GRASSLAND BYPASS PROJECT

MONTHLY DATA REPORT

April 2004

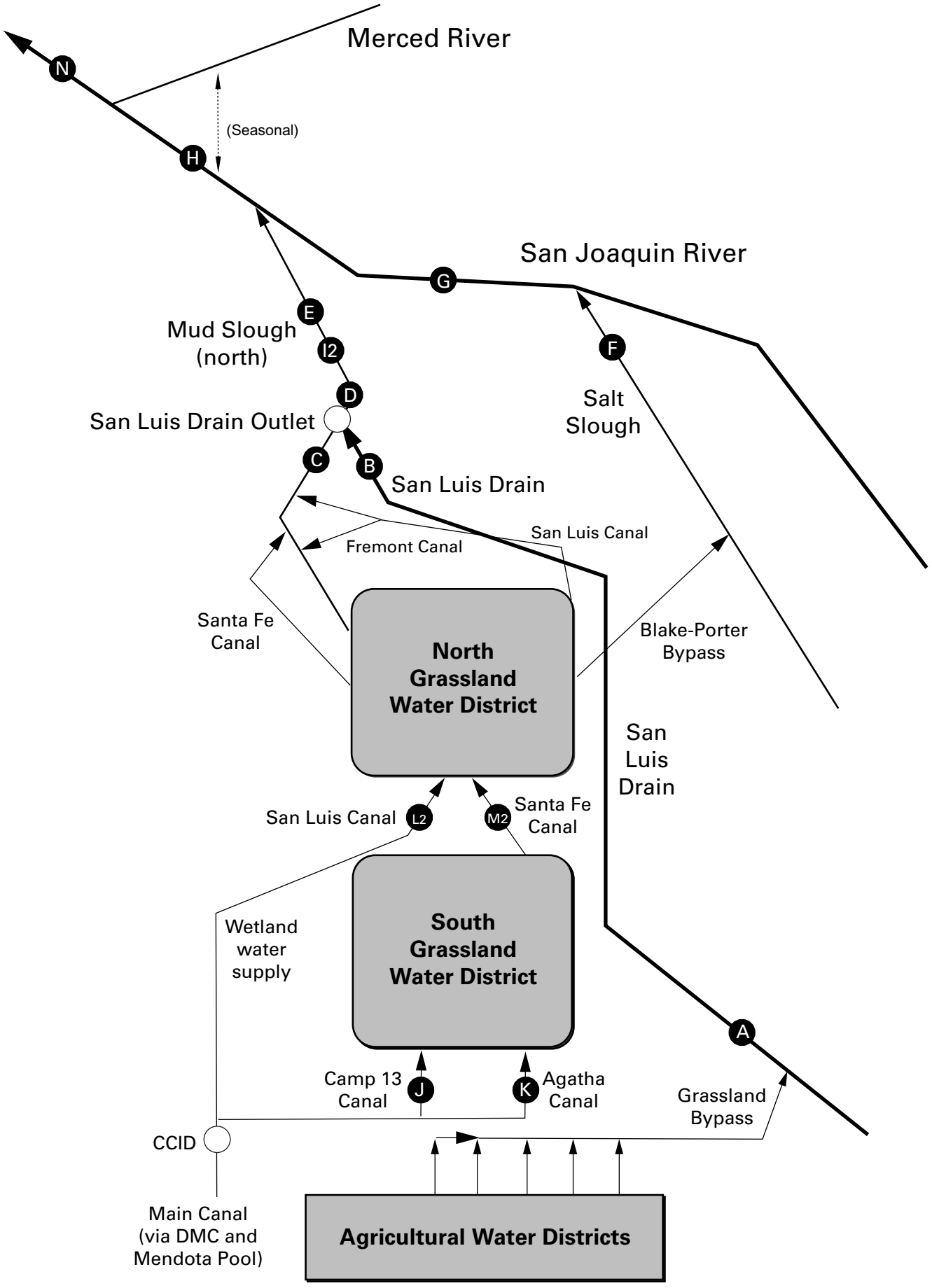
July 06, 2004

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


Merced River
N
(Seasonal)
H
San Joaquin River
G
E
Mud Slough
(north)
I2
F
D
San Luis Drain Outlet
Salt
Slough
C
B
San Luis Drain
San Luis Canal
Fremont Canal
Santa Fe
Canal
North
Grassland
Water District
Blake-Porter
Bypass
San
Luis
Drain
San Luis Canal
L2
M2
Santa Fe
Canal
Wetland
water
supply
South
Grassland
Water District
A
Camp 13
Canal
J
K
Agatha
Canal
Grassland
Bypass
CCID
Main Canal
(via DMC and
Mendota Pool)
Agricultural Water Districts

