



December 29, 2010

Rudy Schnagl
Central Valley Regional Water Quality Control Board
11020 Sun Center Drive #200
Rancho Cordova, CA 95670-6114

Subject: Waste Discharge Requirement Order No. 5-01-234, Update of Long Term Drainage Management Plan.

Dear Rudy,

The above Waste Discharge Requirements (WDR) requires submission of an update of the long-term drainage management plan for the Grassland Bypass Project. The WDR's were issued to the San Luis & Delta-Mendota Water Authority (Water Authority) and the U. S. Bureau of Reclamation. The Water Authority members that participate in the Grassland Bypass Project are hereafter referred to as the Grassland Area Farmers.

The long-term drainage management plan was submitted on September 30, 1998 in compliance with WDR No. 98-171. The plan has been updated annually since 1999.

Milestones since Last Update

The milestones that have occurred for the Grassland Bypass Channel Project since the 2010 update are as follows:

- ◆ The Grassland Area Farmers have reduced the discharge of selenium from the Grassland Drainage Area by 87% since the beginning of the project as measured at the end of Water Year 2010. There were no exceedances of monthly selenium load allocations during Water Year 2010.
- ◆ The Grassland Area Farmers have continued to develop funding for the Westside Regional Drainage Plan as described in previous reports. In September 2009, the Water Authority received federal funding assistance through the U.S. Bureau of Reclamation's San Joaquin River Salinity Management Program. The funding amount was modified in 2010 for a total of \$10.3 million. These funds continue to be used to implement a number of activities outlined in the Westside Regional Drainage Plan including groundwater management, reuse development, source control projects and environmental mitigation.
- ◆ The Grassland Area Farmers continue to utilize and expand the San Joaquin River Water Quality Improvement Project (SJRIP). The total acreage of the SJRIP has been increased to more than 6,000 acres, with approximately 5,100 developed to salt tolerant crops for drainage reuse. Approximately 12,400 acre feet of drain water was reused on the SJRIP in 2010.

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- ◆ The Grassland Area Farmers are continuing to work closely with the U.S. Bureau of Reclamation to develop an in-valley drainage solution for the Grassland Drainage Area. The In-Valley Solution Plan includes irrigation improvements, seepage reduction, land retirement, recirculation, drainage reuse, and drainage treatment.
- ◆ The discharge from the Grassland Bypass Project in Calendar Year 2009 (a dry/below normal year type) was 1,239 pounds of selenium with a load limit of 3,296 pounds. It is anticipated that the selenium load discharge during Calendar Year 2010 (an above normal year type) will be approximately 63% below the annual load limit of 4,162 pounds, with no monthly exceedances.

Statement of Goals

The principal goal of the Grassland Area Farmers remains as described in the September 30, 1998 long term drainage management plan. This goal is summarized as providing for the achievement of the water quality objectives fixed by the Regional Board and their Basin Plan related to subsurface drainage discharges from the drainage area while maintaining viable agricultural production in that area.

Uncontrolled Discharges

The Grassland Area Farmers are continuing to work with the USBR and USGS to identify sources of high drainage flows in extreme wet weather events. In September, 2005 the USGS issued a draft of their report "Update Of A Ground-Water Flow Model For The Central Part Of The Western San Joaquin Valley, California". This is the first product of the work that is supposed to assist in identifying these sources. Another source that continues to be of interest is contribution from seepage out of the San Luis Canal/California Aqueduct. This issue was described in the 2004 annual report.

Future Regulation and Milestones

The Regional Board has adopted a TMDL for salt and boron and one for dissolved oxygen. These TMDLs have subsequently been approved by the State Board and the State Office of Administrative Law. These regulations encompass discharges from a much larger area than the Grassland Drainage Area. The Grassland Area Farmers are a participant in these processes.

Discharge during Water Year 2010

Table 1 sets forth discharges from the Grassland Drainage Area for the period Water Year 1995 through Water Year 2010. The Grassland Bypass Project began in Water Year 1997. The volume of drainage has been reduced significantly compared to pre-project (1995) discharges:

- Discharge volume (acre feet) has been reduced by 75%

- Selenium load has been reduced by 87%
- Salt load has been reduced by 72%
- Boron load has been reduced by 64%

Figure 1 shows this historic discharge (acre feet) and selenium concentration from the Grassland Drainage Area since 1995. As expected, the discharged volume has reduced significantly since the project implementation. However, the concentration of selenium has also reduced – by almost 50% since the beginning of the project. The cause of this selenium concentration reduction is not clear but is likely the combined result of water delivery infrastructure improvements, irrigation system modernization, and reuse activities on the San Joaquin River Improvement Project.

