

# GRASSLAND BYPASS PROJECT

## MONTHLY DATA REPORT

January 1999

March 30, 1999

### 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), January 1999.**

See Table 26 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow
DATA SOURCE	usgs
UNITS	cfs
Jan-01-1999	24
Jan-02-1999	21
Jan-03-1999	22
Jan-04-1999	20
Jan-05-1999	18
Jan-06-1999	21
Jan-07-1999	20
Jan-08-1999	24
Jan-09-1999	29
Jan-10-1999	23
Jan-11-1999	22
Jan-12-1999	15
Jan-13-1999	18
Jan-14-1999	14
Jan-15-1999	17
Jan-16-1999	15
Jan-17-1999	19
Jan-18-1999	18
Jan-19-1999	17
Jan-20-1999	24
Jan-21-1999	20
Jan-22-1999	22
Jan-23-1999	21
Jan-24-1999	24
Jan-25-1999	27
Jan-26-1999	27
Jan-27-1999	28
Jan-28-1999	28
Jan-29-1999	32
Jan-30-1999	33
Jan-31-1999	40

**Table 2. Continuous water monitoring at Station B (discharge from San Luis Drain), January 1999.**

See Table 26 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
Jan-01-1999	25.0 e	8.9	7.8	5,220	77.5	10.4
Jan-02-1999	27.0 e	8.9	8.0	5,020	63.8	9.3
Jan-03-1999	24.0 e	8.8	8.1	4,940	57.1	7.4
Jan-04-1999	25.0 e	8.6	8.5	5,280	64.5	8.7
Jan-05-1999	24.0 e	8.3	7.8	4,830	52.4	6.8
Jan-06-1999	23.0 e	8.1	7.7	4,450	52.8	6.5
Jan-07-1999	25.0 e	7.7	7.7	4,620	52.1	7.0
Jan-08-1999	25.4	7.6	7.5	4,880	79.6	10.9
Jan-09-1999	28.2	7.3	7.7	4,650	61.3	9.3
Jan-10-1999	31.2	7.0	7.6	4,660	59.3	10.0
Jan-11-1999	28.0	6.6	7.7	4,630	56.2	8.5
Jan-12-1999	27.1	6.2	7.7	4,590	61.4	9.0
Jan-13-1999	22.0	6.2	7.8	4,620	56.5	6.7
Jan-14-1999	23.5	6.5	7.8	4,570	63.5	8.0
Jan-15-1999	21.2	7.8	7.2	4,640	65.5	7.5
Jan-16-1999	24.4	9.8	7.2	5,060	121	15.9
Jan-17-1999	24.3	11.7	6.8	4,650	76.9	10.1
Jan-18-1999	25.8	12.7	6.7	4,570	63.4	8.8
Jan-19-1999	26.5	13.0	7.0	4,660	54.2	7.7
Jan-20-1999	25.6	13.1	7.1	4,650	59.3	8.2
Jan-21-1999	29.2	12.8	7.2	4,720	53.8	8.5
Jan-22-1999	27.8	13.0	7.2	4,690	56.7	8.5
Jan-23-1999	28.8	12.7	7.5	4,630	58.9	9.1
Jan-24-1999	27.4	11.8	7.4	4,790	62.2	9.2
Jan-25-1999	30.4	11.4	7.1	4,530	55.3	9.1
Jan-26-1999	31.8	10.0	7.0	4,730	66.5	11.4
Jan-27-1999	30.9	9.7	6.9	4,690	62.2	10.4
Jan-28-1999	34.9	9.8	6.8	4,360	57.3	10.8
Jan-29-1999	33.8	9.9	7.1	4,590	49.1	9.0
Jan-30-1999	35.8	9.9	7.0	4,510	52.5	10.1
Jan-31-1999	38.9	9.9	7.1	4,640	53.4	11.2
Mean	27.6	9.5	7.4	4,710	62.1	
<b>Total</b>						<b>284</b>

<b>Load Limitation for January 1999 (lbs)</b>	<b>506</b>
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**Table 3. Continuous water monitoring at Station D  
(Mud Slough North downstream of drainage discharges), January 1999.**

