

GRASSLAND BYPASS PROJECT

MONTHLY DATA REPORT

November 2003

February 9, 2004

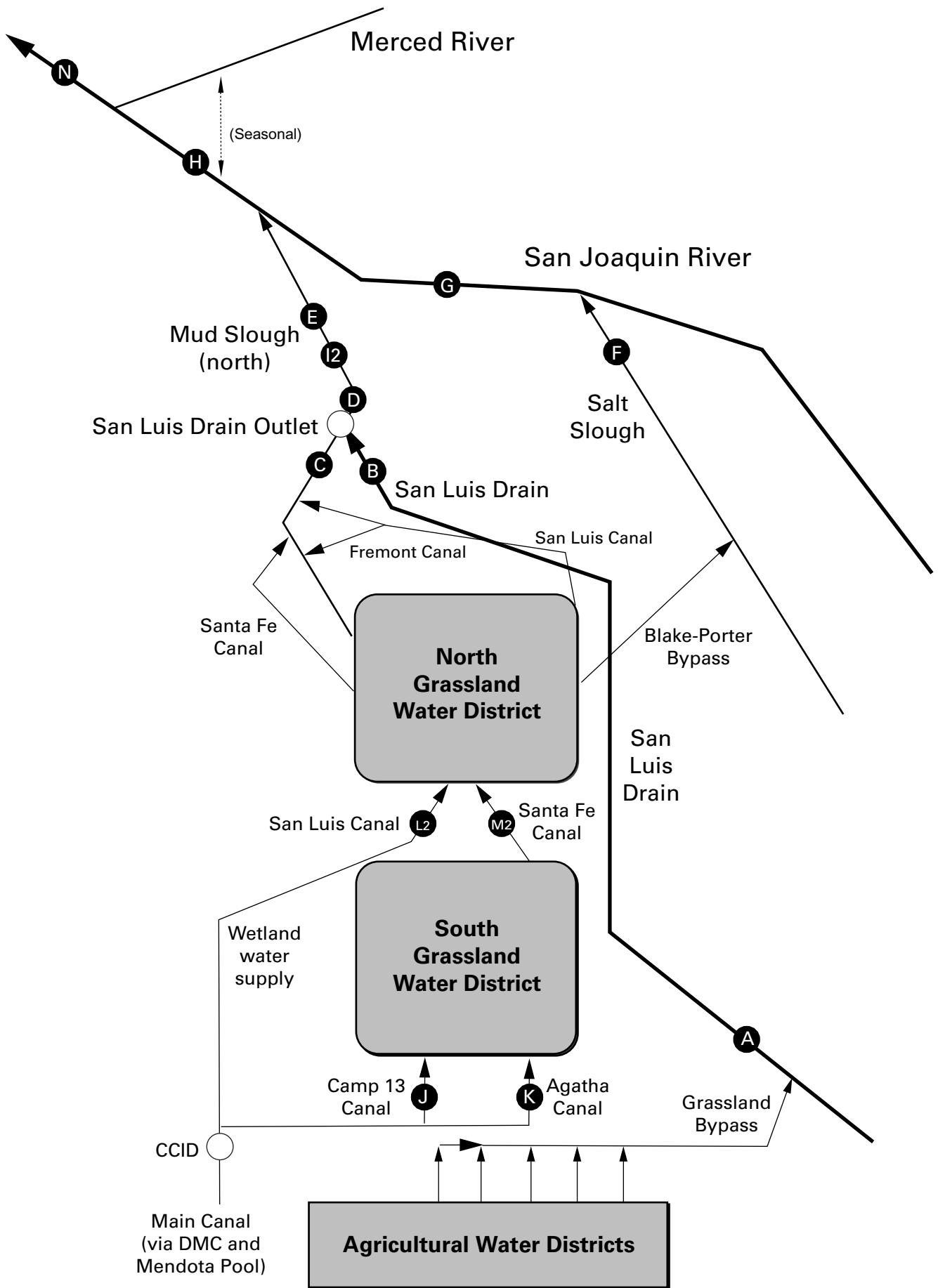
Preliminary Results

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

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

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Specific Conductance
DATA SOURCE	SLDMWA	SLDMWA
UNITS	cfs	µS/cm
Nov-01-2003	14	5,070
Nov-02-2003	13	4,930
Nov-03-2003	13	5,010
Nov-04-2003	16	4,920
Nov-05-2003	19	5,430
Nov-06-2003	18	5,080
Nov-07-2003	19	4,670
Nov-08-2003	17	4,430
Nov-09-2003	17	4,370
Nov-10-2003	16	4,500
Nov-11-2003	17	4,540
Nov-12-2003	18	4,530
Nov-13-2003	19	4,280
Nov-14-2003	17	4,420
Nov-15-2003	16	4,610
Nov-16-2003	16	4,610
Nov-17-2003	15	4,570
Nov-18-2003	15	4,540
Nov-19-2003	15	4,600
Nov-20-2003	15	4,750
Nov-21-2003	14	4,930
Nov-22-2003	13	5,020
Nov-23-2003	14	5,250
Nov-24-2003	14	5,080
Nov-25-2003	15	4,960
Nov-26-2003	15	4,900
Nov-27-2003	15	5,060
Nov-28-2003	15	5,080
Nov-29-2003	16	5,360
Nov-30-2003	17	5,140
.	.	.
Mean	16	4,820

Table 2a. Continuous water monitoring at Station B (discharge from San Luis Drain), November 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
Nov-01-2003	23	15.1	5.6	3,920	52.1	6.5