Selenium load discharged from the Grassland Drainage Area compared with 2010 monthly targets in WDR 5-01-234 are shown in Figure 2. Figure 3 shows the 2010 discharged load along with historic discharges and the “glidepath” in the Use Agreement incorporating the load values from the August 4, 2005 request for revision of the TMML for selenium. Figure 4 compares actual discharges to the revised load values starting in 2002. Figure 5 shows an estimate of the impact of control activities that occurred during Water Year 2010. Conservation, which includes improved irrigation application, tiered water pricing, tailwater controls, the tradable loads program, and seasonal land fallowing accounted for a reduction of approximately 6,900 pounds of selenium from historic loads. Reuse and treatment, which includes recycling, use of subsurface drainage water on salt tolerant crops and displacement of subsurface drainage water such as for wetting of roadways for dust control, resulted in a 4,200 pound reduction in discharge in Water Year 2010. The remaining 1,600 pounds was discharged to the San Joaquin River through the Grassland Bypass Project.

Water Year 2010 was designated an above normal year type in accordance with the Waste Discharge Requirements. The applicable performance goal from the Waste Discharge Requirements is 5 ppb selenium monthly mean in the San Joaquin River at Crows Landing. During Water Year 2010 this performance goal was met in all months where data was available.

The long term water quality objective for the San Joaquin River at Crows Landing is a 5-ppb 4-day average selenium concentration. In addition to compliance with the 5 ppb monthly average performance goal this 4-day objective was not exceeded in all months through July 2010 (where data was available).

Meeting Water Quality Objectives within Grassland Area Channels

The Regional Board has established a two parts per billion monthly average selenium objective for water delivery channels within the wetland areas. Previous long term drainage management plans discussed the activities within the Grassland Drainage Area to meet this water quality objective. The objective has been exceeded on a few occasions. During 1997 and 1998 there were storm water discharges caused by excessive rainfall and discharge from coastal streams. Subsequent to that time the Grassland Area Farmers have taken actions as submitted to the Regional Board to prevent discharges to wetland areas during non-storm event periods. This has been successful in eliminating discharges from the Grassland Drainage Area that might cause exceedance of the two parts per billion water quality objective. However, in February of

2005, significant storm events required the Grassland Area Farmers to divert water through the Agatha Canal. No diversions into wetland channels have been made since that time.

The Grassland Area Farmers continue to work with the Regional Board to identify and manage discharges outside of the Grassland Drainage Area that may cause exceedances in water delivery channels within the wetland areas. The attached Figures 6 and 7 show monthly average selenium concentrations for four sites within the wetland area. Exceedances within the last 47 months have shown marked improvements and low exceedance rates (see Table 2).

Tools to be used For Long Term Drainage Management

Conservation, reuse and treatment, and river discharge will continue to be the main tools available to the Grassland Area Farmers during the next several years.

During Water Year 2001, Panoche Drainage District on behalf of the other Grassland Area Farmers implemented the San Joaquin River Water Quality Improvement Project (SJRIP). Table 3 shows the usage of subsurface drainage water within the SJRIP area in 2009, including drain water reused on the newly expanded area. The project resulted in a displacement of 2,681 pounds of selenium. The SJRIP is a multi-phase project, which was initiated with the purchase of 4,000 acres of land in the year 2000 within the Grassland Drainage Area by Panoche Drainage District. During 2008, an additional 2,000 acres were purchased, of which 480 acres were developed for reuse. The total developed reuse area was approximately 4,280 acres. Additionally, the Grassland Area Farmers are in the process of designing a number of infrastructure projects that will increase the operational flexibility and efficiency of the SJRIP. Future phases call for installing subsurface tile drainage systems in the remainder of the SJRIP area to maintain a salt balance within the soil and for disposal of the collected water through treatment and salt disposal options. A portion of these future phases are budgeted in the Prop 50 \$25 million grant and federal appropriations awarded to Panoche Drainage District and the Water Authority. Other funds within this grant will be used to investigate drainage treatment options for final salt disposal.

Future Needs

In order to maintain the drainage control strategy for the Grassland Area Farmers, there are several needs. They are as follows:

- ◆ The completion of the SJRIP Project including planting and construction of subsurface drainage systems.
- ◆ Purchase of additional SJRIP lands of up to 900 acres for planting of additional cropping to be irrigated with subsurface drainage water.

Implementation of treatment and disposal of salt from the SJRIP lands. A pilot treatment system for subsurface drainage treatment was scheduled to begin in 2009. However, the State budget crisis interrupted funding for this program and the pilot treatment proposal will need to be re-evaluated.

- ◆ Retirement of land could be part of the ultimate solution to the problem within the Grassland Drainage Area. The Grassland Area Farmers have developed a land retirement policy that was identified and described in the September 30, 1998 Long Term Drainage Management Plan. In addition to this plan, Broadview Water District and Widren Water District have recently been purchased and have been fallowed. Other lands within the Grassland Drainage Area are also being considered for fallowing.
- The Grassland Area Farmers and other local interests have been participating with the USBR in their San Luis Drainage Feature Re-Evaluation Program. The goal of the Grassland Area Farmers is to develop local projects that can be implemented to meet the selenium load reduction targets, while still a viable agricultural economy.
- The Grassland Area Farmers continue to work with the USBR, other local stakeholders and interested parties to resolve long standing drainage issues through a drainage settlement process. The main component would be full implementation of the Westside Regional Drainage Plan.

