PECOS RIVER COMPACT

Report of the River Master

Water Year 2012

Accounting Year 2013

Final Report

June 24, 2013

Neil S. Grigg
River Master of the Pecos River
749 S. Lemay, Ste. A3, PMB 330
Fort Collins, Colorado 80524

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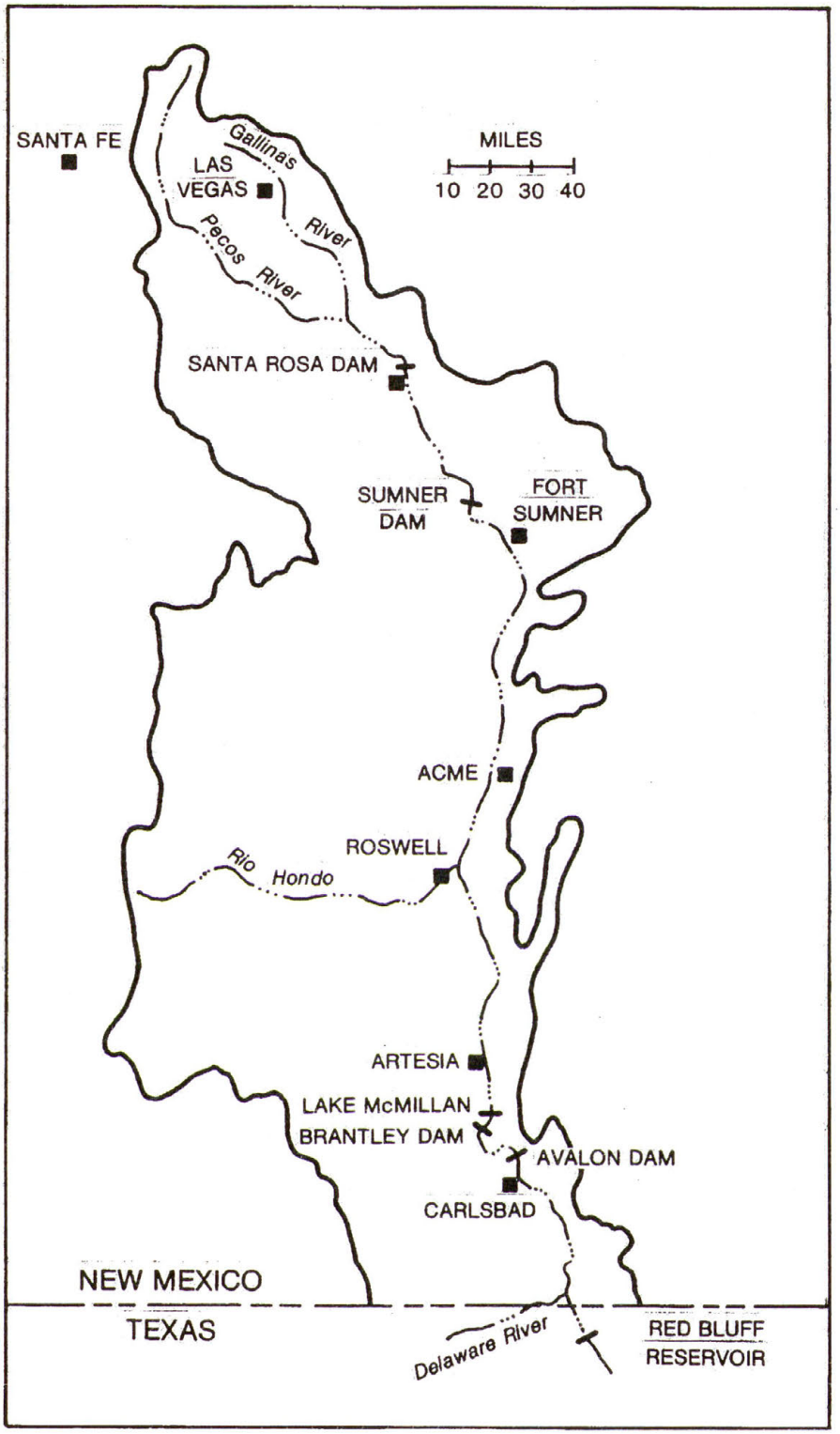
CONTENTS