Nov-02-2003	21	14.7	5.5	4,040	58.4	6.6
Nov-03-2003	20	14.5	6.2	4,320	63.0	6.8
Nov-04-2003	20	14.2	7.6	4,730	73.5	7.9
Nov-05-2003	23	14.2	7.6	4,950	96.4	12.0
Nov-06-2003	26	14.6	7.1	4,390	61.7	8.7
Nov-07-2003	26	15.1	7.2	4,460	60.0	8.4
Nov-08-2003	25	15.0	7.1	4,370	58.5	7.9
Nov-09-2003	25	14.9	6.6	4,150	50.8	6.8
Nov-10-2003	25	15.2	7.3	4,290	53.0	7.1
Nov-11-2003	24	15.0	7.2	4,570	59.9	7.8
Nov-12-2003	24	14.3	7.0	4,750	79.3	10.3
Nov-13-2003	25	14.4	6.9	4,440	71.6	9.7
Nov-14-2003	26	14.6	6.3	4,070	56.7	8.0
Nov-15-2003	24	14.4	6.1	3,950	47.7	6.2
Nov-16-2003	23	13.9	6.2	3,910	46.8	5.8
Nov-17-2003	22	14.5	6.8	4,080	50.4	6.0
Nov-18-2003	21	14.4	6.8	4,050	48.2	5.5
Nov-19-2003	20	14.3	6.8	4,080	47.7	5.1
Nov-20-2003	20	14.2	6.2	3,850	42.5	4.6
Nov-21-2003	21	13.5	P	3,930	44.5	5.0
Nov-22-2003	22 e	11.3	P	4,010	52.8	6.3
Nov-23-2003	19 e	10.1	P	4,080	61.7	6.3
Nov-24-2003	19 e	9.8	P	3,970	51.3	5.3
Nov-25-2003	20 e	9.4	P	3,930	47.0	5.1
Nov-26-2003	21 e	9.5	P	3,940	46.0	5.2
Nov-27-2003	20 e	9.6	P	3,970	48.1	5.2
Nov-28-2003	20	10.0	P	4,140	61.3	6.6
Nov-29-2003	20	10.1	P	4,130	60.8	6.6
Nov-30-2003	20	10.2	P	4,320	69.8	7.5
.
Mean	22	13.2	6.7	4,190	57.4	6.9
Total Acre-feet	1,320					
Total (lbs)						207

