Jul-11-2003	42	26.5	4,220
Jul-12-2003	31	26.9	4,080
Jul-13-2003	29	26.8	3,680
Jul-14-2003	58	26.7	2,960
Jul-15-2003	90	27.3	2,150
Jul-16-2003	47	27.4	3,210
Jul-17-2003	64	27.9	3,030
Jul-18-2003	47	28.5	3,340
Jul-19-2003	43	28.9	3,430
Jul-20-2003	49	29.1	3,490
Jul-21-2003	53	29.7	2,960
Jul-22-2003	48	29.6	3,340
Jul-23-2003	51	29.6	3,580
Jul-24-2003	54	29.5	3,520
Jul-25-2003	65	29.2	3,190
Jul-26-2003	77	28.6	2,820
Jul-27-2003	72	28.2	2,830
Jul-28-2003	70	28.4	2,780
Jul-29-2003	69	28.6	2,740
Jul-30-2003	63	28.6	2,920
Jul-31-2003	56	27.3	3,400
Mean	58	27.5	3,410



Table 4. Continuous water monitoring at Station F (Salt Slough at Highway 165), July 2003.

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
Jul-01-2003	134 e	NA	NA
Jul-02-2003	141 e	NA	NA
Jul-03-2003	148 e	NA	NA
Jul-04-2003	146 e	NA	NA
Jul-05-2003	144 e	NA	NA
Jul-06-2003	142 e	NA	NA
Jul-07-2003	140 e	NA	NA
Jul-08-2003	138 e	NA	NA
Jul-09-2003	136 e	NA	NA
Jul-10-2003	135 e	NA	NA
Jul-11-2003	137 e	26.2	975
Jul-12-2003	139 e	26.5	937
Jul-13-2003	137 e	26.2	889
Jul-14-2003	133 e	26.1	896
Jul-15-2003	134 e	27.1	890
Jul-16-2003	138 e	27.0	879
Jul-17-2003	135 e	27.4	876
Jul-18-2003	131 e	28.2	878
Jul-19-2003	138 e	28.4	899
Jul-20-2003	143 e	28.3	847
Jul-21-2003	143 e	29.3	845
Jul-22-2003	131 e	29.1	840
Jul-23-2003	119 e	28.9	894
Jul-24-2003	126 e	28.6	958
Jul-25-2003	149 e	28.2	867
Jul-26-2003	169 e	27.5	876
Jul-27-2003	173 e	27.7	906
Jul-28-2003	185 e	27.9	884
Jul-29-2003	220 e	27.9	852
Jul-30-2003	206	27.8	891
Jul-31-2003	170	26.5	911
Mean	147	27.7	890

Table 5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), July 2003.

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
Jul-01-2003	508	25.7	1,300	4.2
Jul-02-2003	483	25.6	1,340	3.9
Jul-03-2003	440	25.5	1,390	4.6
Jul-04-2003	464	25.1	1,420	5.1
Jul-05-2003	432	25.4	1,450	5.1
Jul-06-2003	424	25.6	1,520	5.3
Jul-07-2003	491	25.6	1,470	5.3
Jul-08-2003	433	24.8	1,420	5.2
Jul-09-2003	445	25.4	1,430	5.2
Jul-10-2003	410	26.2	1,420	5.4
Jul-11-2003	474	26.0	1,490	P
Jul-12-2003	425	26.6	1,390	P
Jul-13-2003	382	26.3	1,520	P
Jul-14-2003	430	26.2	1,310	P
Jul-15-2003	356	27.3	1,280	P
Jul-16-2003	385	26.9	1,270	P
Jul-17-2003	364	27.3	1,340	P
Jul-18-2003	400	28.2	1,330	P
Jul-19-2003	389	28.6	1,290	P
Jul-20-2003	369	29.2	1,390	P
Jul-21-2003	404	29.3	1,300	P
Jul-22-2003	372	29.0	1,290	P
Jul-23-2003	338	28.6	1,280	P
Jul-24-2003	324	28.3	1,380	P
Jul-25-2003	315	28.3	1,550	4.1
Jul-26-2003	339	27.9	1,510	3.1
Jul-27-2003	416	27.7	1,300	3.3
Jul-28-2003	448	27.8	1,210	3.1
Jul-29-2003	455	28.3	1,170	2.8
Jul-30-2003	457	28.1	1,200	2.1
Jul-31-2003	452	26.5	1,290	2.8
Mean	414	27.0	1,360	4.2

