GRASSLAND BYPASS PROJECT

MONTHLY DATA REPORT

May 2004

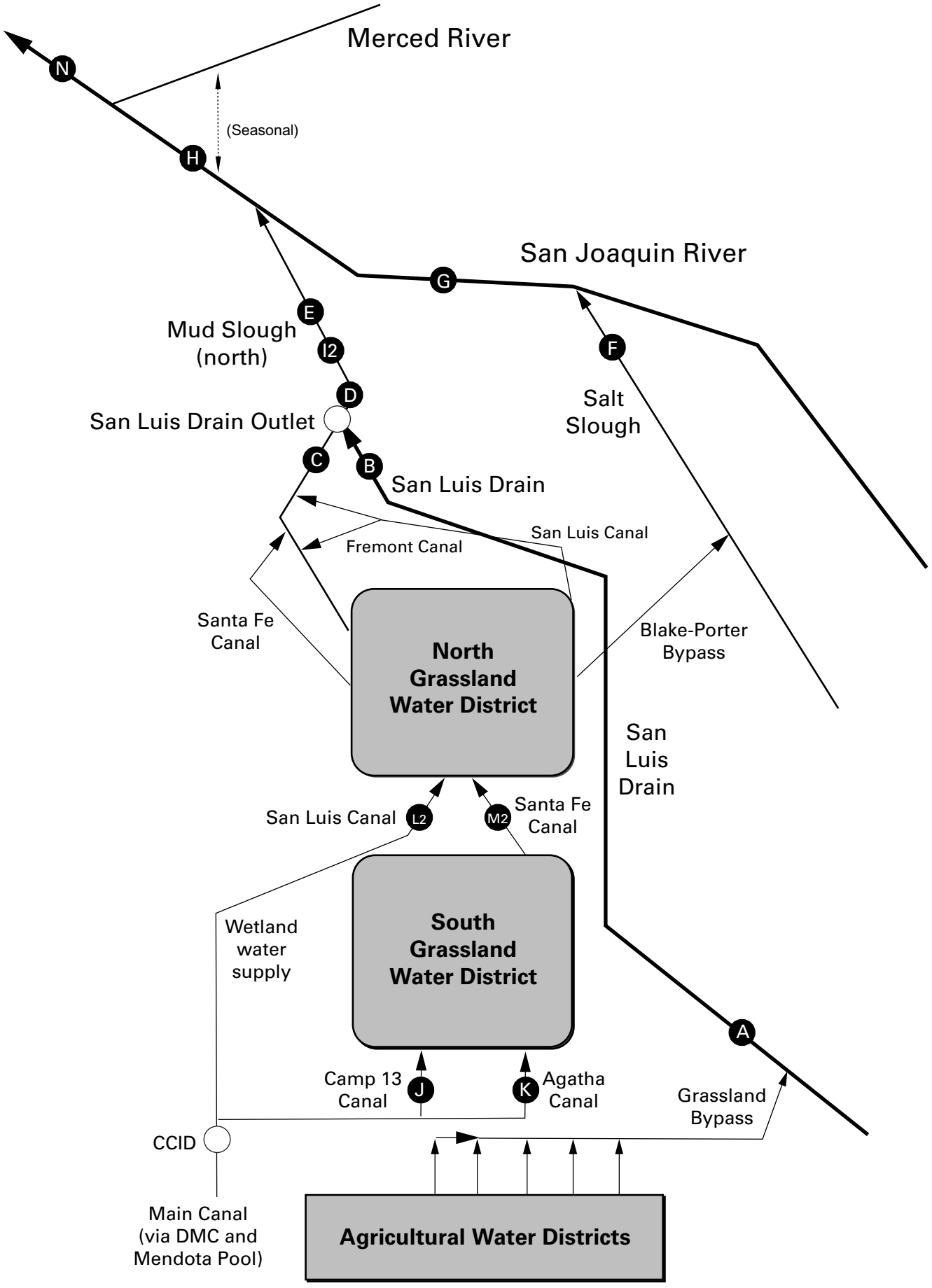
August 19, 2004

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), May 2004.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Specific Conductance
DATA SOURCE	SLDMWA	SLDMWA
UNITS	cfs	µS/cm
May-01-2004	38	4,670
May-02-2004	42	4,480
May-03-2004	45	4,390
May-04-2004	44	4,190
May-05-2004	43	4,250
May-06-2004	37	4,210
May-07-2004	34	4,080
May-08-2004	35	4,000
May-09-2004	37	3,930
May-10-2004	38	4,110
May-11-2004	38	4,250
May-12-2004	45	3,990
May-13-2004	45	3,750
May-14-2004	43	3,660
May-15-2004	48	3,750
May-16-2004	48	3,840
May-17-2004	44	4,110
May-18-2004	39	3,950
May-19-2004	37	3,980
May-20-2004	38	3,870
May-21-2004	36	4,010
May-22-2004	41	3,820
May-23-2004	45	3,590
May-24-2004	41	3,840
May-25-2004	39	3,970
May-26-2004	41	4,180
May-27-2004	48	4,140
May-28-2004	51	4,040
May-29-2004	54	4,080
May-30-2004	59	4,200
May-31-2004	60	4,340
Mean	43	4,050