Load Limitation for November 2003 (lbs)	301
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Table 2b. Continuous water monitoring at San Luis Drain Outlet, November 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
Nov-01-2003	22	52.1	6.2
Nov-02-2003	20	58.4	6.3
Nov-03-2003	19	63.0	6.5
Nov-04-2003	19	73.5	7.5
Nov-05-2003	22	96.4	11.4
Nov-06-2003	24	61.7	8.0
Nov-07-2003	25	60.0	8.1
Nov-08-2003	25	58.5	7.9
Nov-09-2003	24	50.8	6.6
Nov-10-2003	22	53.0	6.3
Nov-11-2003	22	59.9	7.1
Nov-12-2003	22	79.3	9.4
Nov-13-2003	23	71.6	8.9
Nov-14-2003	25	56.7	7.6
Nov-15-2003	23	47.7	5.9
Nov-16-2003	22	46.8	5.6
Nov-17-2003	21	50.4	5.7
Nov-18-2003	21	48.2	5.5
Nov-19-2003	20	47.7	5.1
Nov-20-2003	20	42.5	4.6
Nov-21-2003	19	44.5	4.6
Nov-22-2003	19	52.8	5.4
Nov-23-2003	19	61.7	6.3
Nov-24-2003	19	51.3	5.3
Nov-25-2003	19	47.0	4.8
Nov-26-2003	20	46.0	5.0
Nov-27-2003	20	48.1	5.2
Nov-28-2003	19	61.3	6.3
Nov-29-2003	19	60.8	6.2
Nov-30-2003	20	69.8	7.5
Mean	21	57.4	6.6
Total Acre-feet	1,260		
Total (lbs)			197

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.

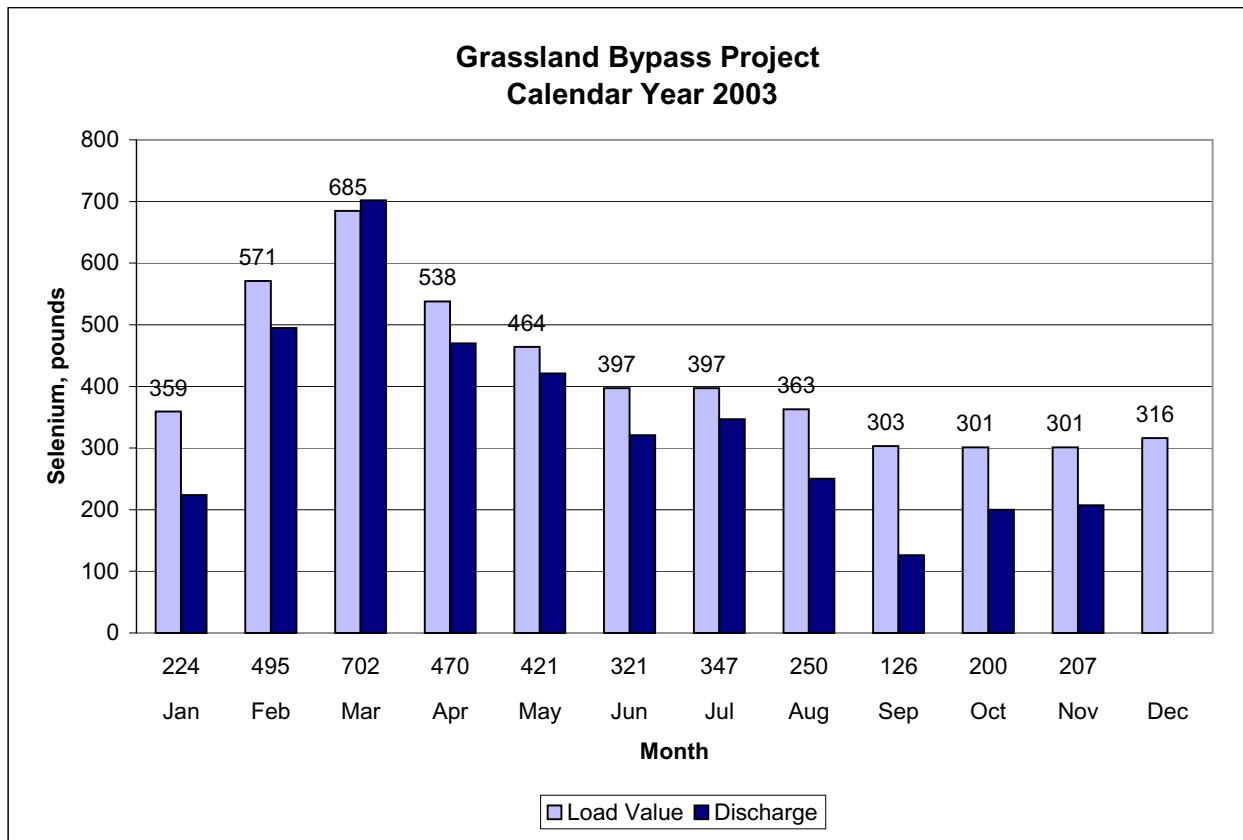
This change is subject to approval by the California Regional Water Quality Board and modification of the Waste Discharge Requirement Order and Monitoring and Reporting Program. It is anticipated that flow will be measured solely at the Outlet works for determination of GBP flow discharge.