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MONTHLY DATA REPORT

LIST OF TABLES FOR MONTHLY REPORT

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

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Specific Conductance
DATA SOURCE	SLDMWA	SLDMWA
UNITS	cfs	µS/cm
Apr-01-2004	36	4,860
Apr-02-2004	36	5,170
Apr-03-2004	38	5,320
Apr-04-2004	38	5,230
Apr-05-2004	40	5,080
Apr-06-2004	40	4,860
Apr-07-2004	43	4,870
Apr-08-2004	42	5,060
Apr-09-2004	39	4,890
Apr-10-2004	37	4,770
Apr-11-2004	35	4,940
Apr-12-2004	36	5,260
Apr-13-2004	35	5,370
Apr-14-2004	33	5,280
Apr-15-2004	34	5,360
Apr-16-2004	36	5,210
Apr-17-2004	36	5,070
Apr-18-2004	34	5,170
Apr-19-2004	35	5,340
Apr-20-2004	39	4,900
Apr-21-2004	38	4,510
Apr-22-2004	40	4,700
Apr-23-2004	42	4,660
Apr-24-2004	48	4,330
Apr-25-2004	47	4,270
Apr-26-2004	45	4,540
Apr-27-2004	42	4,590
Apr-28-2004	45	4,720
Apr-29-2004	38	4,710
Apr-30-2004	40	4,790
.	.	.
Mean	39	4,930

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

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Boron	Specific Conductance	Selenium (total)	Selenium (total) Load
DATA SOURCE	USGS	USGS	CVRWQCB	CVRWQCB	CVRWQCB	Computed
UNITS	cfs	°C	mg/L	µS/cm	µg/L	lbs
Apr-01-2004	39 e	17.0	6.6	4,690	52.4	11.0
Apr-02-2004	39 e	15.3	6.9	4,760	58.5	12.3
Apr-03-2004	39 e	16.6	7.3	5,060	74.2	15.6
Apr-04-2004	39 e	17.8	7.6	5,210	66.2	13.9
Apr-05-2004	39 e	18.1	7.8	5,030	59.1	12.4
Apr-06-2004	41 e	18.3	8.2	5,340	66.6	14.7
Apr-07-2004	41 e	18.9	8.2	5,520	77.8	17.2
Apr-08-2004	43	19.3	8.4	5,420	73.6	17.1
Apr-09-2004	43	20.0	8.1	5,180	69.4	16.1
Apr-10-2004	40	20.9	7.7	5,070	65.5	14.1
Apr-11-2004	37	21.3	7.9	5,150	68.2	13.6
Apr-12-2004	35	21.6	8.1	5,230	66.4	12.5
Apr-13-2004	36	21.4	8.4	5,120	67.4	13.1
Apr-14-2004	35	20.7	8.7	5,000	62.0	11.7
Apr-15-2004	34	19.6	9.0	5,220	68.8	12.6
Apr-16-2004	34	18.7	8.8	5,430	75.7	13.9
Apr-17-2004	36	18.3	8.9	5,540	74.1	14.4
Apr-18-2004	37	17.7	9.1	5,470	72.5	14.5
Apr-19-2004	34	17.8	8.9	5,550	74.3	13.6
Apr-20-2004	34	18.5	8.9	5,400	72.6	13.3
Apr-21-2004	38	19.1	8.8	5,230	69.9	14.3
Apr-22-2004	44	18.1	8.9	5,320	69.7	16.5
Apr-23-2004	42	18.4	9.5	5,860	77.4	17.5
Apr-24-2004	43	19.9	9.4	5,470	74.0	17.2
Apr-25-2004	47	21.4	8.2	4,920	61.0	15.5
Apr-26-2004	48	22.9	8.3	5,140	65.2	16.9
Apr-27-2004	45	23.8	7.7	4,790	62.6	15.2
Apr-28-2004	45	23.3	7.3	4,530	62.5	15.2
Apr-29-2004	47	20.3	7.1	4,610	58.4	14.8
Apr-30-2004	40	20.6	7.9	4,880	64.4	13.9
.	.	.	.	.	.	.
Mean	40	19.5	8.2	5,170	67.7	14.5
Total Acre-feet	**2,370**					
Total (lbs)						**435**