Table 2a. Continuous water monitoring at Station B (discharge from San Luis Drain), May 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
May-01-2004	40	21.8	8.4	4,830	61.1	13.2
May-02-2004	39	22.7	8.7	5,070	62.4	13.1
May-03-2004	41	24.1	9.1	5,000	59.2	13.1
May-04-2004	44	25.4	8.9	5,040	59.2	14.0
May-05-2004	44	25.0	8.4	4,940	53.5	12.7
May-06-2004	42	24.1	8.2	4,710	54.4	12.3
May-07-2004	37	23.0	8.0	4,770	56.0	11.2
May-08-2004	34 e	22.6	7.1	4,340	46.1	8.5
May-09-2004	34 e	22.3	7.3	4,530	54.8	10.0
May-10-2004	36 e	21.5	7.2	4,480	49.0	9.5
May-11-2004	38 e	20.6	6.9	4,380	47.5	9.7
May-12-2004	41	20.3	7.0	4,330	44.8	9.9
May-13-2004	46	20.8	6.8	4,220	45.0	11.2
May-14-2004	47	21.8	7.0	4,420	51.9	13.2
May-15-2004	44	22.5	6.5	4,170	50.4	12.0
May-16-2004	48	22.8	6.2	3,920	48.0	12.4
May-17-2004	48	22.0	6.2	3,800	43.1	11.2
May-18-2004	46	21.5	6.1	3,880	45.2	11.2
May-19-2004	41	21.6	6.4	3,890	41.5	9.2
May-20-2004	39	22.1	7.6	4,500	56.8	11.9
May-21-2004	39	21.9	6.7	4,360	45.9	9.7
May-22-2004	39	21.8	7.1	4,250	37.9	8.0
May-23-2004	43	21.7	7.1	4,240	36.3	8.4
May-24-2004	46	21.2	7.1	4,200	32.0	7.9
May-25-2004	43	21.0	7.4	4,250	32.2	7.5
May-26-2004	41	21.8	6.5	3,820	29.0	6.4
May-27-2004	44	22.8	6.3	3,870	32.1	7.6
May-28-2004	50	22.7	6.8	4,090	33.7	9.1
May-29-2004	54	22.2	7.2	4,340	36.9	10.7
May-30-2004	56	22.5	7.1	4,310	46.8	14.1
May-31-2004	60	23.5	6.9	4,300	45.5	14.7
Mean	43	22.3	7.2	4,360	46.4	10.8
Total Acre-feet	**2,670**					
Total (lbs)						**334**

Load Limitation for May 2004 (lbs)	**439**

Table 2b. Continuous water monitoring at San Luis Drain Outlet, May 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
May-01-2004	40	61.1	13.2
May-02-2004	39	62.4	13.1
May-03-2004	42	59.2	13.4
May-04-2004	45	59.2	14.4
May-05-2004	44	53.5	12.7
May-06-2004	43	54.4	12.6
May-07-2004	36	56.0	10.9
May-08-2004	34	46.1	8.5
May-09-2004	34	54.8	10.0
May-10-2004	36	49.0	9.5
May-11-2004	38	47.5	9.7
May-12-2004	39	44.8	9.4
May-13-2004	46	45.0	11.2
May-14-2004	47	51.9	13.2
May-15-2004	45	50.4	12.2
May-16-2004	48	48.0	12.4
May-17-2004	48	43.1	11.2
May-18-2004	46	45.2	11.2
May-19-2004	41	41.5	9.2
May-20-2004	38	56.8	11.6
May-21-2004	39	45.9	9.7
May-22-2004	38	37.9	7.8
May-23-2004	43	36.3	8.4
May-24-2004	46	32.0	7.9
May-25-2004	43	32.2	7.5
May-26-2004	41	29.0	6.4
May-27-2004	43	32.1	7.4
May-28-2004	50	33.7	9.1
May-29-2004	52	36.9	10.3
May-30-2004	56	46.8	14.1
May-31-2004	61	45.5	15.0
Mean	43	37.1	10.8
Total Acre-feet	**2,660**		
Total (lbs)			**333**

*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.