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)

Note: USGS is verifying flow data for the SLD Terminus.

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), November 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
Nov-01-2003	176	14.3	1,510
Nov-02-2003	210	13.9	1,380
Nov-03-2003	213	14.0	1,380
Nov-04-2003	213	13.6	1,400
Nov-05-2003	205	13.9	1,520
Nov-06-2003	209	14.5	1,480
Nov-07-2003	208	15.2	1,440
Nov-08-2003	208	15.0	1,440
Nov-09-2003	200	14.9	1,450
Nov-10-2003	193	15.2	1,420
Nov-11-2003	183	14.6	1,430
Nov-12-2003	179	13.9	1,470
Nov-13-2003	172	14.2	1,470
Nov-14-2003	176	14.5	1,410
Nov-15-2003	172	14.3	1,390
Nov-16-2003	170	13.7	1,390
Nov-17-2003	167	14.5	1,410
Nov-18-2003	171	14.5	1,430
Nov-19-2003	169	14.2	1,450
Nov-20-2003	172	14.0	1,430
Nov-21-2003	161	13.1	1,450
Nov-22-2003	153	10.7	1,470
Nov-23-2003	142	9.3	1,540
Nov-24-2003	128	8.9	1,630
Nov-25-2003	133	8.5	1,590
Nov-26-2003	130	9.0	1,620
Nov-27-2003	126	9.2	1,650
Nov-28-2003	113	10.1	1,750
Nov-29-2003	101	10.3	1,830
Nov-30-2003	95	10.5	1,890
.	.	.	.
Mean	168	12.9	1,500

Table 4. Continuous water monitoring at Station F (Salt Slough at Highway 165), November 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
Nov-01-2003	142	14.0	1,260
Nov-02-2003	149	13.5	1,210
Nov-03-2003	150	13.6	1,210
Nov-04-2003	168	13.1	1,200
Nov-05-2003	171	13.2	1,200
Nov-06-2003	166	13.7	1,200
Nov-07-2003	173	14.6	1,220
Nov-08-2003	163	14.4	1,250
Nov-09-2003	160	14.7	1,280
Nov-10-2003	166	14.9	1,310
Nov-11-2003	170	14.4	1,310
Nov-12-2003	160	13.5	1,290
Nov-13-2003	157	13.9	1,300
Nov-14-2003	160	14.2	1,340
Nov-15-2003	160	14.0	1,360
Nov-16-2003	165	13.4	1,370
Nov-17-2003	171	14.1	1,380
Nov-18-2003	169	14.1	1,380
Nov-19-2003	160	13.7	1,370
Nov-20-2003	167	13.5	1,290
Nov-21-2003	174	12.7	1,220
Nov-22-2003	182	10.8	1,190
Nov-23-2003	164	9.6	1,290
Nov-24-2003	152	9.1	1,340
Nov-25-2003	149	8.8	1,310
Nov-26-2003	144	9.3	1,290
Nov-27-2003	136	9.6	1,310
Nov-28-2003	132	10.3	1,350
Nov-29-2003	128	10.6	1,400
Nov-30-2003	125	10.8	1,460
.	.	.	.
Mean	158	12.7	1,300

Table 5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), November 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
Nov-01-2003	709	14.3	1,030	1.7
Nov-02-2003	746	13.7	975	1.4
Nov-03-2003	779	13.7	938	1.6
Nov-04-2003	759	13.1	949	1.6
Nov-05-2003	777	13.2	962	1.6
Nov-06-2003	791	13.7	951	1.9
Nov-07-2003	790	14.5	981	2.6
Nov-08-2003	787	14.5	1,000	2.0
Nov-09-2003	782	14.5	1,030	1.9
Nov-10-2003	777	14.6	1,060	1.9
Nov-11-2003	770	14.3	1,050	1.6
Nov-12-2003	757	13.5	1,060	1.7
Nov-13-2003	735	13.8	1,090	2.0
Nov-14-2003	716	14.1	1,120	2.6
Nov-15-2003	714	13.9	1,120	2.5
Nov-16-2003	727	13.3	1,080	2.0
Nov-17-2003	719	14.0	1,100	1.7
Nov-18-2003	727	14.1	1,080	1.7
Nov-19-2003	732	13.9	1,080	1.7
Nov-20-2003	725	13.7	1,090	1.7
Nov-21-2003	726	13.0	1,090	1.5
Nov-22-2003	730	11.0	1,080	1.4
Nov-23-2003	741	9.7	1,090	1.4
Nov-24-2003	713	9.2	1,100	1.6
Nov-25-2003	684	8.9	1,160	1.8
Nov-26-2003	675	9.2	1,190	1.6
Nov-27-2003	672	9.3	1,200	P
Nov-28-2003	667	9.9	1,210	P
Nov-29-2003	658	10.2	1,220	P
Nov-30-2003	644	10.6	1,260	P
.
Mean	731	12.6	1,080	1.8

