

**Grassland Bypass Project
Interim Baseline Monitoring Program**

Monthly Data Report

January 2014

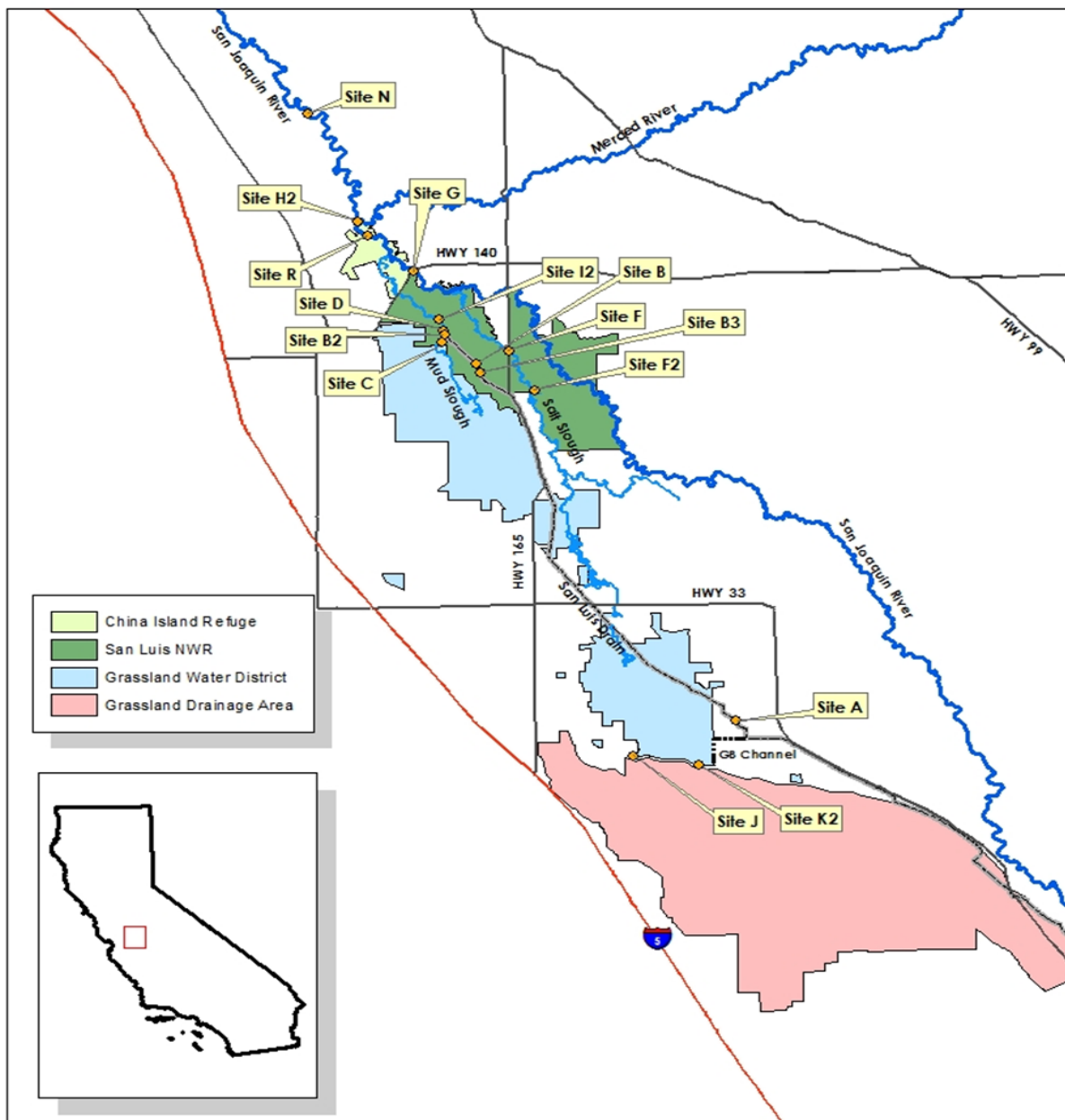


A Cooperative Effort Of:

U.S. Bureau of Reclamation
Central Valley Regional Water Quality Control Board
U.S. Fish and Wildlife Service
National Marine Fisheries Service
California Department of Fish and Wildlife
San Luis & Delta-Mendota Water Authority
U.S. Environmental Protection Agency
U.S. Geological Survey

Compiled by San Francisco Estuary Institute

Figure 1. Map of the Grassland Bypass Project area



Grassland Bypass Project

2013 Monitoring Plan Sites

0 2.5 5 10 Miles



Grassland Bypass Project
 NAD 1983 California Zone 10
 U.S. Bureau of Reclamation

**GRASSLAND BYPASS PROJECT
MONTHLY DATA REPORT**

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Table 1a. Water monitoring of inflow to the San Luis Drain (Station A)