Map of Pecos River Basin Showing Accounting Reaches
Purpose of the Report and Statement of Shortfall or Overage
Table of Annual and Accumulated Overage or Shortfall
Table 1. General Calculation of Annual Departures, T.A.F. (B.1.a.- d.)
Table 2. Flood Inflows, Alamogordo Dam to Artesia (B.3)
Table 3. Flood Inflows, Artesia to Carlsbad (B.4)
Table 4. Flood Inflows, Carlsbad - State Line (B.5.c)
Table 5. Depletion Due to Irrigation above Alamogordo Dam (C.1.a)
Table 6. Depletion Due to Santa Rosa Reservoir Operations (C.1.b)
Table 7. Carlsbad Springs New Water (B.4.c)
Table 8. Carlsbad Main Canal Seepage Lagged (B.4.c.(1)(e))
Table 9. Lake Avalon Leakage Lagged (B.4.c.(1)(g))
Table 10. Evaporation Loss at Lake Avalon (B.4.f)
Table 11. Change in Storage, Lake Avalon (B.4.g)
Table 12. Data Required for River Master Manual Calculations
Appendix: Response to States' Objections



Map of Pecos River Basin Showing Accounting Reaches

PECOS RIVER COMPACT
Supreme Court of the United States
No. 65, Original
Amended Decree

Final Report of the River Master
Water Year 2012 - Accounting Year 2013
June 24, 2013

Purpose of the Report. In its Amended Decree issued March 28, 1988 the Supreme Court of the United States appointed a River Master of the Pecos River and directed him to "... Deliver to the parties a Preliminary Report setting forth the tentative results of the calculations required by Section III.B.1 of this Decree by May 15 of the accounting year..." and to consider "... any written objections to the Preliminary Report submitted by the parties prior to June 15 of the accounting year..." and to deliver "... to the parties a Final Report setting forth the final results of the calculations required by Section III.B.1 of this Decree by July 1 of the accounting year." This is the required Final Report with the determination of:

a. The Article III(a) obligation;

b. Any shortfall or overage, which calculation shall disregard deliveries of water pursuant to an Approved Plan;

c. The net shortfall, if any, after subtracting any overages accumulated in previous years, beginning with water year 1987.

Result of Calculations and Statement of Shortfall or Overage. The results of the calculations in this Final Report show that New Mexico's delivery in Water Year 2012 was an overage of 1,900 acre-feet. The accumulated overage since the beginning of Water Year 1987 is 102,000 acre-feet.

Neil S. Grigg
River Master of the Pecos River

Pecos River Compact		
Accumulated Shortfall or Overage		
	June 24, 2013	
Water Year	Annual Overage or Shortfall, AF	Accumulated Overage or Shortfall, AF
1987	15,400	15,400
1988	23,600	39,000
1989	2,700	41,700
1990	-14,100	27,600
1991	-16,500	11,100
1992	10,900	22,000
1993	6,600	28,600
1994	5,900	34,500
1995	-14,100	20,400
1996	-6,700	13,700
1997	6,100	19,800
1998	1,700	21,500
1999	1,400	22,900
2000	-12,300	10,600
2001	-700	9,900
2002	-3,000	6,900
2003	2,000	8,900
2004	8,300	17,200
2005	24,000	41,200
2006	26,100	67,300
2007	25,200	92,500
2008	6,000	98,500
2009	1,600	100,100
2010	-500	99,600
2011	500	100,100
2012	1,900	102,000