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	.	.	.
Sep-03-2003	34	.	.	3,680	180	.	.	.
Sep-10-2003	20	.	.	4,630	78	.	.	.
Sep-17-2003	11	.	.	5,560	24	.	.	.
Sep-24-2003	16	.	.	3,970	89	.	.	.
Oct-01-2003	12	.	.	5,480	80	.	.	.
Oct-08-2003	21	.	.	5,020	100	.	.	.
Oct-15-2003	18	.	.	5,060	54	.	.	.
Oct-22-2003	14	.	.	5,110	91	.	.	.
Oct-29-2003	17	.	.	5,200	85	.	.	.
Nov-05-2003	19	.	.	5,650	NA	.	.	.
Nov-12-2003	18	.	.	4,780	52	.	.	.
Nov-19-2003	15	.	.	4,640	35	.	.	.
Nov-25-2003	15	.	.	4,900	14	.	.	.

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
Sep-02-2003	34	.	.	3,740	.	34.4	.	5.8
Sep-09-2003	21	.	.	3,950	.	30.6	.	6.3
Sep-16-2003	12	.	.	4,640	.	42.0	.	8.3
Sep-23-2003	14	.	.	5,060	.	54.0	.	8.7
Sep-30-2003	10	.	.	4,830	.	45.0	.	9.3
Oct-07-2003	23	.	.	4,780	.	66.5	.	8.7
Oct-14-2003	17	.	.	5,190	.	81.8	.	8.3
Oct-21-2003	14	.	.	4,810	.	68.5	.	8.2
Oct-28-2003	18	.	.	5,010	.	85.2	.	8.4
Nov-04-2003	16	.	.	5,170	.	78.5	.	8.3
Nov-11-2003	17	.	.	4,840	.	77.4	.	8.2
Nov-18-2003	15	.	.	4,670	.	P	.	8.5
Nov-24-2003	14	.	.	5,030	.	90.9	.	8.3

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
Sep-04-2003	34	25.8	8.3	3,610	27	31.8	6.0
Sep-11-2003	21	22.7	8.4	4,020	32	28.6	6.7
Sep-18-2003	14	21.2	8.5	4,480	33	36.0	7.5
Sep-25-2003	19	22.7	8.7	4,690	39	36.6	8.0
Oct-02-2003	17	21.8	8.4	3,990	34	30.7	6.8
Oct-09-2003	26	21.3	8.3	4,140	33	55.7	6.6
Oct-16-2003	23	18.6	8.5	4,640	33	65.7	7.3
Oct-23-2003	20	20.1	8.3	4,140	28	55.3	6.6
Oct-30-2003	22	16.7	8.1	4,410	22	51.0	7.5
Nov-06-2003	26	14.1	8.4	4,460	32	57.8	7.0
Nov-13-2003	25	13.7	8.3	4,380	31	68.1	6.1
Nov-20-2003	20	13.8	8.2	3,900	30	P	5.9
Nov-26-2003	21	8.9	8.3	3,970	28	46.5	6.2

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
Sep-04-2003	25	24.6	7.7	783	.	0.4	0.6
Sep-11-2003	19	NA	NA	NA	.	NA	NA
Sep-18-2003	34	20.1	7.8	679	.	0.4	0.5
Sep-25-2003	59	21.9	7.5	722	.	<0.4	0.5
Oct-02-2003	72	20.8	7.4	774	.	0.4	0.6
Oct-09-2003	100	20.6	7.4	808	.	<0.4	0.6
Oct-16-2003	104	18.2	7.5	989	.	<0.4	0.7
Oct-23-2003	151	19.4	7.5	986	.	0.5	0.7
Oct-30-2003	135	15.3	7.7	1,150	.	<0.4	0.8
Nov-06-2003	183	13.8	7.7	1,130	.	<0.4	0.8
Nov-13-2003	147	13.1	7.7	1,190	.	<0.4	0.9
Nov-20-2003	152	13.3	7.7	1,230	.	P	0.9
Nov-26-2003	109	7.9	7.9	1,410	.	0.4	1.0

