

# GRASSLAND BYPASS PROJECT

## MONTHLY DATA REPORT

November 1998

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



## GRASSLAND BYPASS PROJECT

## MONTHLY DATA REPORT

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**Table 1. Continuous water monitoring at Station A (inflow to San Luis Drain), November 1998.**

See Table 26 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow
DATA SOURCE	usgs
UNITS	cfs
Nov-01-1998	24
Nov-02-1998	24
Nov-03-1998	26
Nov-04-1998	24
Nov-05-1998	25
Nov-06-1998	22
Nov-07-1998	22
Nov-08-1998	21
Nov-09-1998	23
Nov-10-1998	22
Nov-11-1998	19
Nov-12-1998	18
Nov-13-1998	18
Nov-14-1998	20
Nov-15-1998	19
Nov-16-1998	18
Nov-17-1998	17
Nov-18-1998	17
Nov-19-1998	24
Nov-20-1998	18
Nov-21-1998	18
Nov-22-1998	18
Nov-23-1998	18
Nov-24-1998	16
Nov-25-1998	16
Nov-26-1998	17
Nov-27-1998	18
Nov-28-1998	20
Nov-29-1998	19
Nov-30-1998	15
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**Table 2. Continuous water monitoring at Station B (discharge from San Luis Drain), November 1998.**

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
Nov-01-1998	28.8	16.1	6.8	4,480	41.9	6.5
Nov-02-1998	27.8	15.8	7.2	4,600	45.3	6.8
Nov-03-1998	29.0	16.1	6.8	4,580	47.2	7.4
Nov-04-1998	29.9	16.1	6.5	4,660	52.0	8.4
Nov-05-1998	28.1	16.0	6.9	4,990	74.4	11.3
Nov-06-1998	29.8	15.1	7.1	5,110	61.6	9.9
Nov-07-1998	26.8	14.4	7.2	5,020	52.2	7.5
Nov-08-1998	26.8	13.9	6.9	4,760	42.8	6.2
Nov-09-1998	26.2	14.0	7.1	4,760	44.2	6.2
Nov-10-1998	28.5	13.4	7.1	4,690	45.6	7.0
Nov-11-1998	26.9	12.8	7.0	4,690	47.5	6.9
Nov-12-1998	25.1	12.6	6.9	4,650	45.5	6.2
Nov-13-1998	24.5	13.1	7.1	4,640	46.8	6.2
Nov-14-1998	24.6	13.3	7.4	4,820	51.0	6.8
Nov-15-1998	25.4	13.7	7.2	4,780	50.5	6.9
Nov-16-1998	25.4	14.3	7.2	4,700	49.6	6.8
Nov-17-1998	23.9	14.3	7.2	4,730	48.6	6.3
Nov-18-1998	22.0	14.2	7.4	4,870	51.0	6.1
Nov-19-1998	23.0	13.8	7.2	4,840	51.6	6.4
Nov-20-1998	28.5	13.5	NA	NA	52.8 <sup>est 1</sup>	8.1
Nov-21-1998	25.3	13.4	7.6	5,200	54.0	7.4
Nov-22-1998	23.7	14.1	7.9	5,310	56.5	7.2
Nov-23-1998	24.7	14.7	8.1	5,320	53.9	7.2
Nov-24-1998	22.3	14.5	8.8	5,670	49.0	5.9
Nov-25-1998	22.3	14.3	9.5	6,100	66.0	7.9
Nov-26-1998	23.0	13.9	9.0	6,140	93.0	11.5
Nov-27-1998	23.4	13.8	8.2	5,760	92.3	11.6
Nov-28-1998	23.9	13.6	8.0	5,420	66.5	8.6
Nov-29-1998	25.9	13.3	7.9	5,770	62.8	8.8
Nov-30-1998	22.7	13.1	8.0	5,250	51.5	6.3
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Mean	25.6	14.2	7.5	5,050	54.9	
<b>Total</b>						<b>226</b>

<b>Load Limitation for November 1998 (lbs)</b>	<b>348</b>
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**Table 3. Continuous water monitoring at Station D  
(Mud Slough North downstream of drainage discharges), November 1998.**

