

GRASSLAND BYPASS PROJECT

MONTHLY DATA REPORT

December 2003

March 04, 2004

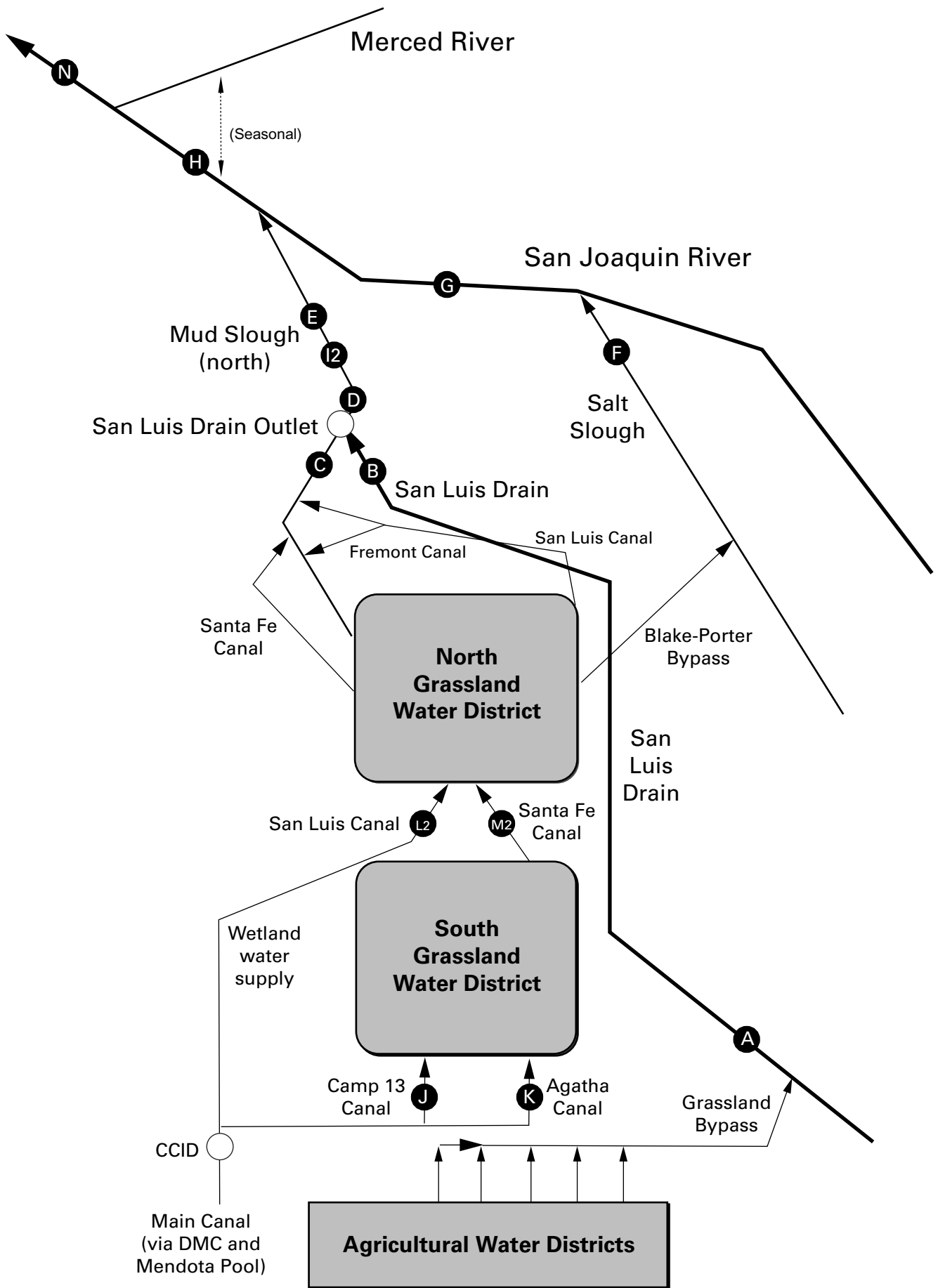
Preliminary Results

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

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Specific Conductance
DATA SOURCE	SLDMWA	SLDMWA
UNITS	cfs	µS/cm
Dec-01-2003	18	5,110
Dec-02-2003	18	4,950
Dec-03-2003	16	4,840
Dec-04-2003	15	4,880
Dec-05-2003	15	4,970
Dec-06-2003	16	5,050
Dec-07-2003	16	5,120
Dec-08-2003	16	5,180
Dec-09-2003	15	5,330
Dec-10-2003	17	5,200
Dec-11-2003	17	5,140
Dec-12-2003	17	5,160
Dec-13-2003	17	5,160
Dec-14-2003	17	5,160
Dec-15-2003	18	5,400
Dec-16-2003	16	5,460
Dec-17-2003	14	5,380
Dec-18-2003	9	5,000
Dec-19-2003	12	5,290
Dec-20-2003	20	5,970
Dec-21-2003	21	4,580
Dec-22-2003	17	4,720
Dec-23-2003	14	4,850
Dec-24-2003	14	4,910
Dec-25-2003	17	4,840
Dec-26-2003	19	4,820
Dec-27-2003	15	4,960
Dec-28-2003	13	5,410
Dec-29-2003	12	5,430
Dec-30-2003	15	4,690
Dec-31-2003	12	4,960
Mean	16	5,090

Table 2a. Continuous water monitoring at Station B (discharge from San Luis Drain), December 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
Dec-01-2003	21	10.8	P	4,310	64.6	7.3