** 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
Sep-04-2003	59	25.0	8.0	2,640	20.0	4.1
Sep-11-2003	40	23.5	8.3	2,340	13.6	3.6
Sep-18-2003	48	19.6	8.0	1,750	9.2	2.4
Sep-25-2003	78	21.9	7.7	1,650	7.6	2.2
Oct-02-2003	89	20.8	7.6	1,430	6.0	1.8
Oct-09-2003	126	20.7	7.5	1,650	11.0	2.0
Oct-16-2003	127	18.0	7.6	1,630	9.4	1.8
Oct-23-2003	171	19.4	7.6	1,360	5.5	1.3
Oct-30-2003	157	15.6	7.7	1,650	7.1	1.8
Nov-06-2003	209	13.8	7.8	1,550	8.3	1.5
Nov-13-2003	172	13.2	7.7	1,710	10.4	1.7
Nov-20-2003	172	13.3	7.8	1,590	P	1.4
Nov-26-2003	130	8.0	8.0	1,850	7.3	1.7

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
Sep-04-2003	.	7.1	2,650	22	19.3	4.1
Sep-09-2003	.	8.0	2,840	34	18.4	4.4
Sep-17-2003	.	8.1	2,310	31	10.2	3.2
Sep-24-2003	.	7.7	1,600	19	7.1	2.0
Oct-01-2003	.	7.1	1,400	44	5.4	1.6
Oct-08-2003	.	7.4	1,870	NA	7.7	2.3
Oct-15-2003	.	7.3	1,810	18	9.4	1.9
Oct-21-2003	.	7.5	1,600	15	7.4	1.5
Oct-29-2003	.	7.7	1,640	17	6.6	1.7
Nov-06-2003	.	7.6	1,580	11	6.6	1.6
Nov-10-2003	.	7.6	1,630	17	5.5	1.6
Nov-20-2003	.	7.5	1,640	14	4.5	1.6
Nov-24-2003	.	7.8	2,050	NA	7.2	2.0

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
Sep-04-2003	74	24.2	7.9	1,060	0.4	0.4
Sep-11-2003	66	20.8	8.0	1,180	0.6	0.6
Sep-18-2003	56	18.3	7.8	1,290	<0.4	0.6
Sep-25-2003	57	19.9	8.0	1,260	<0.4	0.8
Oct-02-2003	86	19.2	7.8	1,070	0.6	0.6
Oct-09-2003	128	19.3	7.8	1,040	NA	0.6
Oct-16-2003	108	17.1	7.8	1,250	0.5	0.6
Oct-23-2003	133	18.4	7.7	1,240	0.6	0.6
Oct-30-2003	121	14.4	7.8	1,240	<0.4	0.6
Nov-06-2003	166	12.8	7.7	1,200	<0.4	0.6
Nov-13-2003	157	12.8	7.7	1,390	<0.4	0.8
Nov-20-2003	167	12.6	7.6	1,380	P	0.8
Nov-26-2003	144	8.2	7.7	1,540	1.2	0.8

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 ^{††}	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Sep-03-2003	155	.	.	401	0.9	0.2
Sep-10-2003	180	.	.	400	0.6	0.2
Sep-17-2003	180	.	.	418	0.8	0.2
Sep-24-2003	180	.	.	382	<0.4	0.2
Oct-01-2003	195	.	.	433	0.6	0.2
Oct-08-2003	80	.	.	522	<0.4	0.2
Oct-15-2003	10	.	.	570	<0.4	0.2
Oct-22-2003	17	.	.	583	0.6	0.1
Oct-29-2003	10	.	.	519	<0.4	0.2
Nov-05-2003	10	.	.	567	0.4	0.1
Nov-12-2003	10	.	.	568	0.6	0.2
Nov-19-2003	10	.	.	596	P	0.3
Nov-25-2003	10	.	.	710	0.6	0.4