Load Limitation for April 2004 (lbs)	**499**

Table 2b. Continuous water monitoring at San Luis Drain Outlet, April 2004.
Note: This is unofficial data reported for comparison with Station B.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	San Luis Drain Outlet Flow	Selenium (total) *	Selenium (total) Load
DATA SOURCE	USGS	CVRWQCB	Computed
UNITS	cfs	µg/L	lbs
Apr-01-2004	38	52.4	10.7
Apr-02-2004	38	58.5	12.0
Apr-03-2004	38	74.2	15.2
Apr-04-2004	38	66.2	13.6
Apr-05-2004	38	59.1	12.1
Apr-06-2004	40	66.6	14.4
Apr-07-2004	41	77.8	17.2
Apr-08-2004	44	73.6	17.5
Apr-09-2004	43	69.4	16.1
Apr-10-2004	40	65.5	14.1
Apr-11-2004	37	68.2	13.6
Apr-12-2004	35	66.4	12.5
Apr-13-2004	35	67.4	12.7
Apr-14-2004	35	62.0	11.7
Apr-15-2004	33	68.8	12.2
Apr-16-2004	34	75.7	13.9
Apr-17-2004	36	74.1	14.4
Apr-18-2004	37	72.5	14.5
Apr-19-2004	35	74.3	14.0
Apr-20-2004	35	72.6	13.7
Apr-21-2004	38	69.9	14.3
Apr-22-2004	37	69.7	13.9
Apr-23-2004	41	77.4	17.1
Apr-24-2004	43	74.0	17.2
Apr-25-2004	49	61.0	16.1
Apr-26-2004	48	65.2	16.9
Apr-27-2004	45	62.6	15.2
Apr-28-2004	42	62.5	14.2
Apr-29-2004	43	58.4	13.5
Apr-30-2004	40	64.4	13.9
.	.	.	.
Mean	39	58.5	14.3
Total Acre-feet	**2,330**		
Total (lbs)			**428**

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

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.