See Table 26 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Specific Conductance
DATA SOURCE	usgs	usgs	usgs
UNITS	cfs	°C	µS/cm
Jan-01-1999	134	8.7	2,230
Jan-02-1999	130	8.4	2,270
Jan-03-1999	128	8.4	2,250
Jan-04-1999	126	7.9	2,250
Jan-05-1999	125	7.4	2,250
Jan-06-1999	125	7.0	2,200
Jan-07-1999	126	6.5	2,230
Jan-08-1999	130	6.8	2,290
Jan-09-1999	137	6.2	2,350
Jan-10-1999	140	5.9	2,350
Jan-11-1999	139	5.6	2,240
Jan-12-1999	139	5.1	2,200
Jan-13-1999	138	5.4	2,140
Jan-14-1999	138	5.8	2,180
Jan-15-1999	142	7.9	2,080
Jan-16-1999	141	10.7	2,150
Jan-17-1999	148	12.6	2,110
Jan-18-1999	165	13.0	2,040
Jan-19-1999	181	13.4	2,000
Jan-20-1999	202	13.1	2,020
Jan-21-1999	229	12.3	1,920
Jan-22-1999	236	12.4	1,860
Jan-23-1999	233	11.9	1,820
Jan-24-1999	263	10.6	1,720
Jan-25-1999	261	10.1	1,760
Jan-26-1999	242	8.9	1,910
Jan-27-1999	218	8.8	2,000
Jan-28-1999	209	9.0	2,060
Jan-29-1999	201	9.3	2,140
Jan-30-1999	187	9.2	2,280
Jan-31-1999	192	10.0	2,430

**Table 4. Continuous water monitoring at Station F (Salt Slough at Highway 165), January 1999.**

See Table 26 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Specific Conductance
DATA SOURCE	usgs	usgs	usgs
UNITS	cfs	°C	µS/cm
Jan-01-1999	145	9.0	1,610
Jan-02-1999	145	8.7	1,580
Jan-03-1999	137	8.7	1,580
Jan-04-1999	140	8.4	1,560
Jan-05-1999	140	8.0	1,510
Jan-06-1999	144	7.7	1,560
Jan-07-1999	172	7.0	1,360
Jan-08-1999	179	7.1	1,310
Jan-09-1999	176	6.7	1,340
Jan-10-1999	178	6.2	1,290
Jan-11-1999	183	5.8	1,240
Jan-12-1999	185	5.2	1,210
Jan-13-1999	192	5.4	1,220
Jan-14-1999	200	5.7	1,190
Jan-15-1999	200	7.5	1,210
Jan-16-1999	217	9.9	1,230
Jan-17-1999	258	11.7	1,130
Jan-18-1999	277	12.4	1,140
Jan-19-1999	290	12.8	1,140
Jan-20-1999	316	12.9	1,180
Jan-21-1999	344	12.2	1,150
Jan-22-1999	360	12.0	1,180
Jan-23-1999	357	11.7	1,240
Jan-24-1999	344	10.7	1,260
Jan-25-1999	341	10.2	1,260
Jan-26-1999	349	9.0	1,260
Jan-27-1999	352	8.6	1,250
Jan-28-1999	333	8.6	1,350
Jan-29-1999	316	8.8	1,340
Jan-30-1999	322	8.7	1,310
Jan-31-1999	335	9.3	1,280