Dec-02-2003	22	11.5	P	4,200	65.8	7.8
Dec-03-2003	23	11.8	P	4,210	61.7	7.7
Dec-04-2003	20	12.0	P	4,300	64.9	7.0
Dec-05-2003	20	12.3	P	4,400	72.9	7.9
Dec-06-2003	20	12.7	P	4,600	86.6	9.3
Dec-07-2003	21	13.2	P	4,440	77.8	8.8
Dec-08-2003	21	12.4	P	4,340	76.5	8.7
Dec-09-2003	20	11.2	P	4,200	75.0	8.1
Dec-10-2003	20	11.1	P	4,050	66.6	7.2
Dec-11-2003	22	11.4	P	4,040	61.4	7.3
Dec-12-2003	20	10.9	P	4,120	60.1	6.5
Dec-13-2003	21	11.3	P	4,240	65.3	7.4
Dec-14-2003	22	11.6	P	4,260	71.1	8.4
Dec-15-2003	22 e	10.9	P	4,280	73.4	8.7
Dec-16-2003	22 e	10.4	P	4,400	73.7	8.7
Dec-17-2003	22 e	10.1	P	4,410	81.4	9.7
Dec-18-2003	20 e	9.9	P	4,410	76.5	8.3
Dec-19-2003	16	9.9	P	4,390	73.9	6.4
Dec-20-2003	18	10.2	P	4,360	73.8	7.2
Dec-21-2003	24	10.8	P	4,400	74.1	9.6
Dec-22-2003	26	11.1	P	4,420	76.3	10.7
Dec-23-2003	23	11.0	P	4,450	79.9	9.9
Dec-24-2003	19	11.2	P	4,210	71.1	7.3
Dec-25-2003	21	11.1	P	3,830	36.8	4.2
Dec-26-2003	24 e	10.1	P	4,380	51.8	6.7
Dec-27-2003	25 e	9.6	P	4,800	85.2	11.5
Dec-28-2003	22 e	9.2	P	4,050	67.3	8.0
Dec-29-2003	18	8.8	P	3,960	61.4	6.0
Dec-30-2003	21	8.9	P	3,920	52.9	6.0
Dec-31-2003	20	9.6	P	3,450	56.2	6.1
Mean	21	10.9	P	4,250	68.9	7.9
Total Acre-feet	1,300					
Total (lbs)						244