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
Nov-01-1998	202	15.8	1,490
Nov-02-1998	198	15.3	1,490
Nov-03-1998	192	15.5	1,550
Nov-04-1998	195	15.8	1,580
Nov-05-1998	193	15.6	1,600
Nov-06-1998	185	14.1	1,680
Nov-07-1998	181	13.5	1,710
Nov-08-1998	182	13.3	1,650
Nov-09-1998	183	13.1	1,650
Nov-10-1998	187	12.3	1,650
Nov-11-1998	189	11.8	1,650
Nov-12-1998	183	12.1	1,630
Nov-13-1998	176	12.6	1,630
Nov-14-1998	169	12.7	1,690
Nov-15-1998	166	13.2	1,750
Nov-16-1998	165	13.8	1,740
Nov-17-1998	165	14.0	1,740
Nov-18-1998	165	13.3	1,730
Nov-19-1998	159	13.1	1,750
Nov-20-1998	151	12.9	1,910
Nov-21-1998	147	13.1	1,850
Nov-22-1998	141	14.5	1,910
Nov-23-1998	142	15.0	1,900
Nov-24-1998	142	14.7	1,890
Nov-25-1998	133	14.1	2,040
Nov-26-1998	130	13.9	2,110
Nov-27-1998	134	13.8	2,050
Nov-28-1998	144	13.3	1,870
Nov-29-1998	147	12.8	1,810
Nov-30-1998	147	12.9	1,850

**Table 4. Continuous water monitoring at Station F (Salt Slough at Highway 165), November 1998.**

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
Nov-01-1998	163	15.5	1,070
Nov-02-1998	156	15.3	1,100
Nov-03-1998	162	15.1	1,050
Nov-04-1998	175	15.3	1,010
Nov-05-1998	168	15.2	1,060
Nov-06-1998	175	14.0	1,080
Nov-07-1998	185	13.4	1,020
Nov-08-1998	184	13.3	1,040
Nov-09-1998	178	13.3	1,070
Nov-10-1998	175	12.5	1,080
Nov-11-1998	176	11.9	1,100
Nov-12-1998	177	12.1	1,130
Nov-13-1998	172	12.6	1,140
Nov-14-1998	163	12.7	1,170
Nov-15-1998	162	13.1	1,110
Nov-16-1998	159	13.7	1,080
Nov-17-1998	165	14.1	1,040
Nov-18-1998	179	13.5	934
Nov-19-1998	172	12.8	1,110
Nov-20-1998	150	12.3	1,200
Nov-21-1998	143	12.4	1,250
Nov-22-1998	146	13.7	1,230
Nov-23-1998	146	14.3	1,220
Nov-24-1998	146	14.2	1,190
Nov-25-1998	142	13.5	1,190
Nov-26-1998	141	13.0	1,210
Nov-27-1998	147	13.3	1,250
Nov-28-1998	160	13.1	1,300
Nov-29-1998	175	12.7	1,240
Nov-30-1998	190	12.7	1,220

**Table 5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), November 1998.**

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
Nov-01-1998	1,660	15.6	616	1.5
Nov-02-1998	1,680	15.3	578	1.4
Nov-03-1998	1,690	15.2	564	1.2
Nov-04-1998	1,670	15.3	572	1.5
Nov-05-1998	1,590	15.2	610	1.5
Nov-06-1998	1,490	14.4	648	1.8
Nov-07-1998	1,410	13.9	714	1.9
Nov-08-1998	1,390	13.6	763	1.8
Nov-09-1998	1,310	13.6	763	1.5
Nov-10-1998	1,240	13.2	817	1.6
Nov-11-1998	1,210	12.6	859	1.7
Nov-12-1998	1,180	12.5	908	1.9
Nov-13-1998	1,150	12.7	922	1.8
Nov-14-1998	1,120	12.9	928	1.6
Nov-15-1998	1,090	13.2	957	1.6
Nov-16-1998	1,050	13.8	1,010	1.8
Nov-17-1998	1,030	14.0	1,020	1.9
Nov-18-1998	1,020	13.6	1,020	1.7
Nov-19-1998	1,010	13.1	1,050	1.7
Nov-20-1998	988	12.7	1,020	1.6
Nov-21-1998	1,050	12.6	1,070	1.9
Nov-22-1998	1,080	13.4	1,030	1.6
Nov-23-1998	1,070	14.3	1,030	1.5
Nov-24-1998	1,090	14.1	1,010	1.4
Nov-25-1998	1,090	13.5	966	1.8
Nov-26-1998	1,060	13.2	991	1.9
Nov-27-1998	1,040	13.4	1,060	2.1
Nov-28-1998	1,050	13.1	1,080	2.5
Nov-29-1998	1,070	12.9	1,080	2.6
Nov-30-1998	1,250	12.6	1,030	2.1