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

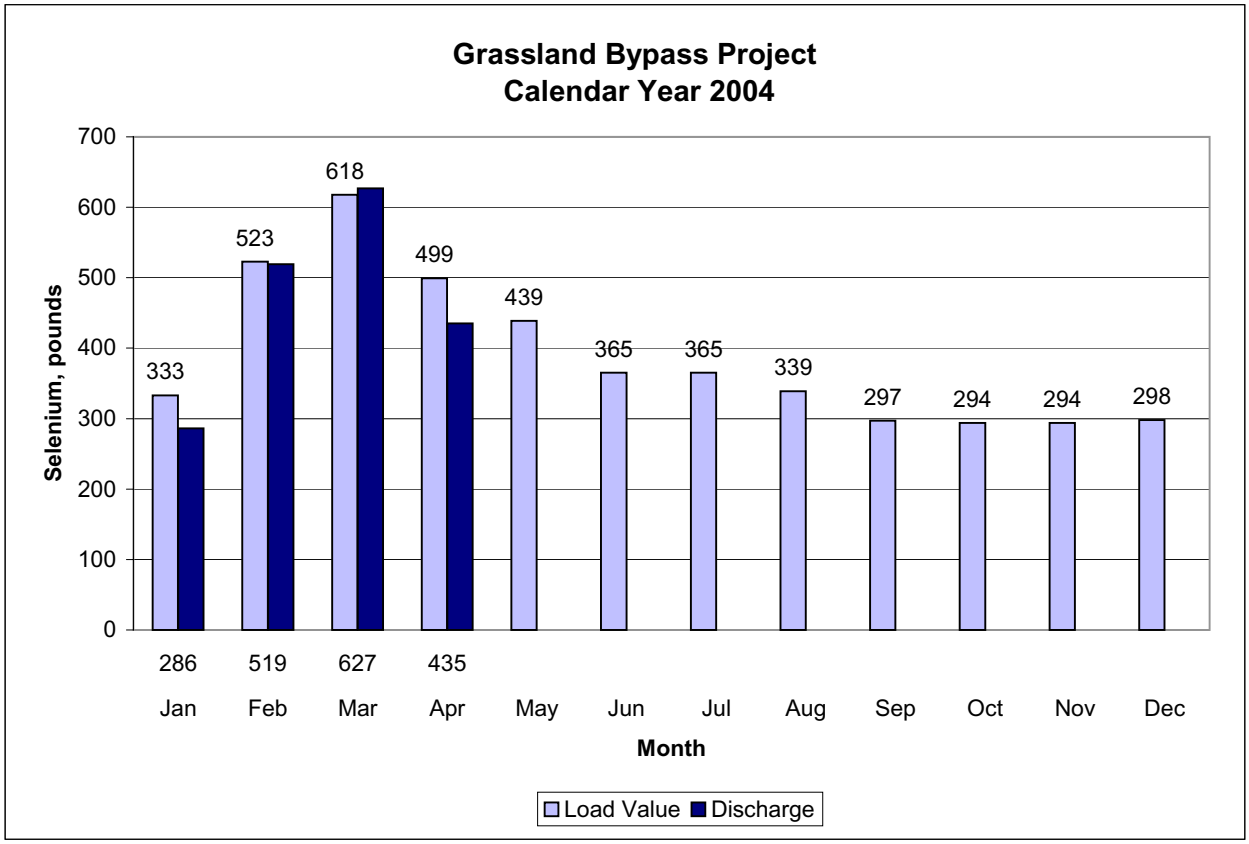

Table 3. Continuous water monitoring at Station D (Mud Slough North downstream of drainage discharges), April 2004.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Specific Conductance
DATA SOURCE	USGS	USGS	USGS
UNITS	cfs	°C	µS/cm
Apr-01-2004	81	16.7	3,560
Apr-02-2004	79	15.2	3,500
Apr-03-2004	74	17.2	3,690
Apr-04-2004	69	18.5	3,930
Apr-05-2004	76	18.6	3,760
Apr-06-2004	68	18.5	4,080
Apr-07-2004	63	18.9	4,290
Apr-08-2004	56	19.7	4,590
Apr-09-2004	59	20.2	4,310
Apr-10-2004	57	20.9	4,080
Apr-11-2004	52	21.3	4,140
Apr-12-2004	47	21.5	4,230
Apr-13-2004	42	21.1	4,550
Apr-14-2004	53	20.6	3,930
Apr-15-2004	49	19.5	3,920
Apr-16-2004	44	18.9	4,480
Apr-17-2004	53	18.5	4,260
Apr-18-2004	57	17.4	4,130
Apr-19-2004	56	18.3	4,030
Apr-20-2004	48	18.8	4,450
Apr-21-2004	57	19.8	4,240
Apr-22-2004	56	18.2	4,350
Apr-23-2004	62	18.7	4,310
Apr-24-2004	58	20.4	4,340
Apr-25-2004	71	22.1	4,020
Apr-26-2004	74	23.4	4,130
Apr-27-2004	80	24.0	3,920
Apr-28-2004	69	23.0	3,880
Apr-29-2004	62	19.9	4,170
Apr-30-2004	56	20.8	4,470
.	.	.	.
Mean	61	19.7	4,120

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

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Specific Conductance
DATA SOURCE	USGS	USGS	USGS
UNITS	cfs	°C	µS/cm
Apr-01-2004	183	16.5	1,750
Apr-02-2004	178	15.4	1,700
Apr-03-2004	186	17.1	1,670
Apr-04-2004	194	18.4	1,620
Apr-05-2004	195	18.3	1,630
Apr-06-2004	190	17.9	1,560
Apr-07-2004	177	18.2	1,590
Apr-08-2004	175	19.2	1,510
Apr-09-2004	161	20.3	1,540
Apr-10-2004	152	20.9	1,570
Apr-11-2004	165	21.1	1,370
Apr-12-2004	179	20.9	1,290
Apr-13-2004	156	20.6	1,250
Apr-14-2004	127	19.5	1,320
Apr-15-2004	132	18.4	1,430
Apr-16-2004	140	17.7	1,370
Apr-17-2004	159	17.7	1,310
Apr-18-2004	186	16.7	1,240
Apr-19-2004	200	17.3	1,160
Apr-20-2004	193	18.7	1,110
Apr-21-2004	168	19.2	1,170
Apr-22-2004	141	18.2	1,300
Apr-23-2004	116	18.9	1,430
Apr-24-2004	108	20.6	1,520
Apr-25-2004	109	22.3	1,440
Apr-26-2004	109	23.4	1,450
Apr-27-2004	103	23.7	1,410
Apr-28-2004	94	22.2	1,540
Apr-29-2004	108	19.1	1,430
Apr-30-2004	122	20.1	1,280
.	.	.	.
Mean	154	19.3	1,430