Load Limitation for December 2003 (lbs)	316
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Table 2b. Continuous water monitoring at San Luis Drain Outlet, December 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
Dec-01-2003	21	64.6	7.3
Dec-02-2003	22	65.8	7.8
Dec-03-2003	22	61.7	7.3
Dec-04-2003	20	64.9	7.0
Dec-05-2003	20	72.9	7.9
Dec-06-2003	20	86.6	9.3
Dec-07-2003	20	77.8	8.4
Dec-08-2003	20	76.5	8.3
Dec-09-2003	20	75.0	8.1
Dec-10-2003	20	66.6	7.2
Dec-11-2003	21	61.4	7.0
Dec-12-2003	21	60.1	6.8
Dec-13-2003	21	65.3	7.4
Dec-14-2003	21	71.1	8.1
Dec-15-2003	21	73.4	8.3
Dec-16-2003	22	73.7	8.7
Dec-17-2003	21	81.4	9.2
Dec-18-2003	19	76.5	7.8
Dec-19-2003	16	73.9	6.4
Dec-20-2003	18	73.8	7.2
Dec-21-2003	23	74.1	9.2
Dec-22-2003	26	76.3	10.7
Dec-23-2003	24	79.9	10.3
Dec-24-2003	21	71.1	8.1
Dec-25-2003	21	36.8	4.2
Dec-26-2003	23	51.8	6.4
Dec-27-2003	25	85.2	11.5
Dec-28-2003	22	67.3	8.0
Dec-29-2003	21	61.4	7.0
Dec-30-2003	21	52.9	6.0
Dec-31-2003	20	56.2	6.1
Mean	21	68.9	7.8
Total Acre-feet	1,300		
Total (lbs)			243

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.

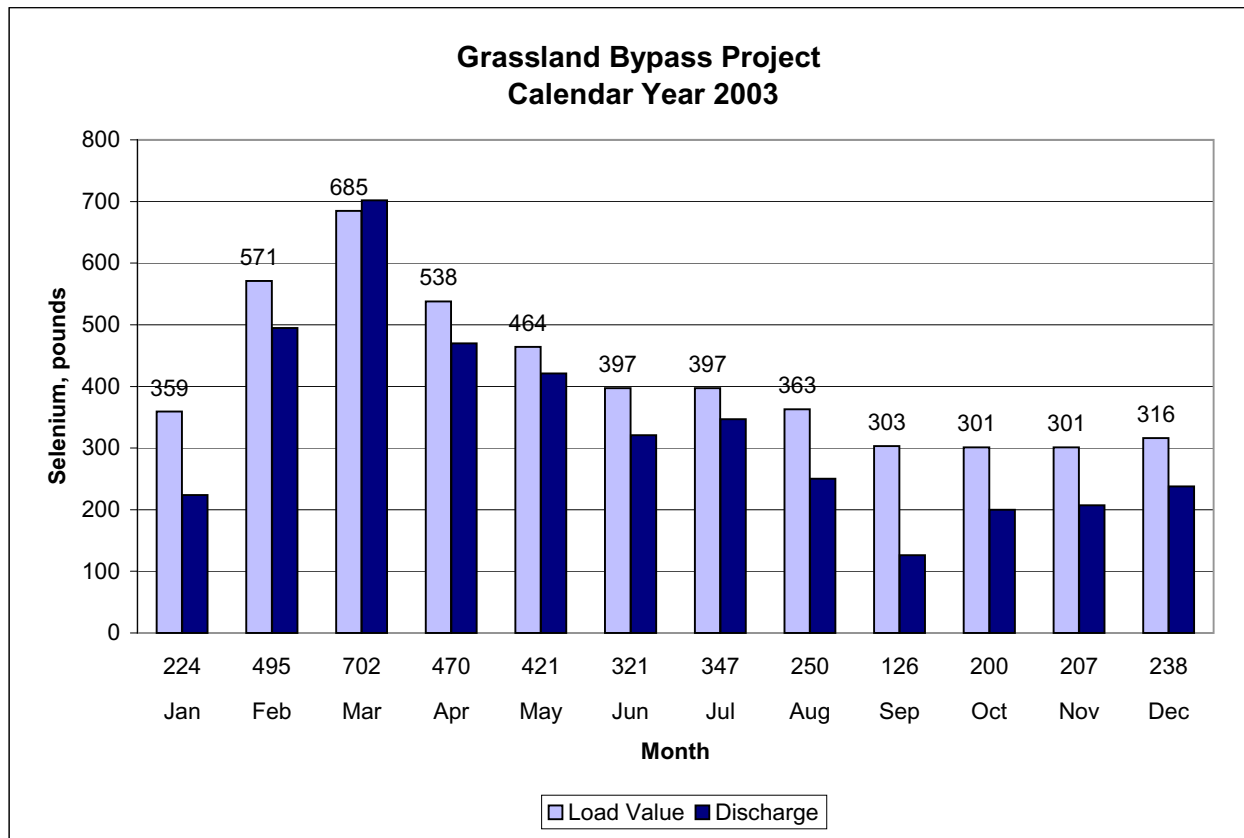
This change is subject to approval by the California Regional Water Quality Board and modification of the Waste Discharge Requirement Order and Monitoring and Reporting Program. It is anticipated that flow will be measured solely at the Outlet works for determination of GBP flow discharge.