Table 1. General Calculation of Annual Departures in TAF (B.1)			
Water Year	2012		
6/24/2013			
	WY 2010	WY 2011	WY 2012
B.1.a. Index Inflows			
(1) Annual flood inflow			
(a) Gaged flow Pecos R bel Alamogordo Dam	116.2	87.4	64.9
(b) Flood Inflow Alamogordo - Artesia (Table 2)	7.9	-12.2	-17.2
(c) Flood Inflow Artesia - Carlsbad (Table 3)	10.0	12.8	11.2
(d) Flood Inflow Carlsbad - State Line (Table 4)	9.4	0.5	3.2
Total (annual flood inflow)	143.5	88.5	62.1
(2) Index Inflow (3-year avg)			98.0
B.1.b. 1947 Condition Delivery Obligation			33.4
(Index Outflow)			
B.1.c. Average Historical (Gaged) Outflow			
(1) Annual historical outflow			
(a) Gaged Flow Pecos River at Red Bluff NM	60.6	24.6	17.7
(b) Gaged Flow Delaware River nr Red Bluff NM	5.6	1.0	1.7
(c) Metered diversions Permit 3254 into C-2713	0.0	0.0	
Total Annual Historical Outflow	66.2	25.6	19.4
(2) Average Historical Outflow (3-yr average)			37.1
B.1.d. Annual Departure			3.6
C. Adjustments to Computed Departure			
1. Adjustments for Depletions above Alam Dam			
a. Depletions Due to Irrigation (Table 5)	0.5	3.3	3.2
b. Depl fr Operation of Santa Rosa Reservoir (Table 6)	4.1	2.7	1.0
c. Transfer of Water Use to Upstream of AD	0	0	0
Recomputed Index Inflows			
(1) Annual flood inflow			
(a) Gaged flow Pecos R bel Alamogordo Dam	120.8	93.4	69.1
(b) Flood Inflow Alamogordo - Artesia	7.9	-12.2	-17.2
(c) Flood Inflow Artesia - Carlsbad	10.0	12.8	11.2
(d) Flood Inflow Carlsbad - State Line	9.4	0.5	3.2
Total (annual flood inflow)	148.1	94.5	66.3
Recomputed Index Inflow (3-year avg)			103.0
Recomputed 1947 Condition Del Outflow			35.9
(Index Outflow)			
Recomputed Annual Departures			1.2
Credits to New Mexico			
C.2 Depletions Due to McMillan Dike			0.7
C.3 Salvage Water Analysis			0
C.4 Unappropriated Flood Waters			0
C.5 Texas Water Stored in NM Reservoirs			0
C.6 Beneficial C.U. Delaware River Water			0
Final Calculated Departure, TAF			1.9

Table 2. Determination of Flood Inflows, Alamogordo Dam to Artesia (B.3)													
Water Year	2012												
6/18/2013													
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	TOT
Flow bel Sumner Dam	1.0	1.2	18.8	6.4	8.5	8.2	5.5	4.1	4.0	4.4	1.5	1.3	64.9
FtSumner Irrig Div	0.0	0.0	4.9	5.2	6.0	4.3	4.0	3.9	3.9	4.2	0.3	0.0	36.6
Ft Sumner ID Return	0.8	0.6	1.4	1.6	2.3	2.3	2.3	2.3	2.1	1.9	1.0	0.8	19.4
Flow past FS IDist	1.8	1.8	15.2	2.7	4.9	6.3	3.8	2.5	2.3	2.2	2.2	2.0	47.7
Channel loss	0.2	0.2	2.9	1.4	1.7	1.8	1.2	1.6	0.8	0.8	0.7	0.2	13.5
Residual Flow	1.6	1.6	12.3	1.3	3.2	4.5	2.7	1.0	1.5	1.4	1.4	1.8	34.2
Base Inflow	2.4	1.6	1.7	1.9	1.6	0.4	0.1	0.0	0.1	0.9	0.7	1.4	12.9
River Pump Divers	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.5
Residual, Artesia	4.0	3.2	13.9	3.1	4.7	4.8	2.7	0.9	1.6	2.3	2.1	3.2	46.6
Pecos Flow Artesia	3.1	2.5	10.2	3.5	2.5	0.7	1.9	0.0	0.1	1.1	1.3	2.4	29.3
Flood Inflow, AD-Art	-0.9	-0.6	-3.7	0.4	-2.2	-4.0	-0.8	-0.9	-1.5	-1.2	-0.9	-0.8	-17.2

Note: Whenever the computed flow past the District is less than the return flow, set the flow past the District equal to the return flow (Manual, B.3.d).