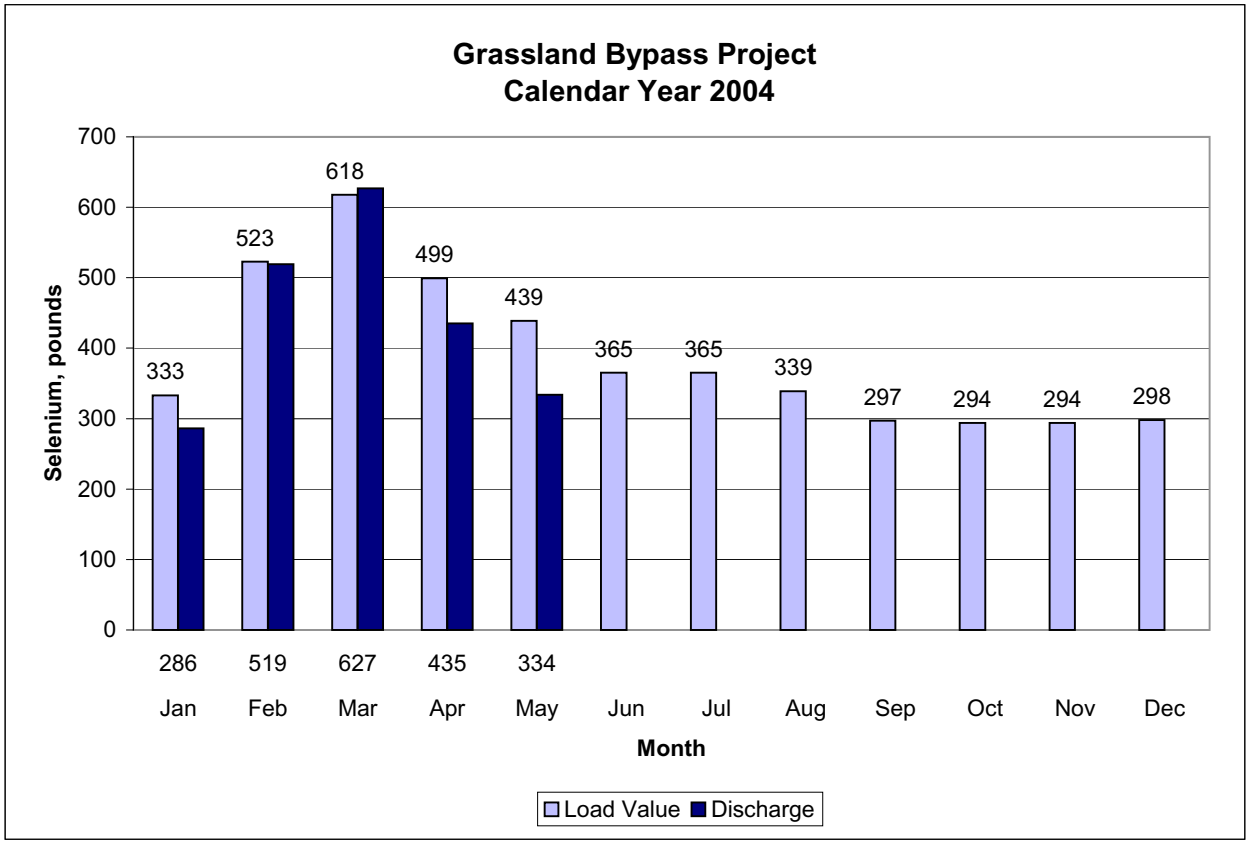

Table 3. Continuous water monitoring at Station D (Mud Slough North downstream of drainage discharges), May 2004.

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
May-01-2004	49	22.1	4,580
May-02-2004	48	23.2	4,960
May-03-2004	53	24.5	4,290
May-04-2004	55	25.3	4,350
May-05-2004	51	NA	NA
May-06-2004	51	23.9	3,610
May-07-2004	57	22.8	3,280
May-08-2004	57	22.5	3,080
May-09-2004	58	21.9	3,030
May-10-2004	67	21.3	3,000
May-11-2004	56	20.8	3,380
May-12-2004	71	20.4	2,990
May-13-2004	95	21.2	2,650
May-14-2004	80	22.4	3,090
May-15-2004	65	22.8	3,500
May-16-2004	68	23.2	3,350
May-17-2004	75	22.4	3,020
May-18-2004	65	22.0	3,250
May-19-2004	62	22.1	3,310
May-20-2004	64	22.6	3,160
May-21-2004	61	22.5	3,400
May-22-2004	50	22.5	3,740
May-23-2004	54	22.4	3,790
May-24-2004	63	21.8	3,540
May-25-2004	75	22.0	3,190
May-26-2004	99	22.9	2,560
May-27-2004	74	23.6	3,010
May-28-2004	83	22.8	3,150
May-29-2004	82	22.1	3,420
May-30-2004	69	22.7	3,990
May-31-2004	74	23.8	4,030
Mean	66	22.6	3,460