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), December 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
Dec-01-2003	100	11.3	1,920
Dec-02-2003	103	12.0	1,880
Dec-03-2003	118	11.8	1,790
Dec-04-2003	118	12.1	1,790
Dec-05-2003	126	12.4	1,760
Dec-06-2003	124	12.8	1,810
Dec-07-2003	127	13.4	1,790
Dec-08-2003	128	11.8	1,770
Dec-09-2003	127	10.3	1,810
Dec-10-2003	144	10.7	1,720
Dec-11-2003	155	11.2	1,690
Dec-12-2003	162	10.2	1,690
Dec-13-2003	160	11.1	1,720
Dec-14-2003	158	11.7	1,750
Dec-15-2003	160	10.5	1,750
Dec-16-2003	164	9.8	1,760
Dec-17-2003	162	9.5	1,750
Dec-18-2003	147	9.5	1,780
Dec-19-2003	145	9.6	1,740
Dec-20-2003	165	10.1	1,690
Dec-21-2003	179	10.9	1,740
Dec-22-2003	184	11.1	1,760
Dec-23-2003	177	11.0	1,790
Dec-24-2003	167	11.3	1,780
Dec-25-2003	175	10.9	1,720
Dec-26-2003	188	9.3	1,750
Dec-27-2003	185	8.5	1,870
Dec-28-2003	177	8.0	1,790
Dec-29-2003	182	8.0	1,720
Dec-30-2003	219	8.4	1,630
Dec-31-2003	247	9.2	1,570
Mean	157	10.6	1,760

Table 4. Continuous water monitoring at Station F (Salt Slough at Highway 165), December 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
Dec-01-2003	123	11.8	1,510
Dec-02-2003	126	12.6	1,510
Dec-03-2003	116	12.4	1,710
Dec-04-2003	113	12.6	1,710
Dec-05-2003	105	13.1	1,820
Dec-06-2003	102	13.6	1,890
Dec-07-2003	98	14.1	1,900
Dec-08-2003	95	12.2	1,930
Dec-09-2003	91	10.7	1,970
Dec-10-2003	90	11.5	1,990
Dec-11-2003	90	12.1	1,980
Dec-12-2003	84	11.0	2,070
Dec-13-2003	83	12.1	2,040
Dec-14-2003	84	12.6	2,040
Dec-15-2003	83	11.0	2,040
Dec-16-2003	83	10.2	2,040
Dec-17-2003	87	9.9	2,020
Dec-18-2003	90	10.0	1,920
Dec-19-2003	86	10.0	1,970
Dec-20-2003	91	10.7	2,000
Dec-21-2003	100	11.7	1,860
Dec-22-2003	109	11.9	1,850
Dec-23-2003	108 e	NA	NA
Dec-24-2003	136 e	NA	NA
Dec-25-2003	155	11.3	1,570
Dec-26-2003	174	9.7	1,540
Dec-27-2003	184	8.8	1,510
Dec-28-2003	184	8.1	1,500
Dec-29-2003	186	8.2	1,490
Dec-30-2003	193	8.8	1,500
Dec-31-2003	202	9.6	1,480
Mean	118	11.1	1,810