**Table 5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), January 1999.**

See Table 26 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
Jan-01-1999	1,110 e	9.0	1,020	1.5
Jan-02-1999	1,120 e	8.7	1,050	2.3
Jan-03-1999	1,110 e	8.9	1,060	2.0
Jan-04-1999	1,100 e	8.8	1,050	1.9
Jan-05-1999	1,090 e	8.5	1,070	1.6
Jan-06-1999	1,080 e	8.1	1,100	2.2
Jan-07-1999	1,070 e	7.7	1,020	1.5
Jan-08-1999	1,080 e	7.7	1,060	1.5
Jan-09-1999	1,080 e	7.4	1,050	1.5
Jan-10-1999	1,090 e	7.0	1,070	2.3
Jan-11-1999	1,100 e	6.7	996	2.0
Jan-12-1999	1,120 e	6.4	1,050	2.0
Jan-13-1999	1,130 e	6.4	1,020	1.7
Jan-14-1999	1,150	6.7	991	1.7
Jan-15-1999	1,160	7.7	996	1.6
Jan-16-1999	1,170	9.4	1,000	1.8
Jan-17-1999	1,180	11.1	928	1.5
Jan-18-1999	1,230	12.4	1,000	2.7
Jan-19-1999	1,290	12.8	1,010	1.8
Jan-20-1999	1,350	13.1	979	1.6
Jan-21-1999	1,410	12.6	957	1.4
Jan-22-1999	1,550	12.4	NA	1.7
Jan-23-1999	2,180	12.0	757	1.2
Jan-24-1999	2,580	11.0	549	0.9
Jan-25-1999	2,780	10.5	504	0.8
Jan-26-1999	2,820	9.8	513	0.9
Jan-27-1999	2,780	9.2	522	0.9
Jan-28-1999	2,310	9.2	631	1.1
Jan-29-1999	2,070	9.0	701	1.3
Jan-30-1999	1,940	8.9	741	1.1
Jan-31-1999	1,690	9.4	860	1.5

**Table 6. Weekly water quality monitoring at Station A (inflow to San Luis Drain), 1999.**

See Table 26 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Total Suspended Solids	Selenium (total)	Selenium (dissolved)	Boron
DATA SOURCE	USGS	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C		µS/cm	mg/L	µg/L	µg/L	mg/L
Nov-04-1998	24	NA	NA	5,040	NA	55.2	55.8	7.8
Nov-11-1998	19	NA	NA	5,660	37	72.4	73.2	8.3
Nov-18-1998	17	NA	NA	6,680	26	63.9	65.7	11
Nov-24-1998	16	NA	NA	5,790	21	61.8	62.7	9.5
Dec-02-1998	20	NA	NA	5,250	NA	106	60.2	7.9
Dec-09-1998	6	NA	NA	5,420	16	50.9	52.7	9.2
Dec-16-1998	18	NA	NA	5,650	30	88.7	89.7	9.5
Dec-22-1998	18	NA	NA	5,680	20	102	95.9	9.0
Dec-30-1998	22	NA	NA	4,870	9	46.0	49.0	7.9
Jan-06-1999	21	NA	NA	4,890	43	58.2	56.0	8.4
Jan-13-1999	18	NA	NA	5,190	39	90.3	88.6	8.2
Jan-20-1999	24	NA	NA	5,080	87	78.4	79.7	7.9
Jan-27-1999	28	NA	NA	5,090	48	61.2	60.3	P

**Table 7. Weekly water quality monitoring at Station B (discharge from San Luis Drain), 1999.**

See Table 26 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Total Suspended Solids	Selenium (total)	Selenium (dissolved)	Boron
DATA SOURCE	USGS	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C		µS/cm	mg/L	µg/L	µg/L	mg/L
Nov-05-1998	28.1	16.7	8.0	5,080	46	68.0	65.0	6.8
Nov-12-1998	25.1	14.4	7.9	4,740	30	46.0	46.4	6.9
Nov-19-1998	23.0	11.1	8.1	5,020	59	49.5	50.2	7.3
Nov-24-1998	22.3	16.1	8.1	5,850	24	53.8	53.9	9.3
Dec-03-1998	23.3	14.4	8.3	5,060	45	53.7	42.9	8.2
Dec-09-1998	19.9	11.1	NA	5,120	28	93.2	92.6	7.3
Dec-17-1998	25.0	9.4	7.8	5,370	P	63.0	69.8	8.6
Dec-22-1998	23.4	7.8	8.0	5,300	18	68.8	67.6	8.2
Dec-31-1998	25.5	10.0	7.7	5,700	28	110	112	8.1
Jan-07-1999	25.0 e	P	8.1	4,820	17	49.2	52.1	P
Jan-14-1999	23.5	7.2	8.5	4,690	13	58.1	59.9	7.3
Jan-21-1999	29.2	P	7.8	4,720	26	53.4	54.1	7.2
Jan-28-1999	34.9	P	7.9	4,460	21	50.4	49.0	P



**Table 8. Weekly water quality monitoring at Station C (Mud Slough North upstream of drainage discharges), 1999.**

See Table 26 for explanation of footnotes and agency abbreviations.