Table 4. Continuous water monitoring at Station F (Salt Slough at Highway 165), May 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
May-01-2004	153	21.6	1,160
May-02-2004	179	22.9	1,040
May-03-2004	194	24.3	970
May-04-2004	195	25.1	975
May-05-2004	169	24.1	999
May-06-2004	133	23.0	1,400
May-07-2004	124	22.1	1,370
May-08-2004	126	22.1	1,320
May-09-2004	141	21.8	1,240
May-10-2004	150	20.7	1,180
May-11-2004	174	19.7	1,070
May-12-2004	169	19.7	1,060
May-13-2004	122	21.3	1,210
May-14-2004	114	22.5	1,260
May-15-2004	104	22.9	1,320
May-16-2004	103	22.6	1,300
May-17-2004	109	21.4	1,250
May-18-2004	128	21.1	1,120
May-19-2004	137	21.5	1,040
May-20-2004	119	22.2	1,170
May-21-2004	94	21.8	1,310
May-22-2004	83	22.0	1,410
May-23-2004	100	21.8	1,290
May-24-2004	101	21.2	1,180
May-25-2004	85	21.5	1,240
May-26-2004	77	22.8	1,390
May-27-2004	93	23.6	1,360
May-28-2004	102	22.8	1,270
May-29-2004	116	21.5	1,150
May-30-2004	118	22.6	1,200
May-31-2004	128	24.2	1,160
Mean	127	22.2	1,210

Table 5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), May 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
May-01-2004	1,140	19.6	789	2.2
May-02-2004	1,290	20.0	690	2.0
May-03-2004	1,530	20.5	591	1.8
May-04-2004	1,810	20.4	500	1.4
May-05-2004	1,840	19.7	517	1.5
May-06-2004	1,820	19.3	515	1.5
May-07-2004	1,790	18.8	506	1.5
May-08-2004	1,790	18.5	488	1.2
May-09-2004	1,810	18.5	481	1.0
May-10-2004	1,860	18.2	450	NA
May-11-2004	1,860	18.0	457	1.0
May-12-2004	1,810	17.8	483	1.1
May-13-2004	1,480	18.7	584	NA
May-14-2004	1,110	20.2	836	2.2
May-15-2004	912	20.9	1,030	2.7
May-16-2004	822	21.4	1,130	2.7
May-17-2004	786	21.5	1,130	3.2
May-18-2004	787	21.2	1,120	2.9
May-19-2004	714	21.3	1,190	3.0
May-20-2004	676	21.7	1,180	3.3
May-21-2004	608	21.8	1,330	3.4
May-22-2004	581	22.2	1,420	3.5
May-23-2004	581	22.1	1,390	2.8
May-24-2004	573	22.3	1,400	2.8
May-25-2004	558	22.4	1,400	3.2
May-26-2004	565	23.3	1,390	2.9
May-27-2004	587	24.1	1,310	2.3
May-28-2004	584	22.9	1,430	2.8
May-29-2004	544	22.0	1,490	3.3
May-30-2004	556	22.4	1,420	3.8
May-31-2004	578	23.8	1,460	4.7
Mean	1,100	20.8	990	2.5

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	.	.	.
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	.	.	.
May-05-2004	43	.	.	4,330	300	.	.	.
May-12-2004	45	.	.	4,220	110	.	.	.
May-19-2004	37	.	.	3,960	NA	.	.	.
May-26-2004	41	.	.	4,280	110	.	.	.

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
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	.	.	5,260	.	69.9	.	8.4
Apr-13-2004	35	.	.	5,330	.	72.2	.	8.8
Apr-20-2004	39	.	.	5,370	.	71.4	.	8.9
Apr-27-2004	42	.	.	4,800	.	65.0	.	7.7
May-04-2004	44	.	.	4,720	.	56.4	.	7.9
May-11-2004	38	.	.	4,310	.	48.4	.	7.4
May-18-2004	39	.	.	4,040	.	44.4	.	6.8
May-25-2004	39	.	.	4,040	.	33.3	.	6.9

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
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
May-06-2004	42	23.1	8.2	4,740	49	57.4	7.8
May-13-2004	46	19.5	8.4	4,160	48	NA	7.2
May-20-2004	39	20.9	8.2	4,560	66	55.8	7.4
May-27-2004	44	21.6	8.2	3,870	56	33.4	6.6