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 ^{††}	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Sep-03-2003	55	.	.	349	0.7	0.1
Sep-10-2003	140	.	.	383	0.6	0.2
Sep-17-2003	160	.	.	370	0.5	0.2
Sep-24-2003	160	.	.	394	0.4	0.1
Oct-01-2003	160	.	.	433	0.6	0.1
Oct-08-2003	160	.	.	522	<0.4	0.2
Oct-15-2003	50	.	.	570	<0.4	0.2
Oct-22-2003	50	.	.	583	0.6	0.1
Oct-29-2003	50	.	.	519	<0.4	0.2
Nov-05-2003	50	.	.	572	0.4	0.1
Nov-12-2003	50	.	.	529	0.5	0.2
Nov-19-2003	50	.	.	565	P	0.3
Nov-25-2003	50	.	.	550	0.5	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 ^{††}	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Sep-03-2003	145	.	.	575	1.0	0.3
Sep-10-2003	145	.	.	573	1.0	0.4
Sep-17-2003	145	.	.	449	0.7	0.2
Sep-24-2003	145	.	.	406	0.5	0.2
Oct-01-2003	145	.	.	428	0.6	0.2
Oct-08-2003	145	.	.	593	0.4	0.2
Oct-15-2003	145	.	.	572	0.4	0.2
Oct-22-2003	105	.	.	587	0.5	0.1
Oct-29-2003	45	.	.	578	0.4	0.2
Nov-05-2003	45	.	.	580	0.5	0.2
Nov-12-2003	15	.	.	608	0.7	0.3
Nov-19-2003	0	.	.	618	P	0.3
Nov-25-2003	0	.	.	900	0.9	0.7

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 ^{††}	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Sep-03-2003	57	.	.	552	0.7	0.4
Sep-10-2003	66	.	.	578	0.9	0.4
Sep-17-2003	46	.	.	559	0.7	0.4
Sep-24-2003	41	.	.	563	0.4	0.4
Oct-01-2003	58	.	.	578	0.6	0.4
Oct-08-2003	65	.	.	739	0.4	0.5
Oct-15-2003	85	.	.	922	0.5	0.8
Oct-22-2003	70	.	.	952	0.7	0.7
Oct-29-2003	99	.	.	1,190	0.5	1.2
Nov-05-2003	130	.	.	1,030	0.5	0.9
Nov-12-2003	133	.	.	1,070	0.4	1.0
Nov-19-2003	137	.	.	1,050	P	1.0
Nov-25-2003	128	.	.	1,070	0.6	1.0

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
Sep-03-2003	.	.	.	348	0.6	0.1
Sep-10-2003	.	.	.	370	0.5	0.1
Sep-17-2003	.	.	.	400	0.5	0.2
Sep-24-2003	.	.	.	380	<0.4	0.1
Oct-01-2003	.	.	.	427	0.5	0.2
Oct-08-2003	.	.	.	533	<0.4	0.1
Oct-15-2003	.	.	.	556	<0.4	0.2
Oct-22-2003	.	.	.	584	0.4	0.1
Oct-29-2003	.	.	.	508	<0.4	0.1
Nov-05-2003	.	.	.	567	0.5	0.1
Nov-12-2003	.	.	.	518	0.4	0.2
Nov-19-2003	.	.	.	560	P	0.2
Nov-25-2003	.	.	.	700	1.2	0.3

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
Sep-04-2003	88	24.6	7.9	1,510	0.4	0.6
Sep-11-2003	76	23.1	8.1	1,680	0.4	0.7
Sep-18-2003	60	19.0	7.9	2,200	<0.4	0.8
Sep-25-2003	72	21.3	8.0	1,690	<0.4	0.6
Oct-02-2003	83	19.7	7.8	1,570	0.5	0.7
Oct-09-2003	115	19.5	7.6	1,240	0.5	0.6
Oct-16-2003	109	17.9	7.9	1,350	<0.4	0.7
Oct-23-2003	120	18.9	7.8	1,350	0.5	0.7
Oct-30-2003	115	15.2	7.5	1,560	<0.4	0.7
Nov-06-2003	167	13.2	7.9	1,300	<0.4	0.7
Nov-13-2003	166	12.8	7.7	1,580	<0.4	0.8
Nov-20-2003	173	13.4	7.3	1,480	P	0.8
Nov-26-2003	160	7.8	7.8	1,560	0.5	0.8