**Table 6. Weekly water quality monitoring at Station A (inflow to San Luis Drain), 1998.**

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	USBR	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C		µS/cm	mg/L	µg/L	µg/L	mg/L
Sep-02-1998	55	NA	NA	4,400	26	50.1	49.4	P
Sep-09-1998	55	NA	NA	3,930	46	54.4	51.9	7.6
Sep-16-1998	54	NA	NA	3,780	50	46.3	47.2	6.1
Sep-23-1998	37	NA	NA	3,040	39	25.4	22.2	5.9
Sep-30-1998	29	NA	NA	4,510	17	67.4	65.2	6.3
Oct-07-1998	28	NA	NA	4,970	26	55.6	57.3	P
Oct-14-1998	28	NA	NA	5,600	NA	66.2	64.8	9.3
Oct-21-1998	21	NA	NA	6,570	35	104	105	9.5
Oct-28-1998	31	NA	NA	4,740	67	48.6	49.2	7.4
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	11.0
Nov-24-1998	16	NA	NA	5,790	21	61.8	62.7	9.5

**Table 7. Weekly water quality monitoring at Station B (discharge from San Luis Drain), 1998.**

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	USBR	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C		µS/cm	mg/L	µg/L	µg/L	mg/L
Sep-03-1998	57.2	27.2	7.3	4,280	P	46.1	46.8	7.4
Sep-10-1998	56.7	22.8	8.1	4,180	11	43.5	42.5	7.2
Sep-17-1998	58.0	25.6	7.3	3,800	P	47.6	48.4	6.3
Sep-24-1998	44.6	22.8	8.0	3,990	55	37.4	32.2	6.5
Oct-01-1998	42.0	20.6	7.6	3,210	40	21.6	22.1	P
Oct-08-1998	32.3	21.7	8.5	4,500	61	45.3	44.1	7.0
Oct-15-1998	36.0	18.9	8.1	5,280	84	50.0	49.6	7.9
Oct-22-1998	28.7	20.0	8.2	5,200	43	49.6	49.0	7.7
Oct-29-1998	36.8	19.4	NA	5,120	54	55.5	55.6	9.2
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



**Table 8. Weekly water quality monitoring at Station C (Mud Slough North upstream of drainage discharges), 1998.**

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
Sep-03-1998	.	27.2	7.8	730	1.9	0.7
Sep-10-1998	.	21.7	7.7	595	0.9	0.5
Sep-17-1998	.	24.4	7.4	618	1.0	0.5
Sep-24-1998	.	22.8	NA	672	0.5	0.6
Oct-01-1998	.	20.6	7.8	657	0.5	P
Oct-08-1998	.	21.7	7.9	676	0.7	0.6
Oct-15-1998	.	17.8	7.9	735	0.7	0.6
Oct-22-1998	.	20.0	7.8	898	0.7	0.8
Oct-29-1998	.	20.0	NA	862	0.6	0.8
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

**Table 9. Weekly water quality monitoring at Station D (Mud Slough North downstream of drainage discharges), 1998.**

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
Sep-03-1998	75	27.2	7.7	3,590	37.8	5.9
Sep-10-1998	75	23.3	7.3	3,790	35.4	6.5
Sep-17-1998	97	25.6	7.2	2,870	31.8	4.5
Sep-24-1998	137	NA	NA	1,800	11.5	2.6
Oct-01-1998	168	21.1	7.9	1,450	6.8	P
Oct-08-1998	206	20.0	8.3	1,410	7.3	1.8
Oct-15-1998	202	18.3	8.1	1,630	8.8	1.9
Oct-22-1998	148	18.9	7.9	2,100	12.3	2.6
Oct-29-1998	219	19.4	NA	1,660	10.4	P
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	P
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