PARAMETER	.	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	.	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	.	°C		µS/cm	µg/L	mg/L
Nov-05-1998	.	16.7	8.1	947	0.7	0.8
Nov-12-1998	.	12.2	8.1	1,000	0.7	0.9
Nov-19-1998	.	12.8	8.1	1,160	0.5	1.0
Nov-24-1998	.	15.6	8.1	1,280	0.5	1.1
Dec-03-1998	.	14.4	NA	1,300	0.5	1.1
Dec-09-1998	.	10.0	NA	1,260	0.5	1.1
Dec-17-1998	.	9.4	7.8	1,430	0.5	1.2
Dec-22-1998	.	6.7	8.3	1,470	<0.4	1.2
Dec-31-1998	.	11.7	8.0	1,510	<0.4	1.3
Jan-07-1999	.	P	8.0	1,630	0.4	1.4
Jan-14-1999	.	7.2	NA	1,700	<0.4	1.4
Jan-21-1999	.	P	7.9	1,180	0.8	1.0
Jan-28-1999	.	P	8.1	1,590	0.6	P

**Table 9. Weekly water quality monitoring at Station D (Mud Slough North downstream of drainage discharges), 1999.**

See Table 26 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
Nov-05-1998	193	16.7	7.9	1,640	11.2	1.8
Nov-12-1998	183	14.4	7.9	1,590	6.6	1.8
Nov-19-1998	159	12.8	8.3	1,820	8.1	2.1
Nov-24-1998	142	15.6	8.2	2,100	9.5	2.6
Dec-03-1998	156	14.4	NA	1,990	9.8	2.3
Dec-09-1998	165	10.6	NA	1,770	7.7	1.9
Dec-17-1998	144	9.4	7.8	2,160	10.2	2.5
Dec-22-1998	145	5.6	8.1	2,170	10.7	2.4
Dec-31-1998	138	12.2	7.5	2,330	11.4	2.7
Jan-07-1999	126	P	8.0	2,340	9.2	P
Jan-14-1999	138	7.2	9.1	2,360	12.3	2.6
Jan-21-1999	229	P	7.8	1,950	8.3	2.2
Jan-28-1999	209	P	8.0	2,130	9.5	P

**Table 10. Weekly water quality monitoring at Station F (Salt Slough at Lander Avenue), 1999.**

See Table 26 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
Nov-05-1998	168	15.6	7.5	1,110	1.1	0.6
Nov-12-1998	177	11.7	8.0	1,150	0.9	0.6
Nov-18-1998	179	15.0	7.6	1,110	0.9	0.6
Nov-24-1998	146	16.1	8.2	1,330	0.9	0.8
Dec-03-1998	193	14.4	7.8	1,210	0.7	0.9
Dec-09-1998	160	12.2	NA	1,480	0.6	1.0
Dec-17-1998	140	9.4	7.5	1,640	0.5	1.0
Dec-22-1998	126	6.7	7.7	1,580	<0.4	1.0
Dec-30-1998	122	10.6	7.3	1,610	0.5	1.0
Jan-07-1999	172	P	7.6	1,440	0.5	P
Jan-14-1999	200	6.1	7.9	1,210	0.7	0.7
Jan-21-1999	344	P	7.5	1,210	1.1	0.8
Jan-27-1999	352	P	7.9	1,290	0.9	P

**Table 11. Weekly water quality monitoring at Station G (San Joaquin River at Fremont Ford), 1999.**

See Table 26 for explanation of footnotes and agency abbreviations.

PARAMETER	.	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	.	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	.	°C		µS/cm	µg/L	mg/L
Nov-05-1998	.	15.0	8.0	459	P	0.2
Nov-12-1998	.	12.2	8.0	979	1.0	0.5
Nov-18-1998	.	14.4	7.7	1,190	0.7	0.6
Nov-24-1998	.	15.6	7.6	1,430	0.4	0.7
Dec-03-1998	.	14.4	7.8	426	<0.4	0.2
Dec-09-1998	.	10.6	6.8	300	<0.4	0.2
Dec-17-1998	.	9.4	7.8	337	<0.4	0.1
Dec-22-1998	.	6.7	8.3	738	<0.4	0.4
Dec-30-1998	.	9.4	7.6	1,230	<0.4	0.6
Jan-07-1999	.	P	7.8	1,430	0.8	P
Jan-14-1999	.	6.1	7.9	1,340	0.7	0.7
Jan-21-1999	.	P	7.4	1,280	1.0	0.7
Jan-27-1999	.	P	8.0	1,020	0.5	P

**Table 12. Weekly water quality monitoring at Station H (San Joaquin River at Hills Ferry), 1999.**

See Table 26 for explanation of footnotes and agency abbreviations.