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

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Specific Conductance	Selenium (total)
DATA SOURCE	USGS	USGS	CVRWQCB	CVRWQCB
UNITS	cfs	°C	µS/cm	µg/L
Apr-01-2004	854	17.1	1,720	3.6
Apr-02-2004	813	15.6	1,720	2.9
Apr-03-2004	747	17.3	1,800	3.2
Apr-04-2004	726	18.3	1,770	3.4
Apr-05-2004	736	18.5	1,720	3.9
Apr-06-2004	723	18.2	1,620	3.6
Apr-07-2004	663	18.6	1,750	3.7
Apr-08-2004	639	19.4	1,870	4.6
Apr-09-2004	604	20.1	1,910	5.1
Apr-10-2004	611	20.7	1,910	5.4
Apr-11-2004	613	20.7	1,840	4.8
Apr-12-2004	656	20.7	1,720	4.0
Apr-13-2004	665	20.3	1,590	4.1
Apr-14-2004	736	19.5	1,280	3.1
Apr-15-2004	750	18.9	1,260	3.3
Apr-16-2004	786	17.8	1,190	2.4
Apr-17-2004	832	17.7	1,200	3.4
Apr-18-2004	853	16.5	1,130	3.3
Apr-19-2004	896	17.0	1,040	3.3
Apr-20-2004	924	18.1	1,000	3.8
Apr-21-2004	924	18.7	1,050	3.3
Apr-22-2004	938	17.9	1,060	3.2
Apr-23-2004	911	18.1	1,100	3.1
Apr-24-2004	956	19.4	1,030	3.3
Apr-25-2004	1,080	20.0	899	2.9
Apr-26-2004	1,230	20.5	821	2.5
Apr-27-2004	1,170	21.0	870	2.9
Apr-28-2004	1120	20.4	832	2.7
Apr-29-2004	1140	18.6	796	2.4
Apr-30-2004	1,150	19.0	839	2.3
.	.	.	.	.
Mean	850	18.8	1,340	3.4

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	.	.	.
Feb-04-2004	37	.	.	4,400	200	.	.	.
Feb-10-2004	54	.	.	4,530	210	.	.	.
Feb-18-2004	75	.	.	3,660	720	.	.	.
Feb-25-2004	71	.	.	4,800	270	.	.	.
Mar-03-2004	80	.	.	4,360	240	.	.	.
Mar-10-2004	45	.	.	5,680	250	.	.	.
Mar-17-2004	53	.	.	5,470	NA	.	.	.
Mar-24-2004	37	.	.	5,170	62	.	.	.
Mar-31-2004	39	.	.	5,360	95	.	.	.
Apr-07-2004	43	.	.	5,050	130	.	.	.
Apr-14-2004	33	.	.	5,470	94	.	.	.
Apr-21-2004	38	.	.	4,670	76	.	.	.
Apr-28-2004	45	.	.	4,960	150	.	.	.

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
Feb-03-2004	34	.	.	4,720	.	67.7	.	7.1
Feb-09-2004	48	.	.	4,320	.	55	.	6.5
Feb-16-2004	58	.	.	4,020	.	51.7	.	6.0
Feb-24-2004	64	.	.	4,000	.	54.6	.	5.8
Mar-02-2004	79	.	.	4,740	.	71.6	.	6.9
Mar-09-2004	44	.	.	5,310	.	69.8	.	7.8
Mar-16-2004	52	.	.	5,530	.	81.6	.	9.1
Mar-23-2004	44	.	.	5,420	.	77.0	.	8.9
Mar-30-2004	46	.	.	4,940	.	57.9	.	7.6
Apr-06-2004	40	.	.	5260	.	69.9	.	8.4
Apr-13-2004	35	.	.	5330	.	72.2	.	8.8
Apr-20-2004	39	.	.	5370	.	71.4	.	8.9
Apr-27-2004	42	.	.	4800	.	65.0	.	7.7

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
Feb-05-2004	43 e	10.2	8.1	4,550	24	74.5	6.6
Feb-12-2004	54	11.1	8.2	4,290	26	56.4	6.9
Feb-19-2004	78	13.0	7.9	3,660	36	41.2	5.5
Feb-26-2004	70	12.5	8.0	4,580	45	59.3	6.5
Mar-04-2004	78	12.7	8.2	4,810	45	74.9	6.8
Mar-11-2004	45	18.2	8.3	5,150	49	60.2	7.4
Mar-18-2004	54	20.2	8.0	5,190	50	86.0	7.7
Mar-25-2004	40 e	18.8	8.5	5,480	40	73.6	8.7
Apr-01-2004	39 e	16.8	8.5	4,660	62	54.0	7.2
Apr-08-2004	43	17.9	8.4	5,470	51	71.9	8.6
Apr-15-2004	34	19.0	8.3	5,150	44	62.7	8.1
Apr-22-2004	44	17.0	8.5	5,350	96	71.1	8.9
Apr-29-2004	47	19.3	8.6	4,640	35	61.7	7.4