PARAMETER	Flow	Temperature	Specific Conductance	Total Dissolved Solids	Total Suspended Solids	Total Selenium	Daily Salt Load
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	Calculated	SLDMWA	SLDMWA/USBR	Calculated
UNITS	cfs	°C	µS/cm	mg/L	mg/L	µg/L	tons
Jan-01-2014	3	7.9	8,360	6,186			57
Jan-02-2014	4	7.8	8,220	6,086		27	61
Jan-03-2014	4	7.8	8,040	5,953		26	61
Jan-04-2014	4	8.1	7,940	5,879		29	63
Jan-05-2014	4	8.2	8,010	5,930		29	61
Jan-06-2014	5	7.6	7,920	5,864		33	84
Jan-07-2014	5	8.8	7,950	5,886		29	79
Jan-08-2014	8	8.7	8,770	6,488		27	137
Jan-09-2014	6	9.8	8,050	5,961		26	100
Jan-10-2014	6	10.0	7,310	5,410		24	93
Jan-11-2014	6	9.6	7,050	5,220		29	79
Jan-12-2014	8	9.3	6,980	5,164		25	113
Jan-13-2014	9	8.9	6,800	5,033	46	21	126
Jan-14-2014	11	8.9	6,770	5,007		22	153
Jan-15-2014	11	9.0	6,680	4,942		23	145
Jan-16-2014	9	9.2	6,600	4,884		23	120
Jan-17-2014	11	9.6	6,430	4,756		23	139
Jan-18-2014	13	9.5	6,760	5,003		21	173
Jan-19-2014	12	9.4	7,570	5,601		21	187
Jan-20-2014	11	9.5	8,140	6,023		27	180
Jan-21-2014	12	9.6	8,080	5,977		26	189
Jan-22-2014	12	9.6	7,820	5,788		25	194
Jan-23-2014	13	9.8	7,210	5,338		26	184
Jan-24-2014	13	10.3	6,910	5,112		28	185
Jan-25-2014	19	11.2	6,590	4,874		25	245
Jan-26-2014	20	11.2	6,170	4,569		26	251
Jan-27-2014	21	10.9	6,590	4,874		27	277
Jan-28-2014	18	12.4	6,510	4,815		29	231
Jan-29-2014	17	14.0	6,970	5,157		29	230
Jan-30-2014	15	14.7	6,890	5,096		26	199
Jan-31-2014	16	13.2	6,890	5,099		26	220

Notes:

See Table 19 for explanation of footnotes and agency abbreviations.
Preliminary Results

Table 1b. Monthly Averages and Totals

	Average Flow (A)	Average Temperature	Average Specific Conductance	Average Total Dissolved Solids	Average Total Suspended Solids	Average Selenium	Salt Load	Salt Load Objective
	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	UA3
	cfs	°C	µS/cm	mg/L	mg/L	µg/L	tons	tons
Jan-2014	11	9.8	7,320	5,418	46	26	4,615	4,283
Cumulative Total							4,615	4,280

Notes:

Salt load objective based on 2014 critical year type

Table 2a. Water monitoring of San Luis Drain Discharge into Mud Slough (north)
Station B2 (Terminus at Mud Slough) and Station B3 (Gun Club Road)

PARAMETER	Flow (B2)	Temperature (B2)	Specific Conductance (B2)	Total Suspended Solids (B2)	Boron (B3)	Total Selenium (B3)	Daily Selenium Load
DATA SOURCE	SLDMWA♦	SLDMWA	SLDMWA	SLDMWA/USBR	USBR	USBR	Calculated
UNITS	cfs	°C	µS/cm	mg/L	mg/L	µg/L	lbs
Jan-01-2014	10	8.1	5,170		9.3	15.0	0.8
Jan-02-2014	10	8.7	4,960		9.8	16.0	0.9
Jan-03-2014	10	8.4	4,840		8.9	13.0	0.7
Jan-04-2014	10	8.6	4,620		9.0	12.0	0.6
Jan-05-2014	10	8.0	4,460		8.6	10.0	0.5
Jan-06-2014	10	7.8	4,550		9.0	10.0	0.5
Jan-07-2014	11	9.8	4,710		10.0	11.0	0.6
Jan-08-2014	11	8.6	5,120		9.8	11.0	0.7
Jan-09-2014	13	10.4	4,810		9.3	11.0	0.8
Jan-10-2014	13	10.7	4,740		9.4	9.2	0.6
Jan-11-2014	13	8.0	4,740		8.5	9.9	0.7
Jan-12-2014	11	8.3	4,840		8.9	11.0	0.6
Jan-13-2014	14	7.4	5,000	13	8.8	11.0	0.8
Jan-14-2014	15	9.3	5,060		8.9	11.0	0.9
Jan-15-2014	17	9.4	5,370		11.0	17.0	1.5
Jan-16-2014	17	10.1	5,630		9.8	14.0	1.3
Jan-17-2014	15	9.7	5,300		8.6	13.0	1.0
Jan-18-2014	16	9.7	5,060		9.9	14.0	1.2
Jan-19-2014	18	9.6	5,370		10.0	14.0	1.4
Jan-20-2014	17	9.6	5,390		9.9	14.0	1.3
Jan-21-2014	17	8.3	5,470		9.8	14.0	1.2
Jan-22-2014	17	9.7	5,260		9.2	15.0	1.4
Jan-23-2014	18	9.8	5,160		11.0	14.0	1.3
Jan-24-2014	18	12.6	5,870		12.0	15.0	1.5
Jan-25-2014	19	13.3	6,290		14.0	16.0	1.6
Jan-26-2014	22	10.5	6,780		14.0	16.0	1.9
Jan-27-2014	25	10.9	6,500		13.0	17.0	2.3
Jan-28-2014	28	14.8	6,110		12.0	19.0	2.8
Jan-29-2014	24	16.9	5,920		12.0	18.0	2.4
Jan-30-2014	24	14.0	5,460		10.0	20.0	2.5
Jan-31-2014	20	11.6	5,590		12.0	22.0	2.4