PARAMETER		Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	.	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	.	°C		µS/cm	µg/L	mg/L
Nov-05-1998	.	16.1	7.8	797	1.9	0.6
Nov-12-1998	.	12.8	8.0	1,310	3.1	1.0
Nov-19-1998	.	13.3	8.2	1,480	3.0	1.1
Nov-24-1998	.	15.6	8.1	1,350	2.0	1.0
Dec-03-1998	.	14.4	NA	746	1.7	0.6
Dec-09-1998	.	11.1	7.2	568	1.0	0.4
Dec-17-1998	.	9.4	7.7	591	0.9	0.4
Dec-22-1998	.	6.1	8.2	1,090	2.1	0.8
Dec-30-1998	.	8.9	7.8	1,670	3.5	1.2
Jan-07-1999	.	P	7.9	1,820	3.2	P
Jan-14-1999	.	6.1	7.9	1,720	2.9	1.3
Jan-21-1999	.	P	7.9	1,530	2.8	1.2
Jan-27-1999	.	P	8.1	1,230	2.3	P

**Table 13. Weekly water quality monitoring at Station J (Camp 13 Ditch), 1999.**

See Table 26 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA <sup>††</sup>	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C		µS/cm	µg/L	mg/L
Nov-04-1998	25	NA	NA	312	2.0	0.2
Nov-11-1998	25	NA	NA	303	1.1	0.2
Nov-18-1998	15	NA	NA	301	1.3	0.3
Nov-24-1998	15	NA	NA	436	3.3	0.4
Dec-02-1998	15	NA	NA	212	1.8	0.2
Dec-09-1998	15	NA	NA	194	0.7	0.2
Dec-16-1998	7	NA	NA	140	<0.4	0.1
Dec-23-1998	7	NA	NA	157	<0.4	0.2
Dec-30-1998	7	NA	NA	579	6.8	0.7
Jan-06-1999	7	NA	NA	436	1.3	0.3
Jan-13-1999	7	NA	NA	434	1.2	0.4
Jan-20-1999	0	NA	NA	544	0.9	0.4
Jan-27-1999	5	NA	NA	1,390	1.0	P

**Table 14. Weekly water quality monitoring at Station K (Agatha Canal), 1999.**

See Table 26 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA <sup>††</sup>	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C		µS/cm	µg/L	mg/L
Nov-04-1998	65	NA	NA	342	2.8	0.2
Nov-11-1998	45	NA	NA	303	1.1	0.2
Nov-18-1998	45	NA	NA	360	1.6	0.2
Nov-24-1998	45	NA	NA	461	1.3	0.3
Dec-02-1998	45	NA	NA	167	0.6	0.1
Dec-09-1998	45	NA	NA	164	0.5	0.2
Dec-16-1998	30	NA	NA	136	<0.4	0.1
Dec-23-1998	30	NA	NA	199	<0.4	0.3
Dec-30-1998	30	NA	NA	608	6.4	0.6
Jan-06-1999	0	NA	NA	444	1.0	0.3
Jan-13-1999	0	NA	NA	1,270	0.6	1.8
Jan-20-1999	0	NA	NA	1,310	1.1	2.0
Jan-27-1999	7	NA	NA	1,860	0.9	P