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
Feb-05-2004	107 e	9.6	8.0	2,150	.	0.5	1.8
Feb-12-2004	92	10.5	8.0	2,350	.	<0.4	2.1
Feb-19-2004	139	12.0	7.9	2,230	.	0.7	2.0
Feb-26-2004	249	11.2	7.9	1,970	.	0.8	1.9
Mar-04-2004	393	11.8	8.1	1,780	.	0.6	1.6
Mar-11-2004	257	17.1	7.9	2,180	.	0.8	2.4
Mar-18-2004	137	19.2	8.0	2,370	.	0.9	2.5
Mar-25-2004	77 e	18.1	8.1	2,390	.	0.7	2.2
Apr-01-2004	42 e	15.5	8.3	2,360	.	1.1	2.5
Apr-08-2004	13	17.8	8.2	3,720	.	0.5	3.5
Apr-15-2004	15	17.6	8.2	2,420	.	1.0	2.2
Apr-22-2004	12	16.0	8.4	3,210	.	0.7	3.2
Apr-29-2004	15	19.4	8.2	1,720	.	0.7	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
Feb-05-2004	150	9.8	8.0	2,780	18.7	3.1
Feb-12-2004	146	10.7	8.1	3,070	19.4	3.7
Feb-19-2004	217	12.3	7.9	2,750	14.8	3.2
Feb-26-2004	320	11.5	7.9	2,143	14.3	3.1
Mar-04-2004	471	12.0	8.0	2,420	14.0	2.7
Mar-11-2004	302	17.2	7.8	2,720	10.4	3.2
Mar-18-2004	191	19.5	8.0	3,260	23.2	4.0
Mar-25-2004	117	18.1	8.2	3,460	22.8	4.4
Apr-01-2004	81	15.9	8.3	3,370	21.5	4.4
Apr-08-2004	56	17.9	8.4	4,970	48.9	7.1
Apr-15-2004	49	18.5	8.2	4,040	33.1	5.6
Apr-22-2004	56	16.1	8.3	4,570	40.5	6.8
Apr-29-2004	62	18.7	8.4	3,600	38.5	5.3

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
Feb-03-2004	.	7.9	3,120	8	16.4	3.5
Feb-10-2004	.	8.0	3,100	8	16.7	3.5
Feb-18-2004	.	NA	NA	NA	13.8	3.3
Feb-27-2004	.	7.9	2,740	22	14.0	3.2
Mar-03-2004	.	8.0	2,380	21	13.7	2.8
Mar-09-2004	.	8.3	2,850	30	10.2	3.2
Mar-16-2004	.	8.2	3,270	49	20.9	4.1
Mar-24-2004	.	8.2	3,660	34	23.3	4.7
Mar-31-2004	.	8.4	3,890	43	27.0	5.0
Apr-07-2004	.	8.5	4,930	20	37.9	6.2
Apr-16-2004	.	8.4	4,860	31	49.7	7.0
Apr-20-2004	.	8.4	5,190	28	47.7	7.0
Apr-27-2004	.	8.5	3,710	26	28.5	4.9

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
Feb-05-2004	251	10.1	7.7	1,510	1.0	1.0
Feb-12-2004	182	10.6	7.4	1,860	0.7	1.1
Feb-19-2004	329	12.1	7.5	1,400	1.1	0.9
Feb-26-2004	458	11.9	7.5	1,500	1.1	NA
Mar-04-2004	453	12.2	7.6	1,420	0.9	1.0
Mar-11-2004	357	17.1	7.6	1,720	0.8	1.2
Mar-18-2004	266	19.0	7.9	1,950	0.8	1.5
Mar-25-2004	270	17.4	7.7	1,670	1.0	1.0
Apr-01-2004	183	15.7	7.6	1,980	0.9	1.0
Apr-08-2004	175	17.2	7.8	1,700	NA	NA
Apr-15-2004	132	17.5	7.9	1,690	0.8	0.8
Apr-22-2004	141	16.2	7.8	1,480	0.8	0.8
Apr-29-2004	108	17.2	7.9	1,800	0.5	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
Feb-04-2004	10	.	.	685	1.5	0.4
Feb-10-2004	10	.	.	665	1.3	0.4
Feb-18-2004	10	.	.	726	2.1	0.5
Feb-25-2004	10	.	.	795	2.0	0.6
Mar-03-2004	5	.	.	687	1.5	0.7
Mar-10-2004	5	.	.	842	1.9	0.8
Mar-17-2004	5	.	.	777	2.0	0.6
Mar-24-2004	5	.	.	1,020	1.8	1.5
Mar-31-2004	5	.	.	805	1.8	0.8
Apr-07-2004	5	.	.	609	1.6	0.5
Apr-14-2004	5	.	.	845	1.4	0.6
Apr-21-2004	5	.	.	660	1.0	0.4
Apr-28-2004	15	.	.	608	0.9	0.3