Recent Developments

There are four recent and on-going developments related to efforts of the Grassland Area Farmers to meet the regulatory requirements of the Waste Discharge Permit and the Use Agreement. The first two were indicated in the 2004 annual report.

- ◆ The Westside Regional Drainage Plan has been developed by the San Joaquin River Exchange Contractors Water Authority, the Broadview Water District, Panoche Water District and Westlands Water District. This process is meant to complement the USBR San Luis Drain Feature Re-evaluation process and to help resolve long standing drainage issues within the area. The Grassland Area Farmers are aggressively pursuing funding opportunities to implement the Westside Regional Drainage Plan, and have met on a number of occasions with the USBR to move this plan forward. A number of state and federal grants have helped significantly in funding portions of this plan.
- ◆ The San Joaquin River Water Quality Management Group was formed out of the "UOP Discussions" between statewide water interests and Delta interests to develop a plan to meet Vernalis salinity objectives. There are many components to this plan that is being developed, one of the major ones being the future reductions of discharge from the Grassland Drainage Area.
- ◆ In December, 2006 the Grassland Area Farmers complied with the requirement in the Use Agreement that a Mud Slough Compliance Plan be developed by 2006 to meet Mud Slough water quality objectives. This letter also outlined a process to continue discharges to the San Joaquin River beyond the term of the current Use Agreement, which expires in December, 2009.
- ◆ In the summer of 2007 the Grassland Area Farmers initiated discussions with stakeholders regarding a time extension of the Grassland Bypass Project. The discharge of selenium and salinity has significantly reduced since the initiation of the

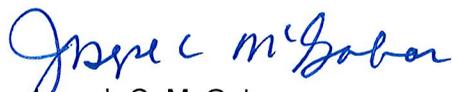
Grassland Bypass Project. The Westside Regional Drainage Plan has been developed and significant funding has been obtained to implement parts of the plan. However, the final funding and technical steps are not yet in place and therefore the Grassland Area Farmers have requested up to a 10 year extension of the Use Agreement. The EIR for this extension was approved by the San Luis & Delta-Mendota Water Authority on October 8, 2009 and the Record of Decision by the US Bureau of Reclamation was issued on December 21, 2009 with a subsequent signing of the new 2001-2019 Use Agreement. This action required a Basin Plan Amendment. The Basin Plan Amendment was approved by the Central Valley Regional Board on May 27, 2010 and by the State Water Resources Control Board on October 5, 2010. The action will also require revised Waste Discharge Requirements which is scheduled during early 2011.

Conclusion

The Grassland Area Farmers have demonstrated their commitment to the project as evidenced by the accomplishments as detailed in this report. They are also committed to the goals and milestones in the new Use Agreement. This will include maintaining efforts to meet monthly and annual selenium targets while at the same time aggressively pursuing the long term solutions and funding that will be necessary to meet these future requirements.

If you should have any questions please feel free to call. I can be reached at (559) 582-9237.

Very Truly Yours,



Joseph C. McGahan
Drainage Coordinator
Grassland Area Farmers

JCM/jcl

Cc: Donald R. Glaser, USBR Sacramento
Dan Nelson, SL&D-MWA
Grassland Basin Drainage Steering Committee
Michael Jackson, USBR Fresno

Table 1
Discharge Comparison from Grassland Drainage Area
Values October thru September

	WY 95	WY 96	WY 97	WY 98	WY 99	WY 00	WY 01	WY 02	WY 03
Volume (AF)	57,574	52,978	39,856	49,289	32,317	31,342	28,235	28,358	27,345
Se (lbs)	11,875	10,034	7,096	9,118	5,124	4,603	4,377	3,939	4,032
Salt (tons)	237,530	197,526	172,602	213,533	149,081	139,303	142,415	128,411	126,500
B (1,000 lbs)	868	723	753	983	630	619	423	544	554
Se (ppm)	0.076	0.070	0.066	0.068	0.058	0.054	0.057	0.051	0.054
Salt (µmhos/cm)	4,102	3,707	4,306	4,308	4,587	4,420	5,016	4,503	4,600
Boron (ppm)	5.5	5.0	7.0	7.3	7.2	7.3	5.5	7.1	7.5

	WY 04	WY 05	WY 06	WY 07	WY 08	WY 09	WY 10	Reduction from WY 95 to WY 10
Volume (AF)	27,640	29,957	25,995	18,531	15,665	13,166	14,529	75%
Se (lbs)	3,860	4,305	3,563	2,554	1,736	1,264	1,601	87%
Salt (tons)	121,138	138,908	119,646	79,094	66,254	55,556	67,661	72%
B (1,000 lbs)	530	585	539	278	269	233	315	64%
Se (ppm)	0.051	0.053	0.050	0.051	0.041	0.035	0.041	
Salt (µmhos/cm)	4,358	4,611	4,577	4,244	4,206	4,196	4,631	
Boron (ppm)	7.1	7.2	7.6	5.5	6.3	6.5	8.0	

Note: WY 97, 98, & 05 include discharges through Grasslands

Note: GAF quality data used where RWQCB data was missing or pending.