**Table 10. Weekly water quality monitoring at Station F (Salt Slough at Lander Avenue), 1998.**

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
Sep-03-1998	219	26.1	7.5	861	1.1	0.4
Sep-10-1998	177	26.1	7.6	888	1.0	0.5
Sep-17-1998	129	24.4	7.5	993	0.4	0.5
Sep-24-1998	145	20.0	NA	993	0.8	0.5
Oct-01-1998	171	20.6	7.5	832	0.9	P
Oct-08-1998	159	19.4	7.4	871	0.9	0.5
Oct-15-1998	208	17.8	7.7	982	0.9	0.5
Oct-22-1998	144	17.2	7.5	1,200	1.1	0.6
Oct-29-1998	196	18.3	NA	1,030	1.0	0.6
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

**Table 11. Weekly water quality monitoring at Station G (San Joaquin River at Fremont Ford), 1998.**

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
Sep-03-1998	.	26.7	7.3	692	0.8	0.3
Sep-10-1998	.	22.2	7.1	816	0.7	0.3
Sep-17-1998	.	23.3	7.8	414	0.4	0.1
Sep-24-1998	.	19.4	7.6	510	<0.4	0.2
Oct-01-1998	.	20.0	7.2	711	0.5	P
Oct-08-1998	.	20.0	7.4	727	0.6	0.3
Oct-15-1998	.	17.8	7.6	709	0.7	0.3
Oct-22-1998	.	17.8	7.5	792	0.5	0.3
Oct-29-1998	.	17.8	NA	424	0.5	0.2
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

**Table 12. Weekly water quality monitoring at Station H (San Joaquin River at Hills Ferry), 1998.**

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
Sep-03-1998	.	27.8	7.2	1,170	5.2	1.1
Sep-10-1998	.	24.4	8.1	1,200	5.1	1.1
Sep-17-1998	.	25.6	7.1	843	5.3	0.9
Sep-24-1998	.	22.8	NA	909	3.8	0.8
Oct-01-1998	.	21.1	7.7	830	2.1	P
Oct-08-1998	.	21.1	7.5	728	1.9	0.5
Oct-15-1998	.	17.8	8.5	790	2.6	0.6
Oct-22-1998	.	20.0	7.5	1,290	3.5	1.0
Oct-29-1998	.	18.3	NA	795	2.8	0.7
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

**Table 13. Weekly water quality monitoring at Station J (Camp 13 Ditch), 1998.**

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
Sep-02-1998	45	NA	NA	271	1.1	P
Sep-09-1998	100	NA	NA	283	1.5	0.2
Sep-16-1998	175	NA	NA	315	1.0	0.2
Sep-23-1998	175	NA	NA	253	1.1	0.1
Sep-30-1998	200	NA	NA	278	0.7	0.1
Oct-07-1998	45	NA	NA	266	1.5	P
Oct-14-1998	10	NA	NA	241	0.9	0.2
Oct-21-1998	10	NA	NA	265	2.4	0.2
Oct-28-1998	10	NA	NA	294	2.4	0.2
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

**Table 14. Weekly water quality monitoring at Station K (Agatha Canal), 1998.**

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
Sep-02-1998	60	NA	NA	392	1.2	P
Sep-09-1998	100	NA	NA	339	1.5	0.2
Sep-16-1998	170	NA	NA	278	1.1	0.2
Sep-23-1998	190	NA	NA	300	1.5	0.2
Sep-30-1998	200	NA	NA	270	0.7	0.1
Oct-07-1998	100	NA	NA	260	1.4	P
Oct-14-1998	50	NA	NA	312	2.1	0.2
Oct-21-1998	50	NA	NA	252	2.7	0.2
Oct-28-1998	65	NA	NA	275	2.0	0.2
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

**Table 15. Weekly water quality monitoring at Station L2 (San Luis Canal at splits), 1998.**

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
Sep-02-1998	6	NA	NA	494	1.4	P
Sep-09-1998	103	NA	NA	470	1.4	0.4
Sep-16-1998	131	NA	NA	NA	NA	P
Sep-23-1998	151	NA	NA	368	1.6	0.3
Sep-30-1998	162	NA	NA	339	1.0	0.2
Oct-07-1998	180	NA	NA	436	1.5	P
Oct-14-1998	162	NA	NA	401	2.3	0.4
Oct-21-1998	37	NA	NA	429	2.5	0.4
Oct-28-1998	35	NA	NA	394	1.2	0.4
Nov-04-1998	38	NA	NA	636	2.3	0.6
Nov-11-1998	16	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