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
Feb-04-2004	50	.	.	534	1.3	0.3
Feb-10-2004	10	.	.	2,280	1.2	4.0
Feb-18-2004	10	.	.	853	1.7	0.8
Feb-25-2004	10	.	.	1,000	2.1	1.1
Mar-03-2004	5	.	.	1,380	1.1	2.0
Mar-10-2004	5	.	.	848	1.2	0.9
Mar-17-2004	5	.	.	1,050	1.7	1.0
Mar-24-2004	5	.	.	1,010	1.3	1.4
Mar-31-2004	5	.	.	1,050	1.3	1.5
Apr-07-2004	5	.	.	922	2.0	0.8
Apr-14-2004	5	.	.	593	0.9	0.4
Apr-21-2004	5	.	.	600	1.0	0.3
Apr-28-2004	20	.	.	493	1.0	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
Feb-04-2004	8	.	.	470	0.8	0.4
Feb-10-2004	0	.	.	971	1.4	0.7
Feb-18-2004	12	.	.	324	0.7	0.3
Feb-25-2004	0	.	.	1,400	2.9	1.2
Mar-03-2004	4	.	.	1,660	3.0	1.9
Mar-10-2004	0	.	.	2,220	3.1	2.7
Mar-17-2004	0	.	.	2,030	3.3	2.7
Mar-24-2004	0	.	.	963	1.6	0.9
Mar-31-2004	0	.	.	783	1.9	0.5
Apr-07-2004	25	.	.	943	2.3	0.7
Apr-14-2004	50	.	.	600	1.2	0.4
Apr-21-2004	50	.	.	630	1.1	0.3
Apr-28-2004	40	.	.	575	1.1	0.3

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

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA††	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Feb-04-2004	127	.	.	1,550	1.9	1.8
Feb-10-2004	116	.	.	1,710	1.4	1.9
Feb-18-2004	99	.	.	2,020	2.3	2.6
Feb-25-2004	162	.	.	1,850	1.6	2.3
Mar-03-2004	137	.	.	2,280	1.4	3.0
Mar-10-2004	160	.	.	2,010	0.9	2.6
Mar-17-2004	145	.	.	2,650	0.9	3.6
Mar-24-2004	120	.	.	2,190	1.3	3.0
Mar-31-2004	82	.	.	2,190	1.4	2.5
Apr-07-2004	47	.	.	2,040	1.5	2.6
Apr-14-2004	79	.	.	1,730	1.5	2.3
Apr-21-2004	20	.	.	1,470	1.4	1.5
Apr-28-2004	40	.	.	1,620	1.5	1.9

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
Feb-04-2004	.	.	.	468	1.2	0.2
Feb-10-2004	.	.	.	549	1.4	0.3
Feb-18-2004	.	.	.	430	1.5	0.2
Feb-25-2004	.	.	.	467	1.3	0.3
Mar-03-2004	.	.	.	800	2.2	0.6
Mar-10-2004	.	.	.	626	1.8	0.3
Mar-17-2004	.	.	.	631	1.9	0.4
Mar-24-2004	.	.	.	353	1.4	0.2
Mar-31-2004	.	.	.	632	2.0	0.4
Apr-07-2004	.	.	.	513	1.5	0.3
Apr-14-2004	.	.	.	547	1.1	0.3
Apr-21-2004	.	.	.	540	1.0	0.2
Apr-28-2004	.	.	.	561	0.9	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
Feb-05-2004	313	9.9	7.4	1,510	0.9	0.9
Feb-12-2004	232	10.6	7.5	1,900	0.5	1.0
Feb-19-2004	342	12.4	7.6	1,610	1.0	1.0
Feb-26-2004	662	12.4	7.5	1,300	0.9	0.8
Mar-04-2004	1,090	12.5	8.1	1,010	0.7	0.5
Mar-11-2004	591	17.6	7.9	1,490	0.7	0.8
Mar-18-2004	385	19.1	7.7	1,960	0.8	1.0
Mar-25-2004	346	18.3	8.0	1,910	0.8	1.0
Apr-01-2004	264	16.3	8.0	2,250	0.8	1.0
Apr-08-2004	206	18.2	7.8	2,110	0.6	0.9
Apr-15-2004	160	17.9	8.0	2,380	0.6	0.9
Apr-22-2004	188	16.9	7.9	1,930	0.6	0.7
Apr-29-2004	148	19.2	8.1	2,530	<0.4	0.9

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
Feb-03-2004	.	.	.	2,220	5.2	1.5
Feb-11-2004	.	.	.	2,280	5.6	1.9
Feb-17-2004	.	.	.	2,420	6.7	2.0
Feb-24-2004	.	.	.	1,890	6.1	1.7
Mar-02-2004	.	.	.	1,290	3.1	1.0
Mar-09-2004	.	.	.	1,780	4.0	1.4
Mar-16-2004	.	.	.	2,310	5.7	2.1
Mar-23-2004	.	.	.	2,320	5.7	2.0
Mar-30-2004	.	.	.	2,480	5.3	2.1
Apr-13-2004	.	.	.	2,640	8.3	1.9
Apr-21-2004	.	.	.	2,160	6.7	1.7
Apr-28-2004	.	.	.	2,920	11.8	2.5