Table 3. Determination of Flood Inflows, Artesia to Carlsbad (B.4)													
Water Year	2012												
5/5/2013													
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	TOT
Rio Penasco at Dayton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fourmile Draw nr Lakew	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
South Seven Rivers	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1
Rocky Arroyo at Hwy Br	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flood Inflow, Art-DS3	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.2
Pecos R at Dam Site 3	1.3	1.4	1.4	7.0	5.8	9.1	3.9	3.0	4.5	1.0	1.1	1.3	40.7
CB Sprgs New Water (from Table 7)	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9	-10.6
Total Inflow, DS3 - CB	0.4	0.5	0.5	6.2	4.9	8.2	3.0	2.1	3.6	0.1	0.2	0.4	30.1
Evap Loss, Lake Avalon (from Table 10)	0.3	0.5	0.5	0.5	0.7	0.4	0.5	0.3	0.3	0.2	0.2	0.2	4.5
Storage Chg, Lake Avalon (from Table 11)	0.3	0.2	0.1	-1.3	-0.3	0.4	-0.2	0.3	-0.2	0.3	0.3	0.4	0.2
Carls ID diversions	0.0	0.0	0.0	7.9	5.2	7.9	3.2	1.8	3.8	0.0	0.0	0.0	29.7
93% CID diver	0.0	0.0	0.0	7.3	4.9	7.3	3.0	1.6	3.5	0.0	0.0	0.0	27.6
Other depletions	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	1.4
Dark Canyon at Csbad	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pecos b Dark Canyon	0.8	0.7	0.7	0.5	0.7	0.5	0.5	0.5	0.5	0.6	0.6	0.7	7.4
Pecos R at Carlsbad	0.8	0.7	0.7	0.5	0.7	0.5	0.5	0.5	0.5	0.6	0.6	0.7	7.4
Total Outflow	1.5	1.5	1.4	7.1	6.0	8.7	4.0	2.9	4.2	1.2	1.2	1.3	41.1
Flood Inflow, DS3-CB	1.1	1.1	0.9	0.9	1.1	0.5	1.0	0.8	0.6	1.0	1.0	0.9	11.0
Flood Inflow, Art-CB	1.1	1.1	0.9	0.9	1.2	0.5	1.1	0.9	0.7	1.0	1.0	0.9	11.2

Table 4. Summary Table for Computations, Carlsbad to State Line (B.5)							
Water Year	2012						
5/5/2013							
	BCB - RB	BCB - RB*	Del R	DC			
	RM	USGS	USGS				
Jan	0.0	0.0	0.0	0.0			
Feb	0.0	0.0	0.0	0.0			
Mar	0.0	0.0	0.0	0.0			
Apr	0.1	0.2	0.0	0.0			
May	0.4	0.6	0.2	0.0			
Jun	0.0	0.0	0.0	0.0			
Jul	0.3	0.4	0.9	0.0			
Aug	0.3	0.2	0.0	0.0			
Sep	0.4	0.5	0.0	0.0			
Oct	0.4	0.4	0.0	0.0			
Nov	0.1	0.0	0.0	0.0			
Dec	0.0	0.0	0.0	0.0			
Total	2.1	2.4	1.1	0.0			
Summary of flood inflows, Carlsbad to State Line, TAF							
Red Bluff - Carlsbad + Dark C RM calcs)					2.1		
Delaware River (USGS Computation)					1.1		
Total Flood Inflow, Carlsbad to State Line					3.2		
* USGS calculations BCB-RB for comparison only. Note that in AY 2013							
Texas presented a set of corrected values based on apparent errors.							
These values are not used in the Final Determination, but this note is for the record.							