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
Sep-02-2003	.	.	.	1,530	4.5	1.4
Sep-09-2003	.	.	.	1,960	6.9	1.9
Sep-16-2003	.	.	.	1,860	3.2	1.5
Sep-30-2003	.	.	.	1,310	3.0	1.1
Oct-07-2003	.	.	.	1,360	3.1	1.2
Oct-14-2003	.	.	.	1,420	4.6	1.1
Oct-21-2003	.	.	.	1,590	4.6	1.2
Oct-28-2003	.	.	.	1,560	3.0	1.1
Nov-04-2003	.	.	.	1,450	3.1	0.9
Nov-14-2003	.	.	.	1,730	4.1	1.2
Nov-18-2003	.	.	.	1,560	2.5	1.2
Nov-26-2003	.	.	.	1,710	2.8	1.2

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
Sep-04-2003	352	24.6	8.0	1,390	2.3	0.9
Sep-11-2003	351	23.2	8.0	1,310	1.8	0.9
Sep-18-2003	251	19.3	7.8	1,450	1.7	0.9
Sep-25-2003	344	21.8	8.0	1,180	1.6	0.7
Oct-02-2003	400	20.2	7.8	1,110	1.5	0.7
Oct-09-2003	550	20.2	7.7	1,060	1.7	0.7
Oct-16-2003	517	16.9	7.6	1,100	2.5	0.8
Oct-23-2003	1,010	18.4	7.7	634	1.3	0.4
Oct-30-2003	715	16.5	7.7	983	1.5	0.6
Nov-06-2003	791	13.6	7.8	960	2.3	0.6
Nov-13-2003	735	13.2	7.8	1,090	2.1	0.7
Nov-20-2003	725	13.3	7.9	1,090	P	0.7
Nov-26-2003	675	8.5	7.9	1,180	1.6	0.7

Table 20. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from December 2002 to November 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	%	%	%	%	%	%
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
Aug-2003	95	98	95	93	95	98
Sep-2003	100	100	95	93	98	100
Oct-2003	100	100	93	100	100	100
Nov-2003	100	93	40*	100	75	100

Table 21. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from December 2002 to November 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
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
Aug-2003	0.39	0.38	0.33	0.33	0.33	0.33
Sep-2003	0.46	0.37	0.45	0.38	0.31	0.38
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

Table 22. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from December 2002 to November 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	%	%	%	%	%	%
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
Aug-2003	90	100	90	90	90	100
Sep-2003	60*	100	100	90	100	90
Oct-2003	60*	100	100	100	100	100
Nov-2003	90	100	89	100	100	90

Table 23. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from December 2002 to November 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
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
Aug-2003	30.1	33.5	29.0	24.4	33.5	26.7
Sep-2003	25.1	30.1	36.1	31.2	33.0	25.6
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

Table 24. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from December 2002 to November 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 ⁵ cells/mL	10 ⁵ cells/mL	10 ⁵ cells/mL	10 ⁵ cells/mL	10 ⁵ cells/mL	10 ⁵ cells/mL
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
Aug-2003	11.9*	13.6	11.7*	13.9	14.5	10.9
Sep-2003	11.8*	15.5	14.5*	13.9*	15.9	12.2
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

Table 25. Summary of selenium concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, September 2003 to November 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
Sep-15-2003	28	<0.4	10	<0.4	<0.4
Sep-17-2003	36	0.5	7.9	<0.4	<0.4
Sep-19-2003	31	0.5	10	<0.4	<0.4
Oct-13-2003	64	0.4	10	<0.4	<0.4
Oct-15-2003	65	<0.4	9.5	<0.4	<0.4
Oct-17-2003	69	<0.4	11	<0.4	<0.4
Nov-10-2003	51	<0.4	5.8	<0.4	<0.4
Nov-12-2003	85	<0.4	8.8	<0.4	<0.4
Nov-14-2003	56	<0.4	8.8	<0.4	<0.4

Table 26. Summary of total suspended solids concentrations in grab water samples collected from September 2003 to November 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
Sep-15-2003	35	74	121	121	33
Sep-17-2003	67	93	90	79	46
Sep-19-2003	30	127	128	170	30
Oct-13-2003	19	35	38	77	18
Oct-15-2003	40	27	28	76	5
Oct-17-2003	55	30	36	164	13
Nov-10-2003	43	22	27	77	13
Nov-12-2003	46	17	26	64	12
Nov-14-2003	53	24	24	109	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