Notes:

See Table 19 for explanation of footnotes and agency abbreviations.
Preliminary Data

Table 2b. Monthly Averages and Totals

	Average Flow (B2)	Average Temperature (B2)	Average Specific Conductance (B2)	Average Total Suspended Solids	Average Boron (B3)	Average Selenium	Selenium Load	Selenium Load Objective
	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	UA3
	cfs	°C	µS/cm	mg/L	mg/L	µg/L	lbs	lbs
Jan-2014	16	10.1	5,290	13	10.2	14.0	39	151
Cumulative Load Totals							39	151

Notes:

Selenium load objective based on 2014 critical year type

Table 2c. Water quality monitoring at Station B3 (discharge from San Luis Drain)

PARAMETER	Physicals					Total Selenium
	Dissolved Oxygen	pH	Specific Conductance	Temperature	Turbidity	
DATA SOURCE	USBR	USBR	USBR	USBR	USBR	USBR
UNITS	mg/L	units	µS/cm	°C	NTU	ug/L
Jan-03-2014	14.5	7.5	4,390	8.1	13.4	12
Jan-09-2014	14.4	7.6	4,630	10.0	13.7	10
Jan-14-2014	18.5	7.8	4,860	8.3	12.9	11
Jan-23-2014	15.8	7.9	5,700	9.0	14.8	16

Notes:

	Nutrients				
	Nitrates as N (Dissolved)	Ammonia as N	Total Kjeldahl Nitrogen	Total Phosphorous as P	Ortho-phosphate as P
	USBR	USBR	USBR	USBR	USBR
	mg/L	mg/L	mg/L	mg/L	mg/L
Jan-09-2014	0.5	0.1	1.4	0.094 V	0.015 T

Notes:

	General Minerals							
	Calcium	Magnesium	Potassium	Sodium	Chloride (Dissolved)	Sulfate (Dissolved)	Total Organic Carbon	Total Dissolved Solids
	USBR	USBR	USBR	USBR	USBR	USBR	USBR	USBR
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Jan-09-2014	270	110	6.8	620	670	1,400	NA	NA

Notes:

	Total Metals								
	Arsenic	Boron	Cadmium	Copper	Lead	Mercury	Molybdenum	Nickel	Zinc
	USBR	USBR	USBR	USBR	USBR	USBR	USBR	USBR	USBR
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Jan-09-2014	5.5	9,000	<1.0	41	<2.5	100	31.0	17.0	<5.0

Notes:

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

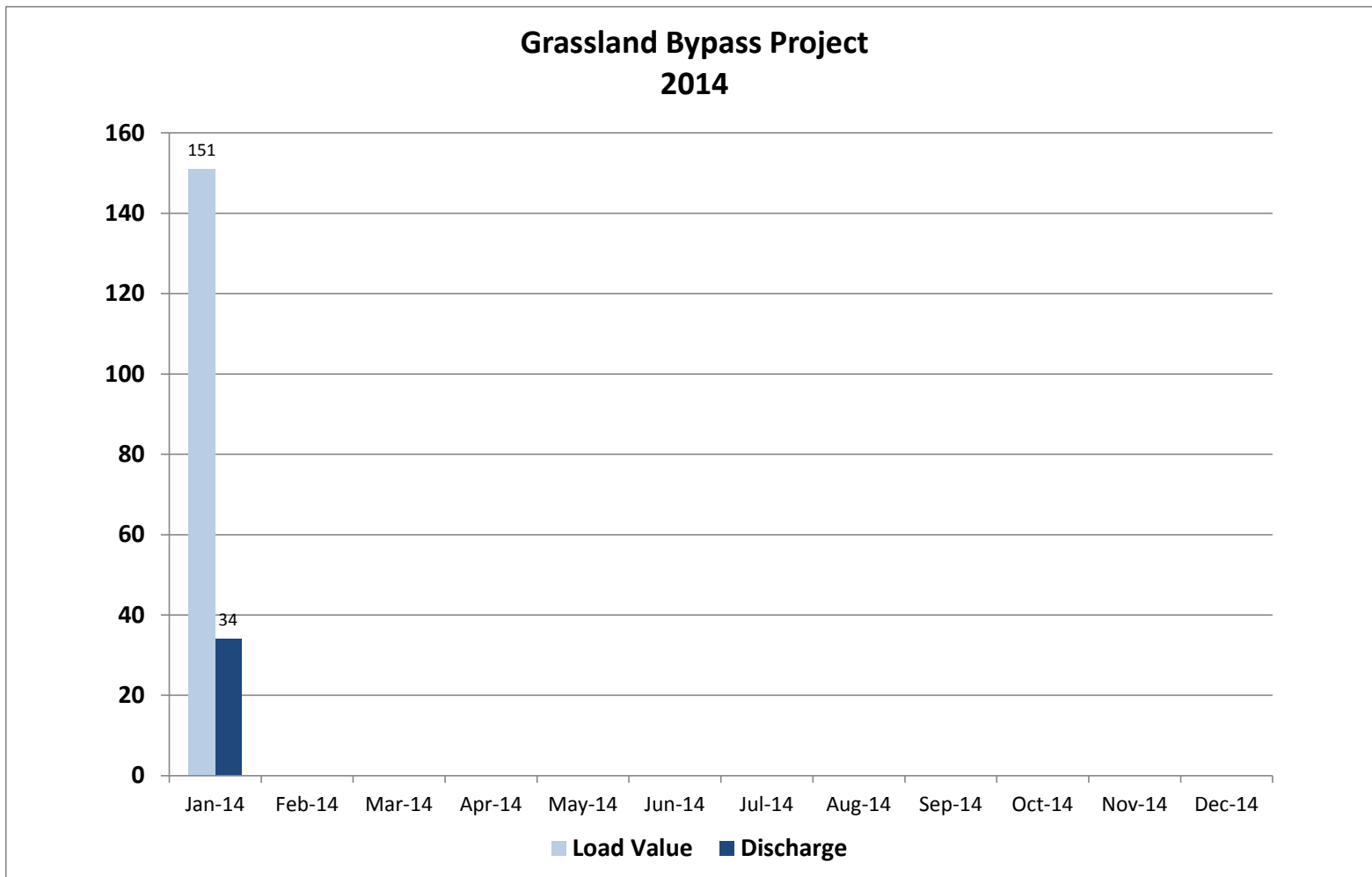


Table 3a. Water monitoring in Mud Slough (north) below San Luis Drain Discharge Station D

PARAMETER	Flow	Temperature	Specific Conductance
DATA SOURCE	USGS	USGS	USGS
UNITS	cfs	°C	µS/cm
Jan-01-2014	52	9.4	2,800
Jan-02-2014	50	9.6	2,880
Jan-03-2014	45	9.9	3,010
Jan-04-2014	46	10.1	3,030
Jan-05-2014	46	9.9	2,940
Jan-06-2014	46	9.9	2,790
Jan-07-2014	54	10.4	2,530
Jan-08-2014	56	10.4	2,480
Jan-09-2014	55	10.9	2,640
Jan-10-2014	56	11.1	2,530
Jan-11-2014	52	10.9	2,680
Jan-12-2014	49	10.6	2,790
Jan-13-2014	54	10.1	2,830
Jan-14-2014	55	10.2	2,720
Jan-15-2014	55	10.3	2,920
Jan-16-2014	53	10.6	3,070
Jan-17-2014	50	10.7	3,010
Jan-18-2014	52	10.7	3,020
Jan-19-2014	56	10.6	3,140
Jan-20-2014	59	10.7	3,130
Jan-21-2014	60	10.6	3,040
Jan-22-2014	58	10.6	3,120
Jan-23-2014	56	10.8	3,330
Jan-24-2014	54	11.7	3,610
Jan-25-2014	54	12.0	3,780
Jan-26-2014	57	11.8	4,090
Jan-27-2014	60	11.8	4,040
Jan-28-2014	64	13.0	3,920
Jan-29-2014	61	14.4	3,880
Jan-30-2014	65	14.5	3,630
Jan-31-2014	66	13.5	3,450

Notes:

See Table 19 for explanation of footnotes and agency abbreviations.
Preliminary Data

Table 3b. Monthly Averages

PARAMETER	Average Flow (D)	Temperature	Specific Conductance
DATA SOURCE	USGS	USGS	USGS
UNITS	cfs	°C	µS/cm
January	55	11	3,120
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			

Table 3c. Water quality monitoring in Mud Slough (north) below San Luis Drain discharge (Station D)

PARAMETER	Physicals					Total Selenium	Total Molybdenum
	Dissolved Oxygen	pH	Specific Conductance	Temperature	Turbidity		
DATA SOURCE	USBR	USBR	USBR	USBR	USBR	USBR	USBR
UNITS	mg/L	units	µS/cm	°C	NTU	ug/L	ug/L
Jan-03-2014	12.1	7.8	3,180	9.0	10.7	3.2	
Jan-09-2014	11.2	7.8	3,080	9.5	12.9	2.4	
Jan-14-2014	15.2	7.8	3,180	8.2	10.7	2.7	
Jan-23-2014	12.4	7.8	3,460	9.2	16.1	4.4	

Notes:

	Nutrients				
	Nitrates as N (dissolved)	Ammonia as N	Total Kjeldahl Nitrogen	Total phosphorous as P	Ortho-phosphate as P
	USBR	USBR	USBR	USBR	USBR
	mg/L	mg/L	mg/L	mg/L	mg/L
Jan-09-2014	0.2	0.2	<5.0	0.12 V	0.046 T

Notes:

	General Minerals							
	Calcium	Magnesium	Potassium	Sodium	Chloride (dissolved)	Sulfate (dissolved)	Total Organic Carbon	Total Dissolved Solids
	USBR	USBR	USBR	USBR	USBR	USBR	USBR	USBR
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Jan-09-2014	120	76	6.5	400	470	650	NA	NA

Notes:

	Total Metals								
	Arsenic	Boron	Cadmium	Copper	Lead	Mercury	Molybdenum	Nickel	Zinc
	USBR	USBR	USBR	USBR	USBR	USBR	USBR	USBR	USBR
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Jan-09-2014	5.3	3400 H	<1.0	29 L	<2.5	110	16.0	10.0	<5.0

Notes:

Table 4. Water quality monitoring in Mud Slough (north) above the San Luis Drain

	Physicals				
PARAMETER	Dissolved Oxygen	Specific Conductance	Turbidity	Boron	Total Selenium
DATA SOURCE	WSJRW	WSJRW	WSJRW	WSJRW	WSJRW
UNITS	mg/L	µS/cm	NTU	mg/L	µg/L
Jan-14-2014	10.2	2,481	8		

Notes:

Table 5. Water quality monitoring in Mud Slough (north) backwater below San Luis Drain discharge Station I2

	Physicals					
PARAMETER	Dissolved Oxygen	pH	Specific Conductance	Temperature	Turbidity	Total Selenium
DATA SOURCE	USBR	USBR	USBR	USBR	USBR	USBR
UNITS	mg/L	units	µS/cm	°C	NTU	µg/L
Jan-03-2014						
Jan-09-2014						
Jan-14-2014						
Jan-23-2014						

Notes:

Samples collected only when site is flooded
 Site was dry during January (no sample collected)

Table 6a. Water monitoring in Salt Slough at Highway 165 Station F

PARAMETER	Flow	Temperature	Specific Conductance
DATA SOURCE	USGS	USGS	USGS
UNITS	cfs	°C	µS/cm
Jan-01-2014	92	9.4	1,680
Jan-02-2014	95	9.4	1,650
Jan-03-2014	93	9.5	1,630
Jan-04-2014	92	9.8	1,660
Jan-05-2014	90	9.6	1,670
Jan-06-2014	90	9.5	1,670
Jan-07-2014	82	10.2	1,680
Jan-08-2014	83	10.3	1,710
Jan-09-2014	83	10.9	1,720
Jan-10-2014	88	11.0	1,610
Jan-11-2014	82	10.7	1,670
Jan-12-2014	85	10.3	1,660
Jan-13-2014	84	9.9	1,680
Jan-14-2014	75	10.0	1,720
Jan-15-2014	79	10.3	1,750
Jan-16-2014	71	10.5	1,800
Jan-17-2014	76	10.6	1,800
Jan-18-2014	63	10.7	1,850
Jan-19-2014	65	10.6	1,850
Jan-20-2014	67	10.7	1,830
Jan-21-2014	73	10.4	1,880
Jan-22-2014	69	10.5	1,880
Jan-23-2014	78	10.7	1,850
Jan-24-2014	64	11.5	1,810
Jan-25-2014	61	12.1	1,880
Jan-26-2014	56	12.0	1,910
Jan-27-2014	69	12.0	1,870
Jan-28-2014	79	12.9	1,820
Jan-29-2014	80	14.6	1,800
Jan-30-2014	83	14.8	1,750
Jan-31-2014	82	13.5	1,720

Notes:

See Table 19 for explanation of footnotes and agency abbreviations.
Preliminary Data

Table 6b. Monthly Averages

PARAMETER	Average Flow (G)	Temperature	Specific Conductance
DATA SOURCE	USGS	USGS	USGS
UNITS	cfs	°C	µS/cm
January	78	11	1,760
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			

Table 6c. Water quality monitoring in Salt Slough at Highway 165 (Station F)

PARAMETER	Physicals					Total Selenium	Total Molybdenum
	Dissolved Oxygen	pH	Specific Conductance	Temperature	Turbidity		
DATA SOURCE	USBR	USBR	USBR	USBR	USBR	USBR	USBR
UNITS	mg/L	units	µS/cm	°C	NTU	ug/L	ug/L
Jan-03-2014	11.4	7.1	1,660	7.9	22.1	<0.4	
Jan-09-2014	10.8	6.9	1,690	10.4	25.0	<0.4	
Jan-14-2014	14.4	6.6	1,710	7.6	17.2	<0.4	
Jan-23-2014	12.8	7.3	1,770	8.9	21.8	<0.4	

Notes:

	General Minerals						
	Calcium	Magnesium	Potassium	Sodium	Chloride (dissolved)	Sulfate (dissolved)	Total Organic Carbon
	USBR	USBR	USBR	USBR	USBR	USBR	USBR
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Jan-09-2014	68	40.0	4.2	220	290	230	NA

Notes:

	Nutrients				
	Nitrates as N (dissolved)	Ammonia as N	Total Kjeldahl Nitrogen	Total phosphorous	Ortho-phosphate as P
	USBR	USBR	USBR	USBR	USBR
	mg/L	mg/L	mg/L	mg/L	mg/L
Jan-09-2014	<10	0.3	0.8	0.095 L,V	0.050 T

Notes:

	Total Metals								
	Arsenic	Boron	Cadmium	Copper	Lead	Mercury	Molybdenum	Nickel	Zinc
	USBR	USBR	USBR	USBR	USBR	USBR	USBR	USBR	USBR
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Jan-09-2014	<5.0	960	<1.0	18.0	<2.5	110	9.4	<10	5.3

Notes:

Table 7a. Water quality monitoring in Grasslands Wetlands Water Supply Channels Station J Camp 13 Ditch headworks

PARAMETER	Flow	Specific Conductance	Temperature	Total Selenium
DATA SOURCE	GWD	USBR	GWD	USBR
UNITS	cfs	µS/cm	°C	µg/L
Jan-06-2014	17	504	8.4	0.8
Jan-13-2014	14	467	9.1	1.0
Jan-21-2014	39	510	9.6	1.0
Jan-27-2014	23	434	10.5	1.0

Notes:

Samples only collected when flow is passing site

Table 7b. Water quality monitoring in Grasslands Wetlands Water Supply Channels Station K2 Agatha Canal headworks

PARAMETER	Flow	Specific Conductance	Temperature	Total Selenium
DATA SOURCE	GWD	USBR	GWD	USBR
UNITS	cfs	µS/cm	°C	µg/L
Jan-06-2014	53	496	8.3	0.8
Jan-13-2014	42	467	9.0	0.9
Jan-21-2014	41	514	9.6	0.9
Jan-27-2014	40	463	10.5	1.0

Notes:

Samples only collected when flow is passing site

Table 8a. Water monitoring in the San Joaquin River above Merced River Station H2

PARAMETER	Flow	Temperature	Specific Conductance
DATA SOURCE	USGS	USGS	USGS
UNITS	cfs	°C	µS/cm
Jan-01-2014	210	8.6	2,420
Jan-02-2014	211	8.9	2,390
Jan-03-2014	206	9.2	2,370
Jan-04-2014	201	9.2	2,390
Jan-05-2014	202	9.2	2,360
Jan-06-2014	202	9.1	2,370
Jan-07-2014	194	9.7	2,530
Jan-08-2014	194	9.8	2,480
Jan-09-2014	191	10.8	2,470
Jan-10-2014	188	10.8	2,530
Jan-11-2014	193	10.5	2,450
Jan-12-2014	190	9.9	2,530
Jan-13-2014	191	9.6	2,480
Jan-14-2014	195	9.7	2,480
Jan-15-2014	193	9.9	2,580
Jan-16-2014	191	10.0	2,590
Jan-17-2014	180	10.1	2,760
Jan-18-2014	176	10.1	2,700
Jan-19-2014	173	10.1	2,890
Jan-20-2014	175	10.1	2,940
Jan-21-2014	178	9.9	2,700
Jan-22-2014	179	10.0	2,580
Jan-23-2014	182	10.1	2,600
Jan-24-2014	186	10.8	2,670
Jan-25-2014	186	11.6	2,830
Jan-26-2014	189	11.3	2,950
Jan-27-2014	190	11.0	3,120
Jan-28-2014	189	12.8	3,070
Jan-29-2014	191	14.4	2,920
Jan-30-2014	197	15.0	2,580
Jan-31-2014	217	13.8	2,360

Notes:

See Table 19 for explanation of footnotes and agency abbreviations.
Preliminary Data

Table 8b. Monthly Averages

PARAMETER	Average Flow (H2)	Temperature	Specific Conductance
DATA SOURCE	USGS	USGS	USGS
UNITS	cfs	°C	µS/cm
January	209	13	2,600
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			

Table 9. Water quality monitoring in the San Joaquin River above Merced River at China Island Refuge Station R

PARAMETER	Physicals					Total Selenium	Total Molybdenum
	Dissolved Oxygen	pH	Specific Conductance	Temperature	Turbidity		
DATA SOURCE	USBR	USBR	USBR	USBR	USBR	USBR	USBR
UNITS	mg/L	units	µS/cm	°C	NTU	ug/L	ug/L
Jan-03-2014	12.2	8.0	2,340	8.3	17.0	0.9	
Jan-09-2014	14.0	7.9	2,510	9.8	17.7	0.8	
Jan-14-2014	16.0	7.9	2,500	8.5	15.5	0.9	
Jan-23-2014	13.0	8.0	2,870	8.7	19.9	1.4	

Notes:

	Nutrients				
	Nitrates as N (Dissolved)	Total ammonia	Total Kjeldahl Nitrogen	Total phosphorous	Ortho-phosphate as P
	USBR	USBR	USBR	USBR	USBR
	mg/L	mg/L	mg/L	mg/L	mg/L
Jan-09-2014	0.16	0.098	0.85	0.16V	0.054 T

Notes:

	General Minerals							
	Calcium	Magnesium	Potassium	Sodium	Chloride (Dissolved)	Sulfate (Dissolved)	Total Organic Carbon	Total Dissolved Solids
	USBR	USBR	USBR	USBR	USBR	USBR	USBR	USBR
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	Units	mg/L
Jan-09-2014	91	59	5.1	310	430	430	NA	NA

Notes:

	Total Metals								
	Arsenic	Boron	Cadmium	Copper	Lead	Mercury	Molybdenum	Nickel	Zinc
	USBR	USBR	USBR	USBR	USBR	USBR	USBR	USBR	USBR
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Jan-09-2014	<5.0	1,800	<1.0	23	<2.5	<100	12	<10	<5.0

Notes:

Table 10a. Water monitoring in the San Joaquin River at Fremont Ford (Static

PARAMETER	Flow	Temperature	Specific Conductance
DATA SOURCE	USGS	USGS	USGS
UNITS	cfs	°C	µS/cm
Jan-01-2014	112	8.3	1,870
Jan-02-2014	118	8.6	1,860
Jan-03-2014	120	8.8	1,820
Jan-04-2014	119	8.9	1,840
Jan-05-2014	117	8.8	1,860
Jan-06-2014	115	8.7	1,880
Jan-07-2014	110	9.5	1,990
Jan-08-2014	107	9.4	2,000
Jan-09-2014	111	10.1	1,960
Jan-10-2014	103	10.5	2,070
Jan-11-2014	105	10.2	1,980
Jan-12-2014	105	9.6	2,010
Jan-13-2014	109	9.2	1,930
Jan-14-2014	113	9.3	1,890
Jan-15-2014	107	9.5	1,980
Jan-16-2014	105	9.6	2,030
Jan-17-2014	100	9.8	2,060
Jan-18-2014	93	9.7	2,110
Jan-19-2014	85	9.7	2,210
Jan-20-2014	87	9.8	2,170
Jan-21-2014	98	9.6	1,980
Jan-22-2014	95	9.6	2,040
Jan-23-2014	99	9.9	1,990
Jan-24-2014	106	10.9	1,950
Jan-25-2014	103	11.2	1,950
Jan-26-2014	97	10.8	2,110
Jan-27-2014	101	10.8	2,030
Jan-28-2014	99	12.4	2,070
Jan-29-2014	107	14.2	1,980
Jan-30-2014	107	14.6	1,980
Jan-31-2014	114	13.4	1,920

Notes:

See Table 19 for explanation of footnotes and agency abbreviations.
 Preliminary Data

Table 10b. Monthly Averages

PARAMETER	Average Flow (G)	Temperature	Specific Conductance
DATA SOURCE	USGS	USGS	USGS
UNITS	cfs	°C	µS/cm
January	105	10	1,990
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			

Table 11a. Water monitoring in the San Joaquin River at Crows Landing (Station N)

PARAMETER	Flow	Temperature	Specific Conductance	Total Selenium
DATA SOURCE	USGS	USGS	USGS	USBR
UNITS	cfs	°C	µS/cm	µg/L
Jan-01-2014	398	8.1	1,430	0.6
Jan-02-2014	405	8.4	1,450	0.6
Jan-03-2014	403	8.6	1,440	0.6
Jan-04-2014	395	8.7	1,450	0.6
Jan-05-2014	393	8.8	1,470	0.6
Jan-06-2014	389	8.7	1,460	0.5
Jan-07-2014	378	9.3	1,460	0.5
Jan-08-2014	365	9.4	1,480	0.4
Jan-09-2014	362	9.7	1,480	0.5
Jan-10-2014	366	10.1	1,520	0.6
Jan-11-2014	367	10.3	1,540	
Jan-12-2014	365	9.8	1,540	
Jan-13-2014	354	9.5	1,550	
Jan-14-2014	350	9.3	1,580	
Jan-15-2014	351	9.4	1,590	
Jan-16-2014	343	9.7	1,600	
Jan-17-2014	332	9.9	1,620	
Jan-18-2014	327	9.9	1,660	
Jan-19-2014	332	9.9	1,690	
Jan-20-2014	336	9.9	1,700	
Jan-21-2014	333	9.8	1,720	
Jan-22-2014	335	9.7	1,750	
Jan-23-2014	342	9.7	1,750	0.7
Jan-24-2014	346	10.4	1,740	0.7
Jan-25-2014	347	11.1	1,730	0.8
Jan-26-2014	350	11.2	1,740	0.8
Jan-27-2014	360	10.9	1,750	0.8
Jan-28-2014	353	11.8	1,770	1.0
Jan-29-2014	354	13.7	1,810	1.2
Jan-30-2014	369	14.6	1,840	1.3
Jan-31-2014	394	13.8	1,780	1.3