Table 5. Depletions Due to Irrigation Above Sumner Dam (C.1.a)								
Water Year	2012							
5/5/2013								
	APR	MAY	JUN	JUL	AUG	SEPT	OCT	TOTAL
Precip Las Vegas FAA AP	0.53	1.10	0.82	1.60	1.67	0.84	0.36	6.92
Eff prec Las Veg FAA AP	0.52	1.06	0.80	1.49	1.55	0.82	0.35	6.59
Precip Pecos Natl Monument	0.63	0.59	0.88	1.57	1.64	1.17	0.41	6.89
Eff Precip Pecos RS	0.62	0.58	0.85	1.47	1.53	1.12	0.40	6.57
Precip Santa Rosa	0.05	1.52	0.15	1.71	1.48	1.96	0.40	7.27
Eff Precip Santa Ro	0.05	1.43	0.15	1.59	1.39	1.80	0.39	6.80
Average eff precip, ft	0.03	0.09	0.05	0.13	0.12	0.10	0.03	0.55
Consumptive use, ft	0.19	0.36	0.36	0.30	0.27	0.18	0.11	1.77
Unit depletion rate (CU less eff precip), ft	0.16	0.27	0.31	0.17	0.15	0.08	0.08	1.22
Acres (most recent inventory)	11529							
Streamflow depletion (actual use), AF	14014							
1947 depletion, AF	10804							
Difference (actual use - 1947 depletion), TAF	3.2							
Adjustment to Gaged Flow, Pecos River below Sumner Dam, TAF =						3.2		

Table 6. Depletions Due to Santa Rosa Reservoir Operations (C.1.b)													
Water Year	2012												
5/4/2013													
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	TOTAL
LS 2001 table (USBR); SRL 1997 tables used (COE)													
Lk Sumner ga ht, avg	45.72	48.37	45.43	36.06	33.55	35.53	34.16	32.82	36.04	35.71	37.76	42.41	
LS content, AF, avg	10946	14036	10652	4345	3254	4100	3502	2970	4336	4182	5192	8068	
LS area, acres, avg	1027	1299	997	471	399	456	416	378	470	461	525	747	
LS evap, inches	4.77	4.45	10.60	12.93	16.63	18.70	16.11	15.53	11.09	9.51	6.76	4.68	131.76
.77 LS Evap	3.67	3.43	8.16	9.96	12.81	14.40	12.40	11.96	8.54	7.32	5.20	3.61	101.45
LS Precip, inches	0.00	0.24	0.19	0.00	0.21	0.16	0.41	2.97	0.29	0.24	0.00	0.41	5.12
Net LS Evap, inches	3.67	3.19	7.97	9.96	12.60	14.24	11.99	8.99	8.25	7.08	5.20	3.20	96.33
LSum Evaploss, TAF	0.31	0.34	0.66	0.39	0.42	0.54	0.42	0.28	0.32	0.27	0.23	0.20	4.39
L S Rosa ga ht, avg	100.92	100.91	96.82	101.18	107.62	101.29	94.77	93.07	90.01	90.70	90.56	90.51	
LSR content, AF, avg	10164	10157	7561	10348	15629	10427	6504	5764	4627	4864	4815	4797	
LSR area, acres, avg	703	702	552	711	961	714	478	406	337	339	350	349	
LSR evap, inches	3.72	5.16	9.27	8.97	13.12	14.12	12.63	11.34	9.16	6.87	5.44	3.76	103.56
.77 LSR Evap	2.86	3.97	7.14	6.91	10.10	10.87	9.73	8.73	7.05	5.29	4.19	2.90	79.74
LSR precip, inches	0.00	0.16	0.11	0.23	1.10	0.31	0.65	2.80	1.40	0.38	0.00	0.71	7.85
Net LSR Evap, inches	2.86	3.81	7.03	6.68	9.00	10.56	9.08	5.93	5.65	4.91	4.19	2.19	71.89
LSR Evaploss, TAF	0.17	0.22	0.32	0.40	0.72	0.63	0.36	0.20	0.16	0.14	0.12	0.06	3.50
Total evaploss, TAF	0.48	0.57	0.99	0.79	1.14	1.17	0.78	0.48	0.48	0.41	0.35	0.26	7.90
Sum contents, AF	21110	24193	18213	14693	18883	14527	10006	8734	8963	9046	10007	12865	
1947 area, acres	1117	1281	1000	910	1021	901	738	700	700	700	738	814	
1947 evaploss, TAF	0.34	0.34	0.66	0.75	1.07	1.07	0.74	0.52	0.48	0.41	0.32	0.22	6.93
current-1947evaploss	0.14	0.23	0.32	0.03	0.07	0.10	0.04	-0.04	0.00	0.00	0.03	0.05	0.96
						Annual adjustment for excess evaporation =							1.0
ADJUSTMENT FOR EXCESSIVE STORAGE IN SANTA ROSA RESERVOIR													
			2011	2011	2012	2012							
			Gage	Storage	Gage	Storage							
EndYear Sumner Sto			4243.85	9209	4244.34	9629							
EndYear S R Sto			4700.88	10136	4690.53	4804							
Sum				19345		14433							
Sto Adjustment, AF						0							
Adjustm Ex Evap, TAF						1.0							
Total Adjustment,TAF						1.0							
	Storage adjustment												
	Both equal or less than 129.3 TAF, adjustment is zero												
	~~Both greater than 129.3 TAF, subtract previous from current year~~												
	Current year less than 129.3 TAF, previous greater than 129.3 TAF, subtract previous year from 129.3 TAF												
	Current year greater than 129.3 TAF, previous year less than 129.3 TAF, subtract 129.3 TAF from current year												