Table 2
Exceedance of 2 ppb Monthly Mean Water Quality Objective

	Site			
	J	K	L2	M2
% months exceeding 2 ppb monthly mean selenium objective Oct 1996 through Aug 2006	19%	13%	32%	13%
% months exceeding 2 ppb monthly mean selenium objective Sept 2006 through July 2010	2%	4%	4%	0%

Months exceeding 2 ppb but with no flow were excluded from calculations

Table 3
San Joaquin River Improvement Project
Calendar Year 2010

MONTH	WATER APPLIED (AF)			SELENIUM LBS	SALT TONS	BORON LBS
	DRAIN	OTHER	TOTAL			
JAN 10	0	0	0	0	0	0
FEB	0	0	0	0	0	0
MAR	517	73	590	101	2,848	16,148
APR	1,133	105	1,238	245	6,887	37,991
MAY	856	8	864	253	4,713	22,340
JUN	1,696	597	2,293	447	9,818	46,577
JUL	2,262	533	2,795	711	12,489	57,915
AUG	2,446	409	2,855	681	13,688	64,354
SEP	1,794	582	2,376	384	10,470	50,084
OCT	1,197	579	1,776	249	7,447	36,420
NOV	478	8	486	110	3,601	20,990
DEC	(pending)	(pending)	(pending)	(pending)	(pending)	(pending)
TOTAL	12,379	2,894	15,273	3,181	71,961	352,819

Figure 1
Grassland Bypass Project
Annual Average Selenium Concentration

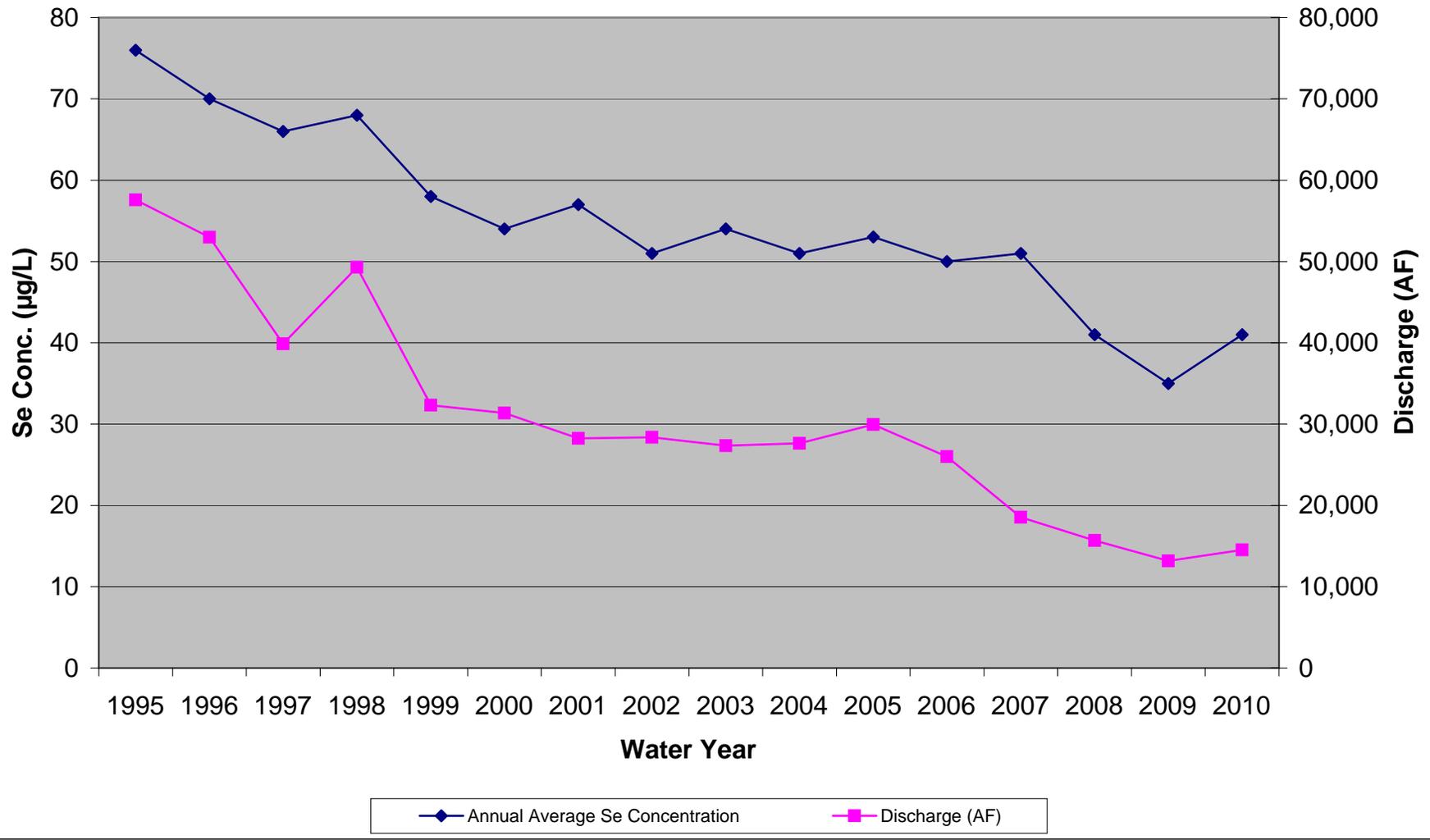


Figure 2
Discharge from the Grassland Drainage Area
October 2009 through September 2010