**Table 15. Weekly water quality monitoring at Station L2 (San Luis Canal at splits), 1999.**

See Table 26 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA <sup>††</sup>	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C		µS/cm	µg/L	mg/L
Nov-04-1998	38	NA	NA	636	2.3	0.6
Nov-11-1998	26	NA	NA	344	1.4	0.3
Nov-18-1998	28	NA	NA	301	1.3	0.2
Nov-24-1998	12	NA	NA	459	3.1	0.4
Dec-02-1998	28	NA	NA	342	2.1	0.3
Dec-09-1998	10	NA	NA	349	1.0	0.4
Dec-16-1998	20	NA	NA	174	0.5	0.2
Dec-23-1998	15	NA	NA	116	<0.4	0.1
Dec-30-1998	13	NA	NA	318	2.9	P
Jan-06-1999	13	NA	NA	568	1.4	0.5
Jan-13-1999	8	NA	NA	631	1.6	0.5
Jan-20-1999	24	NA	NA	560	1.3	0.4
Jan-27-1999	11	NA	NA	620	1.9	P

**Table 16. Weekly water quality monitoring at Station M2 (Santa Fe Canal at weir), 1999.**

See Table 26 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA <sup>11</sup>	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C		µS/cm	µg/L	mg/L
Nov-04-1998	81	NA	NA	843	1.4	1.0
Nov-11-1998	76	NA	NA	876	1.3	1.1
Nov-18-1998	85	NA	NA	1,010	1.1	1.4
Nov-24-1998	81	NA	NA	1,080	1.0	1.5
Dec-02-1998	50	NA	NA	1,150	1.2	1.6
Dec-09-1998	59	NA	NA	1,160	0.8	1.5
Dec-16-1998	40	NA	NA	1,210	0.8	1.7
Dec-23-1998	30	NA	NA	1,550	0.8	2.2
Dec-30-1998	28	NA	NA	1,560	1.0	2.2
Jan-06-1999	28	NA	NA	1,730	2.2	2.2
Jan-13-1999	38	NA	NA	1,960	2.0	2.4
Jan-20-1999	55	NA	NA	1,700	1.1	2.2
Jan-27-1999	51	NA	NA	1,850	2.5	P

**Table 17. Weekly water quality monitoring at Station N (San Joaquin River at Crow's Landing), 1999.**

See Table 26 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
Nov-05-1998	1,590	15.6	7.8	626	1.6	0.4
Nov-12-1998	1,180	13.9	7.8	922	2.0	0.6
Nov-19-1998	1,010	13.3	8.1	1,050	1.7	0.7
Nov-24-1998	1,090	15.0	8.0	1,020	1.3	0.7
Dec-03-1998	1,360	14.4	NA	869	1.5	0.6
Dec-09-1998	1,860	11.1	NA	481	0.9	0.4
Dec-17-1998	1,930	10.0	7.7	482	0.7	0.3
Dec-22-1998	1,340	6.7	7.7	778	1.4	0.5
Dec-30-1998	1,110	8.9	7.8	998	1.6	0.6
Jan-06-1999	1,080 e	P	7.8	1,080	1.6	0.7
Jan-14-1999	1,150	6.7	7.9	1,000	1.8	0.7
Jan-21-1999	1,410	P	7.9	940	1.3	0.7
Jan-28-1999	2,310	P	7.9	678	1.0	0.5

Table 18. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from February 1998 to January 1999. Each value is the mean of 4 replicates with 10 fish in each replicate.

See Table 26 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	%	%	%	%	%	%
February-98	93	43*	73*	80*	93	93
March-98	95	60*	68*	53*	95	84
April-98	100	95	95	100	85	100
May-98	100	98	98	58	80	100
June-98	88	98	98	65*	98	95
July-98	98	93	100	78	93	100
August-98	88	100	95	95	95	100
September-98	98	93	100	100	100	100
October-98	98	53*	80	85	97	100
November-98	95	55*	55*	45*	90	85
December-98	98	68*	68	80	93	93
January-99	100	88	60*	43*	80	100

Table 19. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from February 1998 to January 1999. Each value is the mean of 4 replicates with 10 fish in each replicate.

See Table 26 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
February-98	0.74	0.35*	0.53*	0.56*	0.70	0.59
March-98	0.67	0.31*	0.39*	0.30*	0.54	0.53
April-98	0.67	0.53	0.59	0.58	0.47	0.54
May-98	0.62	0.50	0.54	0.32	0.41	0.51
June-98	0.64	0.56	0.59	0.38*	0.57	0.64
July-98	0.69	0.52	0.68	0.45	0.53	0.68
August-98	0.65	0.59*	0.64	0.65	0.65	0.63
September-98	0.57	0.56	0.60	0.51	0.53	0.66
October-98	0.74	0.31*	0.53	0.55	0.58	0.67
November-98	0.53	0.31*	0.28*	0.26*	0.50	0.49
December-98	0.68	0.48	0.45	0.50	0.53	0.55
January-99	0.72	0.62	0.38	0.23*	0.49	0.69

Table 20. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from February 1998 to January 1999. Each value is the mean of 10 replicates with 1 animal in each replicate.