**Table 16. Weekly water quality monitoring at Station M2 (Santa Fe Canal at weir), 1998.**

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
Sep-02-1998	27	NA	NA	1,100	2.6	P
Sep-09-1998	67	NA	NA	545	2.7	0.5
Sep-16-1998	75	NA	NA	437	1.1	0.4
Sep-23-1998	94	NA	NA	426	1.2	0.3
Sep-30-1998	119	NA	NA	356	1.1	0.3
Oct-07-1998	141	NA	NA	569	1.1	0.6
Oct-14-1998	125	NA	NA	634	2.0	0.7
Oct-21-1998	94	NA	NA	1,050	1.1	1.3
Oct-28-1998	80	NA	NA	877	1.6	1.1
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

**Table 17. Weekly water quality monitoring at Station N (San Joaquin River at Crow's Landing), 1998.**

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
Sep-03-1998	1,660	23.9	7.8	582	2.2	0.5
Sep-10-1998	1,700	22.2	7.9	511	1.5	0.4
Sep-17-1998	1,790	22.8	7.5	440	1.9	0.3
Sep-24-1998	1,780	20.6	NA	398	1.1	0.2
Oct-01-1998	2,100	20.6	8.0	372	0.9	0.1
Oct-08-1998	2,410	18.9	7.5	313	0.7	0.2
Oct-15-1998	2,620	20.0	7.6	359	0.8	0.2
Oct-22-1998	1,300	19.4	7.7	786	1.6	0.5
Oct-28-1998	1,740	17.8	NA	592	2.5	0.5
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

Table 18. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from December 1997 to November 1998. 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	%	%	%	%	%	%
December-97	90	50*	58*	83	88	85
January-98	100	40*	50*	90	90	95
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

Table 19. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from December 1997 to November 1998. 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
December-97	0.60	0.38*	0.52	0.63	0.63	0.57
January-98	0.65	0.26*	0.30*	0.58	0.54	0.57
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

Table 20. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from December 1997 to November 1998. 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	%	%	%	%	%	%
December-97	100	100	90	80	100	80
January-98	80	90	100	100	100	0
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

**Table 21. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from December 1997 to November 1998. 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
December-97	46.0	44.5	41.2	32.7*	43.6	21.1
January-98	13.7*	21.8	18.5*	14.5*	27.4	0.0
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*	22.9	12.5*	22.0	24.2	23.5
November-98	53.4	50.0	53.4	50.6	38.9	24.3

**Table 22. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from December 1997 to November 1998. 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
December-97	14.8	14.2	24.2	19.2	6.3 <sup>††††</sup>	25.0
January-98	1.0*	11.9	14.5	6.8	9.1 <sup>††††</sup>	9.1
February-98	4.2*	7.9	10.9	11.8	8.3 <sup>††††</sup>	17.1
March-98	5.4*	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*	26.6	17.8	9.9*	22.2	19.3
June-98	15.8*	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*	27.4	27.7*	29.8	32.3	28.0
October-98	15.5*	33.5	29.8	29.0	26.5	22.0
November-98	10.8*	16.7	15.0*	21.5	21.3	22.0

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

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
Aug-10-1998	54	2.0	35	1.1	1.1
Aug-12-1998	51	2.0	31	1.1	0.5
Aug-14-1998	37	1.4	30	1.2	<0.4
Sep-08-1998	52	1.1	28	1.2	0.8
Sep-10-1998	43	0.9	37	1.0	<0.4
Sep-12-1998	50	0.9	43	1.2	<0.4
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	0.9	0.5

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

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
Aug-10-1998	1,480	364	1,050	84	41
Aug-12-1998	1,350	294	906	93	24
Aug-14-1998	1,290	182	884	99	24
Sep-08-1998	1,500	67	861	110	47
Sep-10-1998	1,390	84	1,180	119	19
Sep-12-1998	1,470	94	1,170	136	20
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



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
CVRQCB	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
est 1	Estimated value determined by using method for 1 missing values - average of 11/19/98 - 11/21/98
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
NP	Data not provided - future unknown
NT	Not tested
(1)	Calculated average of daily min and max values from source file.
(2)	Increased reproduction for the February 1998 sampling period is due to increased nutrients added to the test water.
(3)	There were no surviving <i>D. magna</i> at test completion. Value represents reproduction that occurred prior to mortality.
(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)
**	Possible calibration problem
†	DMC water failed to meet the survival (>80%) and the 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 (1997 draft).
†††	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