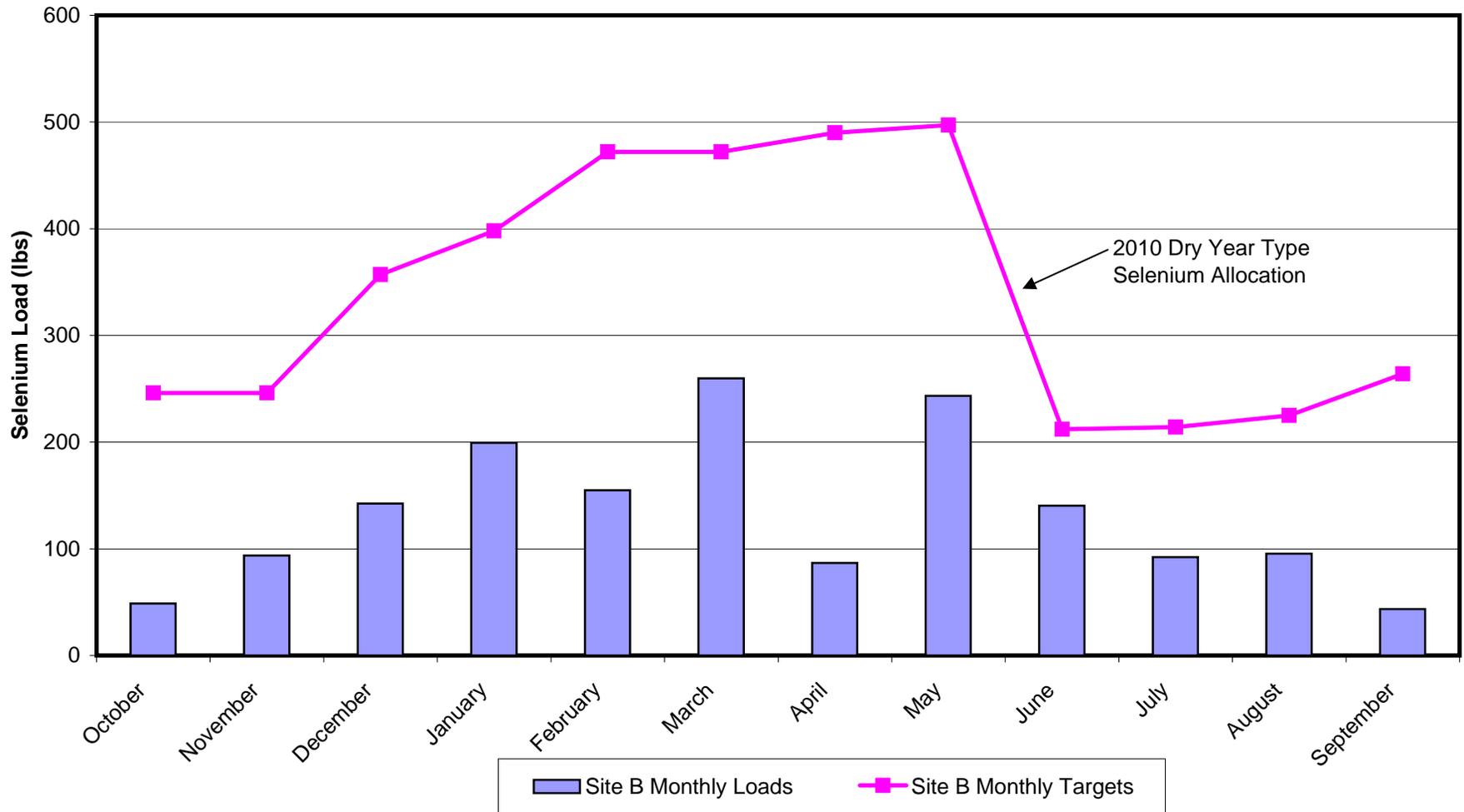


Figure 3
Grassland Drainage Area
Selenium Discharge and Targets

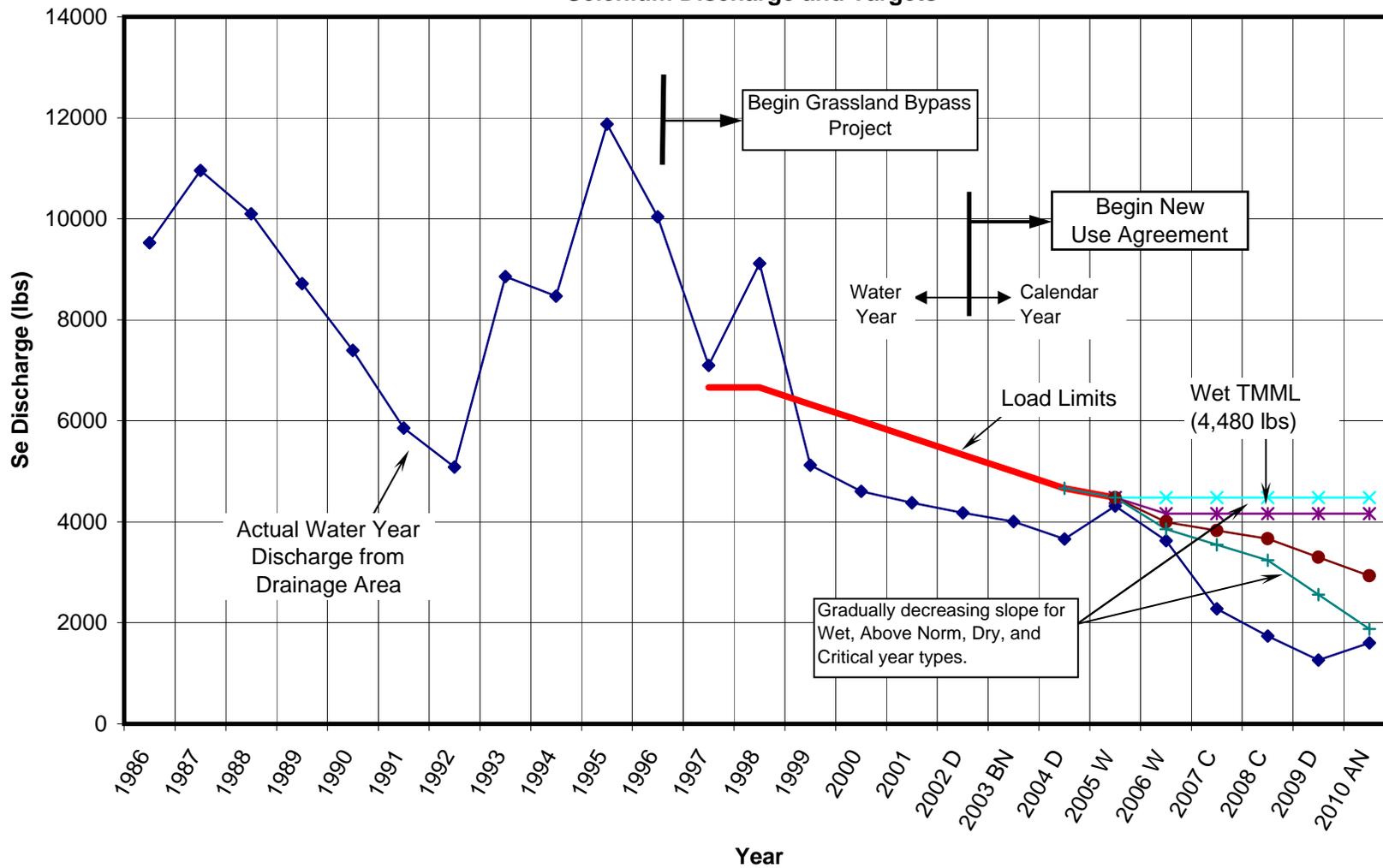