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	.	.	.
May-07-2003	44	.	.	4,680	130	.	.	.
May-14-2003	34	.	.	5,380	NA	.	.	.
May-21-2003	39	.	.	5,270	140	.	.	.
May-28-2003	48	.	.	4,360	130	.	.	.
Jun-04-2003	40	.	.	4,810	110	.	.	.
Jun-11-2003	41	.	.	4,550	90	.	.	.
Jun-18-2003	47	.	.	4,200	140	.	.	.
Jun-25-2003	59	.	.	4,350	100	.	.	.
Jul-02-2003	56	.	.	4,560	90	.	.	.
Jul-09-2003	54	.	.	4,320	85	.	.	.
Jul-16-2003	50	.	.	4,170	82	.	.	.
Jul-23-2003	58	.	.	3,990	150	.	.	.
Jul-30-2003	59	.	.	3,300	200	.	.	.

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
May-06-2003	48	.	.	4,720	.	54.9	.	8.3
May-13-2003	32	.	.	5,270	.	56.5	.	8.7
May-20-2003	36	.	.	5,200	.	61.9	.	8.8
May-27-2003	46	.	.	4,650	.	50.5	.	7.9
Jun-03-2003	43	.	.	4,480	.	38.8	.	8.2
Jun-10-2003	46	.	.	4,590	.	38.1	.	8.5
Jun-17-2003	50	.	.	4,610	.	41.3	.	8.1
Jun-24-2003	59	.	.	4,540	.	45.5	.	7.6
Jul-01-2003	54	.	.	4,560	.	43.8	.	P
Jul-08-2003	57	.	.	4,760	.	50.9	.	P
Jul-15-2003	37	.	.	4,380	.	34.2	.	P
Jul-22-2003	57	.	.	4,110	.	P	.	P
Jul-29-2003	53	.	.	3,780	.	27.2	.	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
May-01-2003	47	18.5	8.1	5,110	53	70.7	8.6
May-08-2003	41	17.5	8.3	4,300	64	46.2	7.1
May-15-2003	32	19.8	8.7	5,190	46	60.9	9.3
May-22-2003	41	22.8	8.2	4,810	37	58.8	8.2
May-29-2003	52	25.3	8.2	4,740	40	45.8	7.7
Jun-05-2003	42	25.1	8.3	4,660	37	39.5	8.1
Jun-12-2003	43	21.5	8.3	4,330	54	38.1	7.8
Jun-19-2003	47	22.7	8.5	4,510	57	38.8	7.9
Jun-26-2003	56	24.2	8.6	4,400	85	45.7	7.6
Jul-03-2003	56	24.9	8.5	4,630	53	55.2	8.3
Jul-10-2003	55	24.9	8.5	4,500	48	47.4	8.1
Jul-17-2003	49	26.6	8.9	4,260	54	28.0	9.0
Jul-24-2003	59	27.8	8.4	4,020	44	P	7.5
Jul-31-2003	56	26.7	8.2	3,610	47	22.9	6.7