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
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
May-06-2004	9	22.6	8.0	2,090	.	0.8	1.8
May-13-2004	49	20.1	8.1	1,110	.	0.8	0.9
May-20-2004	25	21.4	8.0	NA	.	0.6	1.3
May-27-2004	30	22.4	7.9	1,550	.	0.5	1.2

++ 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
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
May-06-2004	51	23.0	8.1	4,180	41.2	6.2
May-13-2004	95	19.7	8.4	2,600	18.5	3.7
May-20-2004	64	20.9	8.2	3,030	25.8	4.1
May-27-2004	74	21.8	8.2	2,800	17.4	3.8

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
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
May-07-2004	.	8.4	3,710	27	33.6	5.2
May-12-2004	.	7.9	3,310	20	23.0	4.7
May-19-2004	.	8.5	4,330	21	29.0	5.9
May-26-2004	.	8.5	4,870	45	12.8	5.3

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
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
May-06-2004	133	21.2	7.8	1,360	0.7	0.6
May-13-2004	122	18.8	7.8	1,330	0.6	0.5
May-20-2004	119	19.9	7.6	1,320	0.7	0.5
May-27-2004	93	21.1	7.8	1,460	0.8	0.5

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
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
May-05-2004	20	.	.	570	1.1	0.3
May-12-2004	20	.	.	564	0.8	0.3
May-19-2004	20	.	.	588	0.7	0.3
May-26-2004	20	.	.	882	1.1	0.9

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
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
May-05-2004	40	.	.	560	1.0	0.2
May-12-2004	85	.	.	536	0.7	0.2
May-19-2004	85	.	.	522	0.8	0.3
May-26-2004	45	.	.	554	0.8	0.3

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
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
May-05-2004	85	.	.	700	1.3	0.4
May-12-2004	45	.	.	642	1.0	0.4
May-19-2004	45	.	.	663	1.0	0.4
May-26-2004	90	.	.	721	1.2	0.5

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
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
May-05-2004	30	.	.	1,350	2.5	1.7
May-12-2004	46	.	.	932	1.1	0.7
May-19-2004	65	.	.	1,170	1.2	1.2
May-26-2004	12	.	.	1,450	1.6	1.7

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
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
May-05-2004	.	.	.	550	1.1	0.2
May-12-2004	.	.	.	524	0.8	0.2
May-19-2004	.	.	.	508	1.3	0.2
May-26-2004	.	.	.	518	0.8	0.2

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

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	USGS	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C	.	µS/cm	µg/L	mg/L
Mar-04-2004	1090	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
May-06-2004	168	22.9	7.7	1,620	0.7	0.6
May-13-2004	167	20.5	7.8	1,560	NA	NA
May-20-2004	149	20.9	7.5	1,570	0.9	0.5
May-27-2004	131	22.7	7.8	2,150	0.5	0.7

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
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-06-2004	.	.	.	2,610	6.5	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
May-21-2004	.	.	.	2,510	9.3	2.1
May-25-2004	.	.	.	2,690	2.4	7.1

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
Mar-04-2004	2,130	12.4	7.9	1,160	3.2	0.9
Mar-11-2004	1440	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
May-06-2004	1,820	18.9	7.9	494	1.6	0.4
May-13-2004	1,480	18.2	7.8	581	1.5	0.4
May-20-2004	676	20.8	7.7	1,120	3.5	0.7
May-27-2004	587	23.6	8.0	1,290	2.2	0.8

Table 20. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from June 2003 to May 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	%	%	%	%	%	%
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
May-2004	100	100	100	100	100	100

Table 21. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from June 2003 to May 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
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
May-2004	0.49	0.55	0.53	0.57	0.43	0.49

Table 22. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from June 2003 to May 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	%	%	%	%	%	%
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
May-2004	90	100	90	80	90	90

Table 23. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from June 2003 to May 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
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
May-2004	32.4	29.6	37.5	34.9	30.7	24.7

Table 24. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from June 2003 to May 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
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
May-2004	19.3*	29.5	25.1	25.1	24.5	14.5

Table 25. Summary of selenium concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, March 2004 to May 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
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
May-10-2004	51	0.5	23	0.8	<0.4
May-12-2004	44	0.6	23	0.6	<0.4
May-14-2004	56	0.6	23	0.5	<0.4

Table 26. Summary of total suspended solids concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, March 2004 to May 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
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
May-10-2004	60	94	81	109	6
May-12-2004	48	49	56	70	0
May-14-2004	68	74	79	136	0

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