Figure 4
Grassland Bypass Project
Annual Selenium Load Discharge and Values

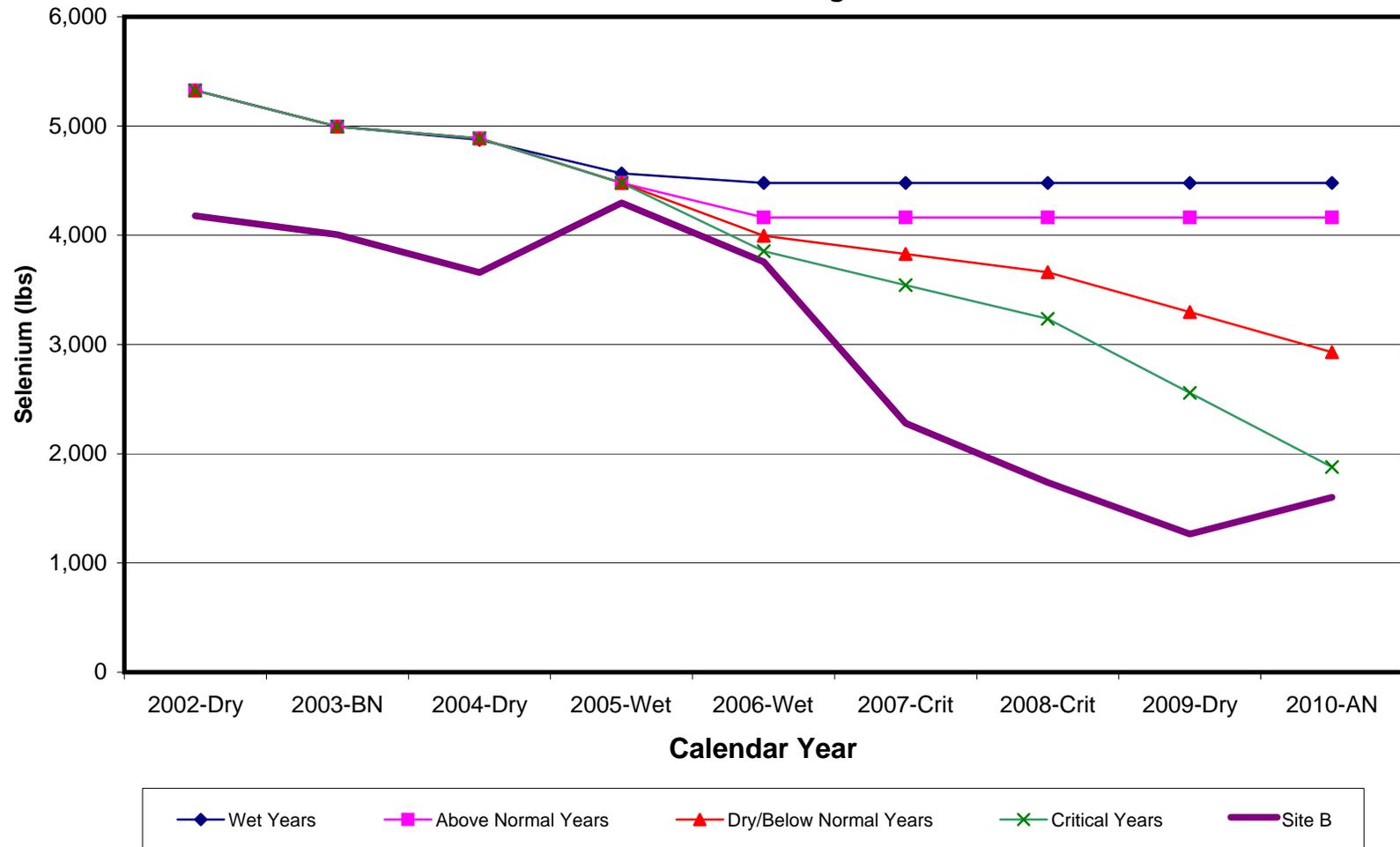


Figure 5