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
May-01-2003	29	17.4	8.2	2,020	.	1.1	1.9
May-08-2003	33	16.0	7.9	2,820	.	0.5	3.1
May-15-2003	16	18.3	7.9	2,220	.	0.8	1.8
May-22-2003	12	23.9	8.1	2,190	.	0.8	1.9
May-29-2003	20	25.4	7.9	1,650	.	1.2	1.4
Jun-05-2003	65	25.0	8.1	1,130	.	1.2	1.0
Jun-12-2003	40	21.6	8.2	1,210	.	1.3	1.2
Jun-19-2003	11	23.9	8.4	1,650	.	1.1	1.8
Jun-26-2003	27	24.5	8.1	1,210	.	1.0	1.1
Jul-03-2003	12	24.7	8.2	1,260	.	1.4	1.2
Jul-10-2003	-3	24.5	8.4	1,560	.	1.3	1.3
Jul-17-2003	15	26.1	8.0	711	.	1.1	0.7
Jul-24-2003	-5	26.0	8.4	1,260	.	P	1.1
Jul-31-2003	0	24.7	8.5	1,360	.	0.9	1.4

\*\* 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
May-01-2003	76 e	17.8	8.2	3,930	41.7	5.8
May-08-2003	74 e	17.4	8.1	4,350	35.1	6.6
May-15-2003	48	18.9	8.5	4,430	39.9	7.1
May-22-2003	53	22.9	8.2	4,300	41.6	6.7
May-29-2003	72	25.0	8.1	3,360	24.6	4.8
Jun-05-2003	109	25.0	8.1	2,520	15.4	3.6
Jun-12-2003	85	21.4	8.3	2,730	16.8	4.4
Jun-19-2003	58	23.5	8.5	3,710	26.1	6.1
Jun-26-2003	83	23.8	8.5	3,500	31.4	5.6
Jul-03-2003	68	24.7	8.4	3,820	42.9	6.5
Jul-10-2003	52	24.8	8.4	4,370	48.0	7.7
Jul-17-2003	64	26.5	8.5	2,770	15.9	5.4
Jul-24-2003	54	27.3	8.4	3,740	P	6.8
Jul-31-2003	56	26.5	8.3	3,410	22.2	6.2

**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
May-06-2003	.	8.3	3,060	46	32.9	4.8
May-14-2003	.	9.4	1,680	24	14.4	6.3
May-22-2003	.	8.6	5,870	15	37.8	6.7
May-27-2003	.	8.7	4,950	13	26.6	5.3
Jun-04-2003	.	8.4	2,710	44	15.6	4.0
Jun-11-2003	.	8.5	3,570	39	16.2	5.3
Jun-17-2003	.	8.5	4,200	31	23.3	7.2
Jun-23-2003	.	9.0	3,000	59	27.2	5.2
Jun-30-2003	.	7.0	4,600	49	33.4	7.5
Jul-08-2003	.	8.7	3,990	29	34.4	6.8
Jul-08-2003	.	8.7	3,990	29	34.4	6.8
Jul-15-2003	.	8.2	2,110	78	13.5	3.4
Jul-22-2003	.	8.5	3,620	25	27.3	6.2
Jul-30-2003	.	8.5	2,980	26	18.1	5.1

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
May-01-2003	130	17.2	7.7	1,650	<0.4	0.7
May-08-2003	116	15.8	7.7	1,770	0.5	0.9
May-15-2003	101	17.1	7.7	1,820	0.5	0.9
May-22-2003	119	22.6	7.7	1,270	0.7	0.6
May-29-2003	119	24.8	7.6	1,250	0.7	0.6
Jun-05-2003	123	23.4	7.6	1,140	0.7	0.5
Jun-12-2003	107	19.8	8.0	1,240	0.6	0.6
Jun-19-2003	99	21.1	7.7	1,220	0.5	0.5
Jun-26-2003	151	23.8	7.7	1,050	0.6	0.5
Jul-03-2003	148 e	23.4	7.7	921	0.8	P
Jul-10-2003	135 e	24.3	7.7	990	0.9	P
Jul-17-2003	135 e	25.6	7.8	906	0.6	P
Jul-24-2003	126 e	26.2	7.8	1,080	P	P
Jul-31-2003	170	25.9	7.6	936	0.5	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
May-07-2003	10	.	.	2,910	1.2	4.7
May-14-2003	20	.	.	1,110	1.7	1.3
May-21-2003	10	.	.	1,030	1.6	1.1
May-28-2003	35	.	.	693	1.9	0.6
Jun-04-2003	30	.	.	518	1.2	0.4
Jun-11-2003	10	.	.	821	1.9	0.7
Jun-18-2003	5	.	.	728	1.4	0.9
Jun-25-2003	5	.	.	614	1.1	0.6
Jul-02-2003	15	.	.	375	1.3	P
Jul-09-2003	5	.	.	669	1.5	P
Jul-16-2003	15	.	.	336	0.8	P
Jul-23-2003	15	.	.	327	P	P
Jul-30-2003	5	.	.	435	0.6	P