Table 7. Carlsbad Springs New Water [B.4.c.(2)]					
Water Year	2012				
5/4/2013					
		TAF	AF/day	cfs	Totals
Pecos R bel DC		7.4	20.2	10.2	10.2
Dark Canyon		0.0	0.0	0.0	0.0
Pecos R bel Lake Avalon		0.0	0.0	0.0	0.0
Depletion, cfs					2.0
CID lag seep, cfs (from Table 8)					3.0
Return flow, cfs					1.0
Lake Av lagged seep, cfs (from Table 9)					19.9
PR seepage, cfs					3.0
Carls new water, cfs					-14.7
Carls new wat, TAF					-10.6
Carls new wat monthly, TAF					-0.9

Table 8. Carlsbad Main Canal Seepage Lagged [B.4.c.(2)(e)]													
Water Year	2012												
5/4/2013													
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	TOTAL
WY 2012													
CID, TAF	0.0	0.0	0.0	7.9	5.2	7.9	3.2	1.8	3.8	0.0	0.0	0.0	29.7
days/mo	31	29	31	30	31	30	31	31	30	31	30	31	366
cfs	0	0.0	0.0	132.1	84.9	132.8	51.7	28.8	63.7	0.0	0.0	0.0	41.2
cfs, qtr avg			0.0			116.2			47.9			0.0	
WY 2011		1Q	2Q	3Q	4Q								
FLOWS, cfs				76.2	6.7								
SEVEN %				5.3	0.5								
WY 2012 lagged		1Q	2Q	3Q	4Q								
FLOWS, cfs		0.0	116.2	47.9	0.0								
SEVEN %		0.0	8.1	3.4	0.0								
LAG		1.0	4.1	4.4	2.5	Avg =	3.0	cfs					