Historic Drainage Water (lbs selenium)
57,000 AF 12,700 lbs Se 240,000 Tons Salt

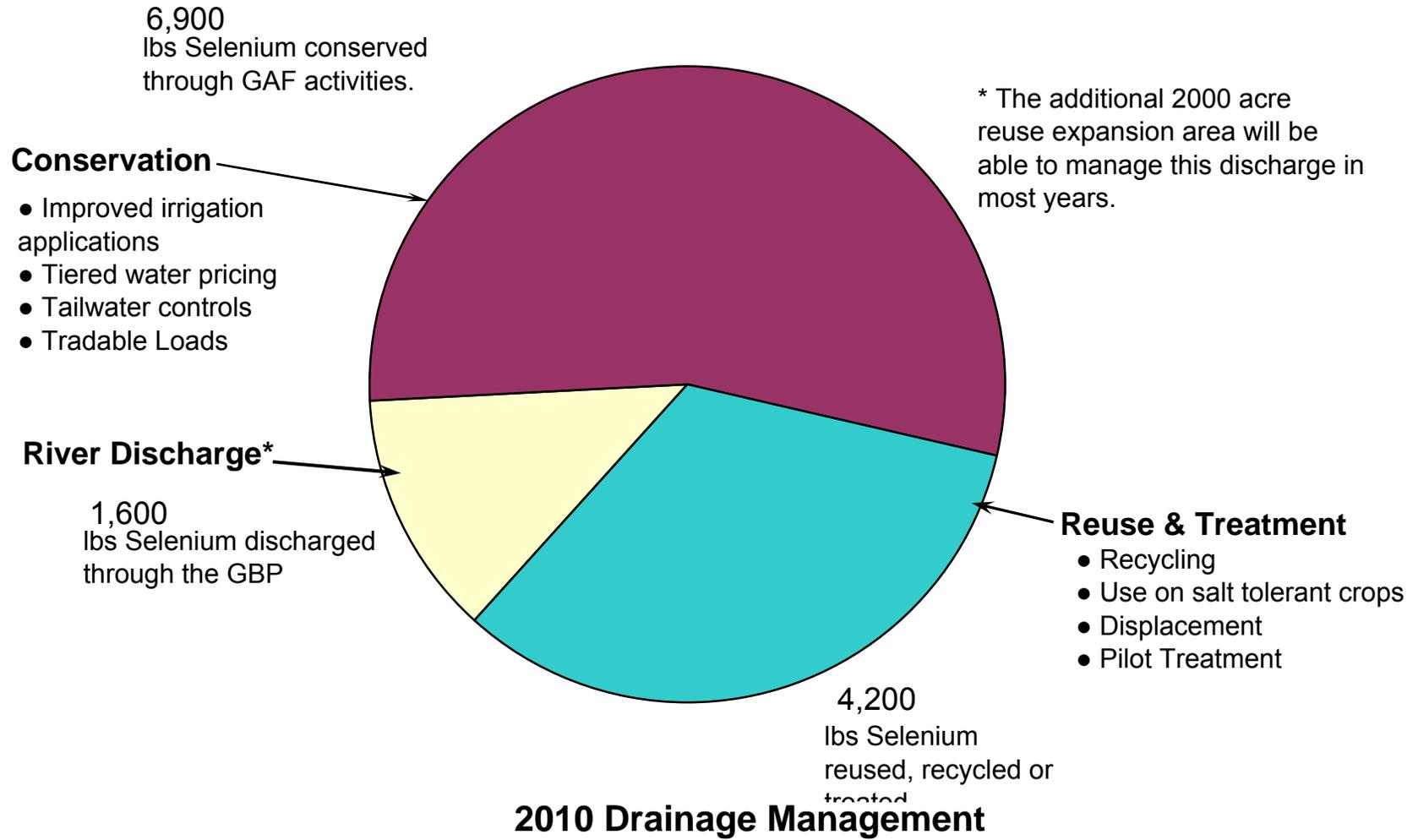


Figure 6