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
May-07-2003	45	.	.	589	1.2	0.3
May-14-2003	65	.	.	607	1.4	0.3
May-21-2003	80	.	.	590	1.0	0.3
May-28-2003	80	.	.	588	1.0	0.3
Jun-04-2003	80	.	.	452	1.0	0.3
Jun-11-2003	46	.	.	312	0.7	0.2
Jun-18-2003	26	.	.	343	0.8	0.2
Jun-25-2003	26	.	.	310	0.7	0.2
Jul-02-2003	26	.	.	257	1.0	P
Jul-09-2003	25	.	.	274	1.0	P
Jul-16-2003	26	.	.	436	0.8	P
Jul-23-2003	35	.	.	453	P	P
Jul-30-2003	35	.	.	302	0.6	P

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
May-07-2003	40	.	.	575	1.1	0.4
May-14-2003	80	.	.	616	1.5	0.4
May-21-2003	120	.	.	765	1.3	0.4
May-28-2003	150	.	.	616	1.2	0.4
Jun-04-2003	80	.	.	617	1.3	0.4
Jun-11-2003	20	.	.	688	1.4	0.5
Jun-18-2003	30	.	.	1,010	1.5	0.9
Jun-25-2003	60	.	.	527	1.0	0.4
Jul-02-2003	60	.	.	661	1.5	P
Jul-09-2003	60	.	.	646	1.6	P
Jul-16-2003	60	.	.	445	0.8	P
Jul-23-2003	60	.	.	P	P	P
Jul-30-2003	40	.	.	623	1.0	P

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

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
May-07-2003	55	.	.	1,620	1.4	2.0
May-14-2003	60	.	.	1,150	1.5	1.3
May-21-2003	71	.	.	1,380	1.7	1.4
May-28-2003	43	.	.	1,140	1.4	1.4
Jun-04-2003	57	.	.	1,060	1.8	1.0
Jun-11-2003	129	.	.	1,160	1.8	1.6
Jun-18-2003	28	.	.	1,640	2.1	2.8
Jun-25-2003	32	.	.	1,150	1.3	1.7
Jul-02-2003	48	.	.	1,490	2.3	P
Jul-09-2003	26	.	.	1,060	1.5	P
Jul-16-2003	33	.	.	932	1.1	P
Jul-23-2003	51	.	.	944	P	P
Jul-30-2003	53	.	.	797	1.0	P

**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.

PARAMETER	.	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	.	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	.	.	.	µS/cm	µg/L	mg/L
May-07-2003	.	.	.	568	1.3	0.3
May-14-2003	.	.	.	568	1.1	0.3
May-21-2003	.	.	.	601	1.1	0.3
May-28-2003	.	.	.	570	1.0	0.3
Jun-04-2003	.	.	.	670	1.4	0.4
Jun-11-2003	.	.	.	330	0.8	0.2
Jun-18-2003	.	.	.	298	0.7	0.2
Jun-25-2003	.	.	.	417	0.5	0.3
Jul-02-2003	.	.	.	285	0.9	P
Jul-09-2003	.	.	.	240	0.8	P
Jul-16-2003	.	.	.	287	0.9	P
Jul-23-2003	.	.	.	309	P	P
Jul-30-2003	.	.	.	297	0.6	P