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
Feb-05-2004	913	10.4	7.7	1,310	2.5	0.9
Feb-12-2004	821	10.8	7.9	1,640	3.5	1.2
Feb-19-2004	948	12.9	7.9	1,480	3.4	1.2
Feb-26-2004	1,890	12.0	7.8	1,110	3.0	0.9
Mar-04-2004	2,130	12.4	7.9	1,160	3.2	0.9
Mar-11-2004	1,440	17.7	7.9	1,520	2.5	1.2
Mar-18-2004	1,040	19.4	7.9	1,840	4.8	1.4
Mar-25-2004	973	18.5	8.0	1,710	3.5	1.2
Apr-01-2004	854	16.7	8.1	1,680	4.1	1.2
Apr-08-2004	639	18.5	7.9	1,900	4.8	1.3
Apr-15-2004	750	18.6	7.9	1,270	3.2	0.8
Apr-22-2004	938	16.9	8.0	1,000	2.9	0.7
Apr-29-2004	1,140	18.3	8.0	772	2.1	0.5

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

See Table 27 for explanation of footnotes and agency abbreviations.

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

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

See Table 27 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal	Laboratory Control
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	mg	mg	mg	mg	mg	mg
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-2003	0.50	0.29*	0.34	0.39	0.43	0.48
Jan-2004	0.60	0.37	0.49	0.58	0.55	0.58
Feb-2004	0.57	0.55	0.56	0.60	0.63	0.63
Mar-2004	0.44	0.39*	0.32*	0.42	0.48	0.46
Apr-2004	0.59	0.57	0.63	0.54	0.56	0.60

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

See Table 27 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal	Laboratory Control
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	%	%	%	%	%	%
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-2003	90	90	100	100	90	100
Jan-2004	95	58*	75	93	98	100
Feb-2004	98	93	100	98	100	100
Mar-2004	100	100	90	100	100	100
Apr-2004	100	100	90	90	90	100

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

See Table 27 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal	Laboratory Control
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	neonates per female	neonates per female	neonates per female	neonates per female	neonates per female	neonates per female
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-2003	59.0	58.7	64.9	73.6	64.2	68.7
Jan-2004	46.8	45.0	40.7	44.5	54.1	41.5
Feb-2004	59.4	59.0	60.7	54.3	60.0	59.0
Mar-2004	59.7	55.3	58.8	58.6	58.4	51.6
Apr-2004	35.5	34.3	35.9	34.6	21.7	15.7

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

See Table 27 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal	Laboratory Control
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	10^5 cells/mL	10^5 cells/mL	10^5 cells/mL	10^5 cells/mL	10^5 cells/mL	10^5 cells/mL
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-2003	0.7*	26.6	34.4	21.1*	25.0	18.5
Jan-2004	9.7*	21.1	5.9*	8.8	18.4	20.9
Feb-2004	0.5*	32.5	21.9	0.4*	25.0	23.1
Mar-2004	24.0*	39.2	27.5	33.1	29.9	29.3
Apr-2004	19.9	31.6	20.0	25.5	19.5	26.5

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

See Table 27 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal
DATA SOURCE	SLDMWA/USBR	SLDMWA/USBR	SLDMWA/USBR	SLDMWA/USBR	SLDMWA/USBR
UNITS	µg/L	µg/L	µg/L	µg/L	µg/L
Feb-02-2004	70	0.5	18	0.9	1.3
Feb-04-2004	48	0.5	11	1.0	<0.4
Feb-06-2004	71	0.5	19	1.1	<0.4
Mar-01-2004	65	0.8	11	1.0	1.3
Mar-03-2004	77	0.8	14	1.0	1.4
Mar-05-2004	70	0.8	14	1.0	1.4
Apr-12-2004	68	1.0	45	0.8	0.6
Apr-14-2004	65	1.2	35	0.8	1.1
Apr-16-2004	73	0.8	53	0.8	<0.4

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

See Table 27 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	mg/L	mg/L	mg/L	mg/L	mg/L
Feb-02-2004	35	42	106	82	21
Feb-04-2004	47	56	42	82	19
Feb-06-2004	45	42	47	76	31
Mar-02-2004	52	39	113	49	62
Mar-04-2004	61	38	148	36	32
Mar-06-2004	61	22	80	36	48
Apr-12-2004	46	86	61	93	25
Apr-14-2004	48	79	57	79	62
Apr-16-2004	73	129	76	103	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 (10^6cell/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.
v	Based on definitive bioassay, NOEC is 50 percent
D	Sample was dechlorinated