Table 5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), December 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
Dec-01-2003	636	11.5	1,270	2.0
Dec-02-2003	628	12.1	1,280	2.3
Dec-03-2003	619	12.1	1,280	2.3
Dec-04-2003	607	12.5	1,300	2.4
Dec-05-2003	617	12.9	1,290	2.1
Dec-06-2003	615	13.2	1,270	2.1
Dec-07-2003	620	13.7	1,300	2.3
Dec-08-2003	615	12.5	1,320	2.6
Dec-09-2003	601	10.9	1,310	2.5
Dec-10-2003	618	11.1	1,330	2.6
Dec-11-2003	634	12.0	1,330	2.3
Dec-12-2003	670	11.0	1,290	2.0
Dec-13-2003	669	11.5	1,260	2.0
Dec-14-2003	652	12.4	1,330	2.2
Dec-15-2003	658	11.3	1,310	2.3
Dec-16-2003	673	10.3	1,300	2.3
Dec-17-2003	676	10.1	1,310	2.3
Dec-18-2003	673	10.1	1,300	2.3
Dec-19-2003	673	10.3	1,310	2.5
Dec-20-2003	699	11.0	1,260	2.2
Dec-21-2003	715	11.8	1,260	1.9
Dec-22-2003	742	12.1	1,260	2.1
Dec-23-2003	756	12.1	1,280	2.6
Dec-24-2003	759	12.3	1,310	2.6
Dec-25-2003	783	12.2	1,340	2.5
Dec-26-2003	808	10.8	1,250	2.0
Dec-27-2003	836	9.7	1,230	1.2
Dec-28-2003	846	9.1	1,280	2.1
Dec-29-2003	841	9.1	1,290	2.6
Dec-30-2003	892	9.5	1,250	1.9
Dec-31-2003	924	10.2	1,240	1.6
Mean	702	11.3	1,290	2.2

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	.	.	.
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	.	.	.
Dec-03-2003	16	.	.	4,680	53	.	.	.
Dec-10-2003	17	.	.	5,210	54	.	.	.
Dec-17-2003	14	.	.	5,260	21	.	.	.
Dec-22-2003	17	.	.	4,710	120	.	.	.
Dec-29-2003	12	.	.	4,360	NA	.	.	.

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
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	.	68.7	.	8.5
Nov-24-2003	14	.	.	5,030	.	90.9	.	8.3
Dec-01-2003	18	.	.	5,140	.	99.0	.	P
Dec-09-2003	15	.	.	5,080	.	95.4	.	P
Dec-16-2003	16	.	.	5,260	.	104	.	P
Dec-21-2003	21	.	.	5,070	.	100	.	P
Dec-28-2003	13	.	.	4,980	.	93.6	.	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
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	41.2	5.9
Nov-26-2003	21	8.9	8.3	3,970	28	46.5	6.2
Dec-04-2003	20	11.9	7.7	4,350	38	65.9	P
Dec-11-2003	22	11.1	8.0	4,030	NA	58.2	P
Dec-18-2003	20 e	9.5	8.1	4,430	26	69.9	P
Dec-23-2003	23	10.9	7.9	4,460	24	78.8	P
Dec-30-2003	21	8.5	7.8	4,020	21	55.1	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
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	.	<0.4	0.9
Nov-26-2003	109	7.9	7.9	1,410	.	0.4	1.0
Dec-04-2003	98	12.0	7.8	1,500	.	<0.4	P
Dec-11-2003	133	10.7	7.9	1,500	.	<0.4	P
Dec-18-2003	127	8.6	8.0	1,560	.	<0.4	P
Dec-23-2003	154	10.8	7.7	1,640	.	<0.4	P
Dec-30-2003	198	8.1	7.9	1,530	.	<0.4	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
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	5.4	1.4
Nov-26-2003	130	8.0	8.0	1,850	7.3	1.7
Dec-04-2003	118	12.0	7.7	2,040	10.5	P
Dec-11-2003	155	10.8	7.8	1,900	8.0	P
Dec-18-2003	147	8.6	7.9	2,020	10.0	P
Dec-23-2003	177	10.9	7.6	2,010	11.4	P
Dec-30-2003	219	8.1	7.9	1,820	5.8	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
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
Dec-01-2003	.	7.8	2,310	11	12.8	2.4
Dec-08-2003	.	7.7	1,420	11	7.9	1.9
Dec-15-2003	.	7.7	1,410	12	8.9	2.0
Dec-22-2003	.	7.5	1,910	6	8.4	1.9