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

Historic Overview.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	.	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	.	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	.	.	.	µS/cm	µg/L	mg/L
Oct-02-2002	.	.	.	695	0.5	0.2
Oct-09-2002	.	.	.	695	0.6	0.2
Oct-16-2002	.	.	.	692	0.7	0.3
Oct-23-2002	.	.	.	647	0.6	0.2
Oct-30-2002	.	.	.	620	0.7	0.2
Nov-06-2002	.	.	.	680	0.8	0.3
Nov-13-2002	.	.	.	658	1.3	0.2
Nov-20-2002	.	.	.	566	0.7	0.2
Nov-26-2002	.	.	.	626	1.0	0.3
Dec-04-2002	.	.	.	607	0.6	0.3
Dec-11-2002	.	.	.	633	0.9	0.3
Dec-18-2002	.	.	.	744	1.1	0.3
Dec-23-2002	.	.	.	815	1.3	0.4
Jan-02-2003	.	.	.	720	1.9	0.4
Jan-08-2003	.	.	.	733	1.4	0.4
Jan-15-2003	.	.	.	675	1.3	0.4
Jan-22-2003	.	.	.	695	1.1	0.4
Jan-29-2003	.	.	.	675	1.5	0.4
Feb-05-2003	.	.	.	660	2.4	0.4
Feb-12-2003	.	.	.	1,060	2.1	0.7
Feb-19-2003	.	.	.	405	1.0	0.2
Feb-26-2003	.	.	.	840	2.1	0.6
Mar-05-2003	.	.	.	520	3.5	0.3
Mar-12-2003	.	.	.	723	1.7	0.4
Mar-19-2003	.	.	.	577	1.7	0.4
Mar-26-2003	.	.	.	589	1.6	0.4
Apr-02-2003	.	.	.	1,060	2.4	0.7
Apr-09-2003	.	.	.	477	1.7	0.3
Apr-16-2003	.	.	.	1,010	1.6	0.6
Apr-23-2003	.	.	.	625	1.4	0.3
Apr-30-2003	.	.	.	565	1.2	0.3
May-07-2003	.	.	.	568	1.3	0.3
May-14-2003	.	.	.	568	1.1	0.3
May-21-2003	.	.	.	601	1.1	0.3
May-28-2003	.	.	.	570	1.0	0.3
Jun-04-2003	.	.	.	670	1.4	0.4
Jun-11-2003	.	.	.	330	0.8	0.2
Jun-18-2003	.	.	.	298	0.7	0.2
Jun-25-2003	.	.	.	417	0.5	0.3
Jul-09-2003	.	.	.	240	0.8	P
Jul-16-2003	.	.	.	287	0.9	P
Jul-23-2003	.	.	.	309	P	P
Jul-30-2003	.	.	.	297	0.6	P

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
May-01-2003	162	17.9	7.6	1,910	<0.4	0.7
May-08-2003	146	16.8	7.2	1,920	0.5	0.9
May-15-2003	121	19.4	7.7	2,460	<0.4	0.9
May-22-2003	151	23.6	7.7	1,520	0.6	0.6
May-29-2003	142	24.9	7.7	1,440	0.7	0.6
Jun-05-2003	139	25.2	7.9	1,440	0.6	0.6
Jun-12-2003	132	20.7	7.6	1,570	0.6	0.6
Jun-19-2003	138	23.5	7.9	1,550	0.6	0.5
Jun-26-2003	181	24.1	7.7	1,060	P	0.4
Jul-03-2003	165	24.5	7.8	1,070	0.8	1.3
Jul-10-2003	164	24.8	7.8	1,180	0.8	0.7
Jul-17-2003	149	26.8	7.6	1,090	<0.4	0.5
Jul-24-2003	133	27.0	7.8	1,080	P	0.5
Jul-31-2003	207	26.1	7.6	1,060	0.5	0.5