Camp 13 (J) and Agatha Canal (K)

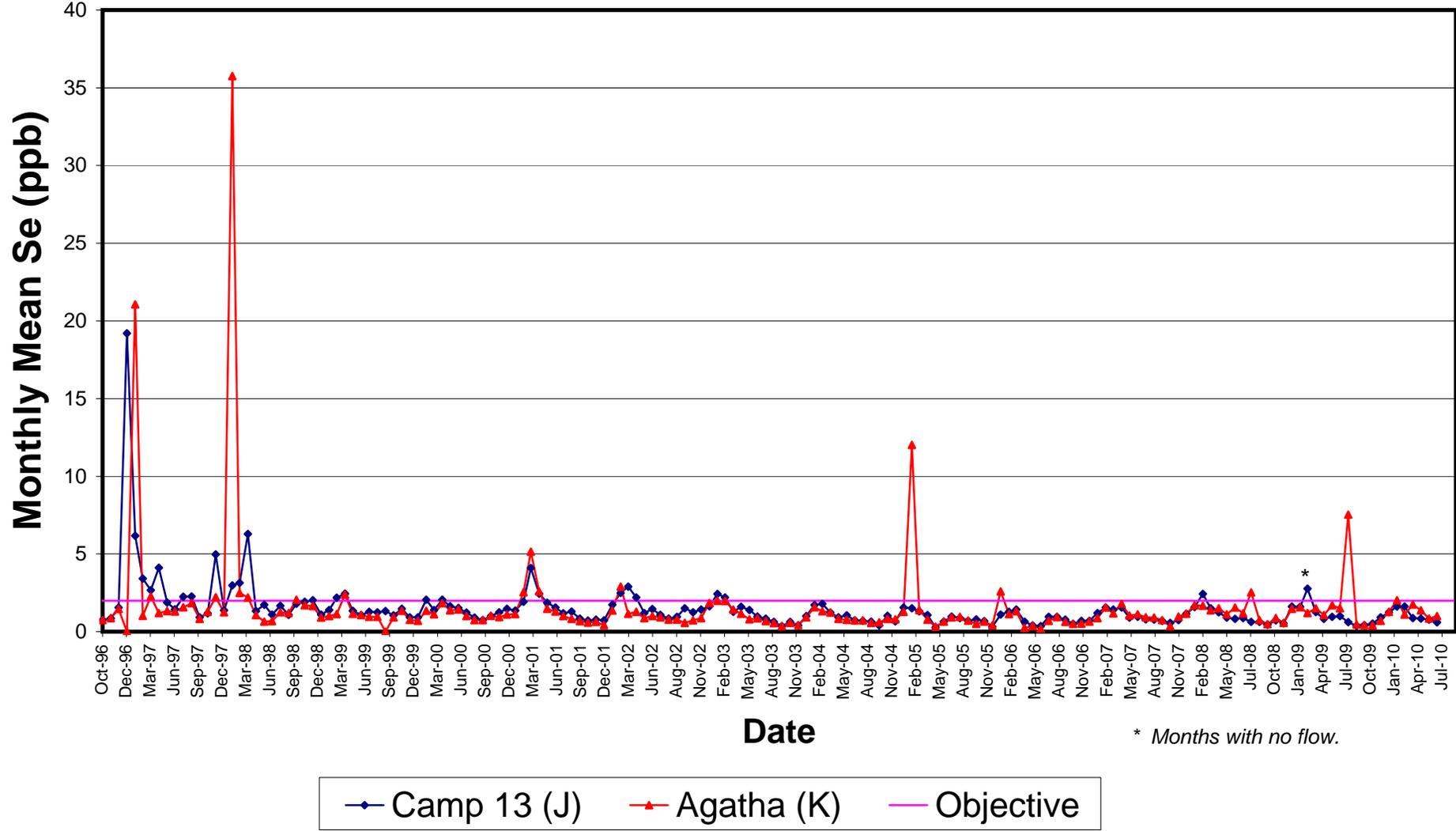


Figure 7
San Luis Canal at Splits (L2) - Santa Fe Canal at Splits (M2)