See Table 26 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	%	%	%	%	%	%
February-98	80	80	100	90	50 <sup>†</sup>	0
March-98	100	90	100	100	100	0
April-98	100	100	90	100	100	0
May-98	100	100	90	100	100	40
June-98	90	100	75	100	90	0
July-98	70	90	100	90	90	70
August-98	100	100	100	90	90	100
September-98	80	100	90	100	80	100
October-98	80	90	70	70	90	80
November-98	100	80	90	100	90	90
December-98	100	100	100	100	80	90
January-99	100	100	100	100	100	100

Table 21. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from February 1998 to January 1999. Each value is the mean of 10 replicates with 1 animal in each replicate.

See Table 26 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
February-98 <sup>(2)</sup>	67.0	70.5	69.9	61.3	39.3 <sup>†</sup>	0.0
March-98	32.0	28.9	28.0	29.1	28.5	0.0
April-98	18.7	25.2	19.6	20.2	10.2	0.0
May-98	34.9	34.6	31.6	21.1	20.1	18.4
June-98	30.8	5.7	7.9	2.3	9.0 <sup>†††</sup>	0.0
July-98	10.8	11.9	12.6	8.2	6.6 <sup>†††</sup>	5.9
August-98	57.5	71.3	49.1	29.9	32.7	28.2
September-98	46.4	56.2	50.7	45.8	40.5	50.2
October-98	14.7 <sup>*</sup>	22.9	12.5 <sup>*</sup>	22.0	24.2	23.5
November-98	53.4	50.0	53.4	50.6	38.9	24.3
December-98	30.2	38.4	35.0	35.8	30.0	26.8
January-99	33.0	28.7	31.2	22.9	14.9	48.0

Table 22. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from February 1998 to January 1999. Each value is the mean of 4 replicates.

See Table 26 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal	Laboratory Control
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	10 <sup>5</sup> cells/mL	10 <sup>5</sup> cells/mL	10 <sup>5</sup> cells/mL	10 <sup>5</sup> cells/mL	10 <sup>5</sup> cells/mL	10 <sup>5</sup> cells/mL
February-98	4.2 <sup>*</sup>	7.9	10.9	11.8	8.3 <sup>††††</sup>	17.1
March-98	5.4 <sup>*</sup>	20.3	16.8	16.5	13.4	25.5
April-98	19.0	36.1	25.8	34.8	23.7	32.5
May-98	8.7 <sup>*</sup>	26.6	17.8	9.9 <sup>*</sup>	22.2	19.3
June-98	15.8 <sup>*</sup>	25.4	21.3	20.1	22.7	32.1
July-98	23.4	20.5	23.7	23.2	22.2	27.6
August-98	5.6	6.4	6.0	7.5	4.2 <sup>††††</sup>	7.5
September-98	21.6 <sup>*</sup>	27.4	27.7 <sup>*</sup>	29.8	32.3	28.0
October-98	15.5 <sup>*</sup>	33.5	29.8	29.0	26.5	22.0
November-98	10.8 <sup>*</sup>	16.7	15.0 <sup>*</sup>	21.5	21.3	22.0
December-98	6.0 <sup>*</sup>	18.9	16.0	13.6 <sup>*</sup>	16.2	24.4
January-99	13.0 <sup>*</sup>	20.6	20.7	19.2 <sup>*</sup>	24.4	25.6

**Table 23. Summary of selenium concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, October 1998 to January 1999.**