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
May-06-2003	.	.	.	2,000	8.1	1.7
May-13-2003	.	.	.	2,300	5.5	1.8
May-20-2003	.	.	.	2,100	7.4	P
May-28-2003	.	.	.	2,560	10.8	2.3
Jun-03-2003	.	.	.	2,170	5.8	2.0
Jun-10-2003	.	.	.	2,100	5.9	2.1
Jun-17-2003	.	.	.	2,130	5.8	2.2
Jun-24-2003	.	.	.	1,890	7.6	1.9
Jul-01-2003	.	.	.	1,940	6.3	1.8
Jul-08-2003	.	.	.	2,120	9.0	2.4
Jul-15-2003	.	.	.	NA	NA	NA
Jul-22-2003	.	.	.	1,620	4.9	1.7

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
May-01-2003	962	17.7	7.9	1,070	2.8	0.8
May-08-2003	1660	15.9	7.5	580	1.6	0.4
May-15-2003	943	19.3	7.8	1,000	2.0	0.7
May-22-2003	613	23.7	7.9	1,340	3.9	1.0
May-29-2003	556	25.7	7.8	1,350	4.5	1.1
Jun-05-2003	519	25.4	8.0	1,370	3.2	1.0
Jun-12-2003	466	22.6	7.9	1,400	2.7	1.1
Jun-19-2003	415	24.4	8.2	1,540	4.1	1.2
Jun-26-2003	508	24.7	8.0	1,280	4.4	1.2
Jul-03-2003	440	23.9	8.1	1,390	4.5	0.5
Jul-10-2003	410	25.0	8.1	1,370	5.7	1.3
Jul-17-2003	364	25.8	8.0	1,360	3.0	1.2
Jul-24-2003	324	26.4	7.9	1,350	P	1.2
Jul-31-2003	452	25.3	7.9	1,250	2.6	1.2

**Table 20. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from August 2002 to July 2003. 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	%	%	%	%	%	%
Aug-2002	85	88	95	90	95	98
Sep-2002	100	98	98	95	95	93
Oct-2002	93	98	100	93	98	100
Nov-2002	98	55*	83	65*	100	100
Dec-2002	100	88	78*	98	98	100
Jan-2003	98	65*	80	95	88	80
Feb-2003	98	78	73	88	98	100
Mar-2003	93	85*	100	95	100	100
Apr-2003	90	100	100	75*	88	100
May-2003	98	100	100	95	100	100
Jun-2003	95	93	98	93	65†	100
Jul-2003	95	100	93	98	93	100

**Table 21. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from August 2002 to July 2003. 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
Aug-2002	0.49*	0.49	0.49	0.58	0.57	0.55
Sep-2002	0.38	0.38	0.29	0.33	0.31	0.30
Oct-2002	0.66	0.66	0.71	0.62	0.67	0.61
Nov-2002	0.41	0.22*	0.41	0.27*	0.38	0.33
Dec-2002	0.55	0.48*	0.49*	0.60	0.57	0.52
Jan-2003	0.37	0.32	0.33	0.32	0.40	0.35
Feb-2003	0.27	0.24	0.22	0.25	0.26	0.30
Mar-2003	0.33	0.36	0.34	0.28	0.30	0.35
Apr-2003	0.34	0.50	0.47	0.31	0.30	0.24
May-2003	0.37*	0.46*	0.40*	0.46	0.50	0.30
Jun-2003	0.47	0.43	0.40	0.40	0.47	0.37
Jul-2003	0.58*	0.61*	0.73	0.65	0.71	0.65