Notes:

Autosampler malfunction January 11-22 (no samples collected)
Preliminary Data

11b. Monthly Averages

PARAMETER	Average Flow (N)	Temperature	Specific Conductance	Selenium
DATA SOURCE	Calculated	Calculated	Calculated	Calculated
UNITS	cfs	°C	µS/cm	µg/L
January	361	10	1,620	0.7
February				
March				
April				
May				
June				
July				
August				
September				
October				
November				
December				

Table 11c. Water quality monitoring in the San Joaquin River at Crows Landing (Station N)

PARAMETER	Physicals					Selenium
	Dissolved Oxygen	pH	Specific Conductance	Temperature	Turbidity	
DATA SOURCE	USBR	USBR	USBR	USBR	USBR	USBR
UNITS	mg/L	units	µS/cm	°C	NTU	µg/L
Jan-03-2014	12.7	8.1	1,500	7.6	11.3	0.6
Jan-09-2014	12.1	8.0	1,610	9.4	11.9	0.5
Jan-14-2014	15.9	8.0	1,640	7.8	9.0	0.4
Jan-23-2014	13.4	8.0	1,840	8.5	12.1	0.8

Notes:

Table 12. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from March 2014 to March 2016. Each value is the mean of 4 replicates with 10 fish in each replicate.

See Table 19 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	%	%	%	%	%	%
Mar-2014						
Jun-2014						
Sep-2014						
Nov-2014						
Mar-2015						
Jun-2015						
Sep-2015						
Mar-2016						

Table 13. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from March 2014 to March 2016. Each value is the mean of 4 replicates with 10 fish in each replicate.

See Table 19 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
Mar-2014						
Jun-2014						
Sep-2014						
Nov-2014						
Mar-2015						
Jun-2015						
Sep-2015						
Mar-2016						

Table 14. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from March 2014 to March 2016. Each value is the mean of 10 replicates with 1 animal in each replicate.

See Table 19 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	%	%	%	%	%	%
Mar-2014						
Jun-2014						
Sep-2014						
Nov-2014						
Mar-2015						
Jun-2015						
Sep-2015						
Mar-2016						

Table 15. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from March 2014 to March 2016. Each value is the mean of 10 replicates with 1 animal in each replicate.

See Table 19 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
Nov-2013						
Mar-2014						
Jun-2014						
Sep-2014						
Nov-2014						
Mar-2015						
Jun-2015						
Sep-2015						
Mar-2016						

Table 16. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from March 2014 to March 2016. Each value is the mean of 4 replicates.

See Table 19 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
Nov-2013						
Mar-2014						
Jun-2014						
Sep-2014						
Nov-2014						
Mar-2015						
Jun-2015						
Sep-2015						
Mar-2016						

Table 17. Summary of selenium concentrations in grab water samples collected at study stations for use in laboratory toxicity tests

See Table 19 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-2014					
Jun-2014					
Sep-2014					
Nov-2014					
Mar-2015					
Jun-2015					
Sep-2015					
Mar-2016					

Table 18. Summary of total suspended solids concentrations in grab water samples collected at study stations for use in laboratory toxicity tests

See Table 19 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-2014					
Jun-2014					
Sep-2014					
Nov-2014					
Mar-2015					
Jun-2015					
Sep-2015					
Mar-2016					

Table 19. Explanations of footnotes and agency abbreviations.

Agency	
CVRWQCB	California Regional Water Quality Control Board, Central Valley Region
GWD	Grasslands Water District
SLDMWA	San Luis & Delta-Mendota Water Authority
USBR	U.S. Bureau of Reclamation
USGS	U.S. Geological Survey
WSJRWC	Westside San Joaquin River Watershed Coalition (WSJRWC)
Water Quality Monitoring	
e	Estimated value
.	Not applicable
<	Less than MDL
D	Sample was dechlorinated
G	Data from records of the Grassland Water District.
H	Result may have high bias
J	Result is between the MDL and RL
L	Result may have low bias
MDL	Minimum detection level
	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
RL	Reporting level
T	Result obtained past the holding time
U	Result determined to be an outlier at the time of data validation
V	Result may vary excessively from the true value
UA3	Use Agreement for Continued Use of the San Luis Drain January 2010 - December 2019
Toxicity	
*	Significantly reduced from Delta Mendota Canal (p<0.05)
**	Sample re-analyzed and result confirmed.
L	Result may be biased low. Sample was not preserved in the field
†	DMC water failed to meet the survival (>80%) acceptability criteria.
†††	DMC water failed to meet the reproduction (>10 neonates/adult) acceptability criteria.
††††	DMC water failed to meet minimum growth (10 ⁶ cell/mL) acceptability criteria.
‡	Control value exceeds suggested maximum variance (20%) acceptability criteria.
‡‡	Fungal growth observed on test organisms.
‡‡‡	Failed cell density requirement of 1E6 cells.
#	New testing laboratory with reporting limit of 0.4 µg/L as of June 1998.
v	Based on definitive bioassay, NOEC is 50 percent