See Table 26 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-12-1998	49	0.7	9.4	0.8	<0.4
Oct-14-1998	37	0.6	8.1	1.1	0.4
Oct-16-1998	46	0.6	10	1.0	<0.4
Nov-10-1998	47	0.6	7.8	1.0	<0.4
Nov-12-1998	46	0.7	6.7	0.9	0.7
Nov-14-1998	52	0.6	8.0	0.9	0.5
Dec-07-1998	50	0.5	6.3	0.8	0.5
Dec-09-1998	79	0.6	7.5	0.8	0.5
Dec-11-1998	56	0.5	8.7	0.8	0.6
Jan-11-1999	46	0.8	12	1.2	1.0
Jan-13-1999	50	0.9	9.8	1.0	1.0
Jan-15-1999	49	0.7	9.2	1.0	1.2

**Table 24. Summary of sulfate concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, October 1998 to January 1999.**

See Table 26 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	mg/L	mg/L	mg/L	mg/L	mg/L
Oct-12-1998	1,390	71	317	115	15
Oct-14-1998	1,630	69	287	108	17
Oct-16-1998	1,660	77	373	112	25
Nov-10-1998	1,510	126	342	148	18
Nov-12-1998	1,470	131	322	160	48
Nov-14-1998	1,560	139	318	161	35
Dec-07-1998	1,710	176	374	205	44
Dec-09-1998	1,690	186	389	225	50
Dec-11-1998	1,440	193	343	226	53
Jan-11-1999	1,520	276	499	200	69
Jan-13-1999	1,480	274	469	205	77
Jan-15-1999	1,500	267	442	208	97



Table 25. Summary of quarterly in situ bioassay results from December 1995 to May 1998.

Results are the number of live fathead minnows (*Pimephales promelas*) per number of fish recovered at the end of the 7 day deployment at each station (initial count of 80 used at each station).

See Table 26 for explanation of footnotes and agency abbreviations.

LOCATION	Windmill (4 day old larvae)	Station B (4 day old larvae)	Station D (4 day old larvae)	Station D (14 day old larvae)	Station F (4 day old larvae)	Station F (14 day old larvae)
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	# alive/total count	# alive/total count	# alive/total count	# alive/total count	# alive/total count	# alive/total count
December-1995 <sup>(4)</sup>	NT	NT	NT	NT	NT	NT
March-1996 <sup>(5)</sup>	80/80	NT	NT	44/44	NT	70/70
August-1996 <sup>(6)</sup>	NT	NT	13/19	22/29	28/40	20/49
November-1996 <sup>(7)</sup>	46/62	63/68	0/2	.	16/36	.
February-1997 <sup>(8)</sup>	NT	3/13	0/0	.	0/11	.
May-1997	64/66	0/0	0/24	.	5/9	.
August-1997 <sup>(9)</sup>	NT	38/38	27/31	.	0/8	.
May-1998	5/24	3/23	2/21	.	1/21	.

Table 26. 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
.	Not applicable
<	Less than MDL. If needed in calculation, use 1/2 MDL
e	Estimated value
P	Pending, data not available at this time but will be available in the future
NA	Not analyzed - operator error, data will not be available in the future
NT	Not tested
(2)	Increased reproduction for the February 1998 sampling period is due to increased nutrients added to the test water.
(4)	In situ cages could not be deployed due to wet weather conditions.
(5)	Baseline results for 3/96 are for 14-day old larvae. There was no survival for the 24-hour old larvae.
(6)	Windmill station was dry due to water drainage. Use of plastic screened beakers for Station F during 8/96 with use of 4-day old larvae resulted in 0/39. Apparent cause of mortality was elevated temperature and sediment which was found in all cages and beakers.
(7)	Heavy silt accumulation was noted in Stations D and F cages and light silt accumulation was observed in both the Windmill station and Station B.
(8)	Moderate silt accumulation was noted in Stations B and F cages and light silt accumulation was observed in Station D.
(9)	No test deployment was done at the Windmill Station due to extreme conditions (stagnant & pH>9.0). Station B replicate A was retrieved with no cork and replicate C lost its cork during retrieval. There were no surviving fish for a growth determination for Station F cages.
*	Significantly reduced from Delta Mendota Canal (p<0.05)
†	DMC water failed to meet the survival (>80%) and the acceptability criteria.
††	DMC water failed to meet the reproduction (>10 neonates/adult) acceptability criteria.
†††	DMC water failed to meet minimum growth (1 X 10 <sup>6</sup> cell/mL) acceptability criteria.
#	New testing laboratory with precision to 0.4 µg/L