**Table 22. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from August 2002 to July 2003. 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	%	%	%	%	%	%
Aug-2002	100	90	100	60*	100	90
Sep-2002	90	100	90	100	90	90
Oct-2002	100	89	90	100	100	89
Nov-2002	60*†† D	100	100	100	100	100
Dec-2002	100	100	100	90	100	90
Jan-2003	90	90	100	90	100	100
Feb-2003	100	100	100	100	100	100
Mar-2003	100	100	90	90	100	90
Apr-2003	90	100	100	100	80	100
May-2003	100	100	100	80	100	100
Jun-2003	90	100	90	100	80	90
Jul-2003	100	90	100	90	80	100

**Table 23. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from August 2002 to July 2003. 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
Aug-2002	40.8	26.6	34.1	20.4	25.6	22.9
Sep-2002	24.4	28.0	28.7	31.1	23.7	16.6
Oct-2002	70.4	30.2	29.6	27.9	29.9	21.1
Nov-2002	7.9* D	30.3	33.5	29.5	18.4	20.3
Dec-2002	22.8	26.3	36.7	29.9	26.7	21.4
Jan-2003	30.1	37.0	38.8	26.3*	38.6	43.0
Feb-2003	36.1	38.0	32.9	37.0	35.0	28.7
Mar-2003	50.9	43.2	46.6	44.4	44.0	41.5
Apr-2003	38.5	42.0	43.3	34.6	31.1	35.1
May-2003	31.7	29.2	34.6	19.0*	30.4	23.7
Jun-2003	28.5	23.0	24.3	29.7	19.5	27.4
Jul-2003	39.9	28.8	46.9	28.2	25.0	26.0

**Table 24. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from August 2002 to July 2003. 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
Aug-2002	NA	NA	NA	NA	NA	NA
Sep-2002	10.9	8.2	7.4	7.6	11.9	12.0
Oct-2002	8.9	5.9*	6.4*	6.4*	7.8	9.5
Nov-2002	10.8*	15.7	11.9*	10.8*	15.7	14.2
Dec-2002	7.3‡	9.7	10.0	6.8‡	2.4 † † †	7.7 † † †
Jan-2003	3.9*	11.7	10.2	5.7*	7.7‡	7.7‡
Feb-2003	0.6*	2.0‡	1.0‡	1.5*	3.0 † † † †	1.2 † † † †
Mar-2003	12.4*	18.4	14.6	20.3	17.4	22.2
Apr-2003	11.1*	15.4	13.3	8.9*	15.7	27.6
May-2003	8.4*	12.9	10.4	10.9	12.1	13.2
Jun-2003	16.2*	15.8*	13.2*	22.8*	31.6	35.2
Jul-2003	15.9*	22.7	12.1*	8.7*	19.5	16.6

**Table 25. Summary of selenium concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, May 2003 to July 2003.**

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
May-12-2003	45	1.4	22	0.7	<0.4
May-14-2003	57	1.0	34	1.1	<0.4
May-16-2003	58	1.1	35	0.7	0.5
Jun-23-2003	45	1.2	34	0.6	<0.4
Jun-25-2003	41	1.1	28	0.5	<0.4
Jun-27-2003	44	0.9	31	0.6	<0.4
Jul-21-2003	28	1.2	17	0.5	<0.4
Jul-23-2003	32	1.0	33	0.5	<0.4
Jul-25-2003	32	1.2	23	0.6	<0.4

**Table 26. Summary of total suspended solids concentrations in grab water samples collected from May 2003 to July 2003.**

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
May-12-2003	108	61	100	101	31
May-14-2003	52	62	84	71	22
May-16-2003	88	177	162	105	19
Jun-23-2003	54	110	79	152	36
Jun-25-2003	78	146	115	202	49
Jun-27-2003	102	164	159	222	32
Jul-21-2003	35	145	75	180	67
Jul-23-2003	27	79	84	175	41
Jul-25-2003	29	128	64	208	40

**Table 27. Explanations of footnotes and agency abbreviations.**

<b>Footnote</b>	<b>Explanation</b>
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 <sup>6</sup> 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 µg/L as of June 1998.
√	Based on definitive bioassay, NOEC is 50 percent
D	Sample was dechlorinated