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
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	0.5	0.8
Nov-26-2003	144	8.2	7.7	1,540	1.2	0.8
Dec-04-2003	113	12.2	7.9	1,670	<0.4	P
Dec-11-2003	90	11.2	7.5	2,020	<0.4	P
Dec-18-2003	90	8.6	7.6	1,920	<0.4	P
Dec-23-2003	108 e	11.4	7.4	1,740	0.6	P
Dec-30-2003	193	8.3	7.7	1,600	0.8	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 ^{††}	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
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	0.9	0.3
Nov-25-2003	10	.	.	710	0.6	0.4
Dec-03-2003	10	.	.	842	0.7	P
Dec-10-2003	10	.	.	740	0.7	P
Dec-17-2003	10	.	.	649	<0.4	P
Dec-22-2003	10	.	.	609	<0.4	P
Dec-29-2003	10	.	.	555	<0.4	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 ^{††}	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
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	0.9	0.3
Nov-25-2003	50	.	.	550	0.5	0.2
Dec-03-2003	50	.	.	598	<0.4	P
Dec-10-2003	50	.	.	630	0.4	P
Dec-17-2003	50	.	.	779	0.7	P
Dec-22-2003	50	.	.	737	0.6	P
Dec-29-2003	50	.	.	674	<0.4	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 ^{††}	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
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	0.8	0.3
Nov-25-2003	0	.	.	900	0.9	0.7
Dec-03-2003	0	.	.	1,740	1.6	P
Dec-10-2003	25	.	.	725	0.8	P
Dec-17-2003	0	.	.	824	0.8	P
Dec-22-2003	0	.	.	1,300	1.4	P
Dec-29-2003	0	.	.	900	0.6	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 ^{††}	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
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	0.7	1.0
Nov-25-2003	128	.	.	1,070	0.6	1.0
Dec-03-2003	134	.	.	1,150	0.5	P
Dec-10-2003	107	.	.	1,250	0.5	P
Dec-17-2003	61	.	.	1,280	0.5	P
Dec-22-2003	55	.	.	1,300	0.5	P
Dec-29-2003	60	.	.	1,200	0.6	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
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	0.9	0.2
Nov-25-2003	.	.	.	700	1.2	0.3
Dec-03-2003	.	.	.	662	1.0	P
Dec-10-2003	.	.	.	655	1.0	P
Dec-17-2003	.	.	.	655	0.9	P
Dec-22-2003	.	.	.	660	0.8	P
Dec-29-2003	.	.	.	660	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
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	0.4	0.8
Nov-26-2003	160	7.8	7.8	1,560	0.5	0.8
Dec-04-2003	132	12.1	8.0	2,000	<0.4	P
Dec-11-2003	109	11.3	7.5	2,210	<0.4	P
Dec-18-2003	136	8.9	8.2	1,780	<0.4	P
Dec-23-2003	145	10.9	7.6	1,840	0.5	P
Dec-30-2003	242	8.5	7.6	1,520	0.8	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
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
Dec-03-2003	.	.	.	NA	NA	NA
Dec-11-2003	.	.	.	2,080	4.0	1.4
Dec-16-2003	.	.	.	2,090	4.6	1.4
Dec-23-2003	.	.	.	1,850	4.7	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
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	1.5	0.7
Nov-26-2003	675	8.5	7.9	1,180	1.6	0.7
Dec-04-2003	607	12.3	7.9	1,280	2.4	P
Dec-11-2003	634	11.5	7.8	1,300	2.6	P
Dec-18-2003	673	9.2	8.0	1,300	2.5	P
Dec-23-2003	756	11.2	7.8	1,300	2.6	P
Dec-30-2003	892	8.6	7.8	1,240	1.8	P

Table 20. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from January 2003 to December 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	%	%	%	%	%	%
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
Dec-2004	95	40*	53*	83	88	100

Table 21. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from January 2003 to December 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
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
Dec-2004	0.50	0.29*	0.34	0.39	0.43	0.48

Table 22. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from January 2003 to December 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	%	%	%	%	%	%
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
Dec-2004	90	90	100	100	90	100

Table 23. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from January 2003 to December 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
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
Dec-2004	59.0	58.7	64.9	73.6	64.2	68.7

Table 24. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from January 2003 to December 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
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
Dec-2004	0.7*	26.6	34.4	21.1*	25.0	18.5

Table 25. Summary of selenium concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, October 2003 to December 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
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
Dec-08-2003	73	<0.4	10	<0.4	<0.4
Dec-10-2003	63	<0.4	9.4	<0.4	<0.4
Dec-12-2003	60	<0.4	7.9	<0.4	1.0

Table 26. Summary of total suspended solids concentrations in grab water samples collected from October 2003 to December 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
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
Dec-08-2003	40	17	12	79	3
Dec-10-2003	30	17	18	67	3
Dec-12-2003	33	18	30	37	8

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 µg/L as of June 1998.
√	Based on definitive bioassay, NOEC is 50 percent
D	Sample was dechlorinated