Table 9. Lake Avalon Leakage Lagged [B.4.c.(2)(g)]													
Water Year	2012												
6/18/2013													
WY 2012	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	TOT
Elev NM rept	75.01	75.28	75.46	73.60	73.58	73.30	74.13	73.56	73.62	73.81	74.30	74.76	
ga ht, avg*	18.01	18.28	18.46	16.60	16.58	16.30	17.13	16.56	16.62	16.81	17.30	17.76	
cfs	24.1	25.4	26.2	17.3	17.3	15.9	19.9	17.2	17.4	18.4	20.7	22.9	
days	31	29	31	30	31	30	31	31	30	31	30	31	366
cfs avg	25.2			16.8			18.2			20.6			20.2
WY 2011		1Q	2Q	3Q	4Q								
cfs				16.6	17.7								
WY 2012 lagged		1Q	2Q	3Q	4Q								
cfs		25.2	16.8	18.2	20.6								
lag cfs		21.3	19.8	18.9	19.2	Avg =	19.8	cfs					
* Computed as WS elev by NM Report minus Gage datum at 3157.0 (USBR datum)													

Table 10. Evaporation Loss at Lake Avalon [B.4.d.(1)]														
Water Year	2012													
5/4/2013														
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOT	
Av WS NM Rept	75.01	75.28	75.46	73.60	73.58	73.30	74.13	73.56	73.62	73.81	74.30	74.76		
Avalon ga ht, avg, ft*	18.01	18.28	18.46	16.60	16.58	16.30	17.13	16.56	16.62	16.81	17.30	17.76		
Avg area Avalon, ac**	738	757	769	648	647	630	680	646	649	661	691	721		
Panevap Brantley, in.	4.65	5.80	9.98	12.42	14.59	16.64	13.19	14.09	9.85	8.19	4.80	4.34	118.54	
Lakeevap Brantley, in.	3.58	4.47	7.68	9.56	11.23	12.81	10.16	10.85	7.58	6.31	3.70	3.34	91.28	
Precip Brantley, in.	0.11	0.17	0.14	0.90	2.82	0.02	3.65	1.04	2.38	0.07	0.05	0.16	11.51	
Netevap, inches	3.47	4.30	7.54	8.66	8.41	12.79	6.51	9.81	5.20	6.24	3.65	3.18	79.77	
Evaploss Av, TAF	0.21	0.27	0.48	0.47	0.45	0.67	0.37	0.53	0.28	0.34	0.21	0.19	4.48	
* Computed as WS elev by NM Report minus Gage datum at 3157.0 (USBR datum)														
** Based on USBR Area and Capacity Table in effect January 1, 1997														

Table 11. Change in Storage, Lake Avalon [B.4.d.(2)]														
(Gage heights are end of month)														
Water Year	2012													
5/4/2013														
	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	TOT
	2011	2012												
WS NM Rept	74.7	75.1	75.4	75.5	73.6	73.1	73.7	73.4	73.9	73.6	74.0	74.5	75.0	
Gage EOM, ft*	17.7	18.1	18.4	18.5	16.6	16.1	16.7	16.4	16.9	16.6	17.0	17.5	18.0	
Storage, AF**	2275	2568	2794	2871	1525	1209	1590	1397	1722	1525	1789	2133	2494	
Change sto, TAF		0.3	0.2	0.1	-1.3	-0.3	0.4	-0.2	0.3	-0.2	0.3	0.3	0.4	0.2
* Computed as WS elev by NM Report minus Gage datum at 3157.0 (USBR datum)														
** Based on USBR Area and Capacity Table in effect January 1, 1997														

Table 12. Data Required for River Master Manual Calculations													
Water Year	2012												
6/18/2013													
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	TOTAL
STREAMFLOW GAGING RECORDS, TAF													
Pecos R b Sumner Dam	1.0	1.2	18.8	6.4	8.5	8.22	5.5	4.1	4.040	4.4	1.5	1.3	64.9
Fort Sumner Main C	0.0	0.0	4.9	5.2	6.0	4.3	4.0	3.9	3.9	4.2	0.3	0.0	36.6
Pecos R nr Artesia	3.1	2.5	10.2	3.5	2.5	0.7	1.9	0.0	0.1	1.1	1.3	2.4	29.3
Rio Penasco at Dayton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fourmile Draw nr Lakewood	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
South Seven Rivers nr Lkwd	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1
Rocky Arroyo at Hwy Br nr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pecos R at Dam Site 3	1.3	1.4	1.4	7.0	5.8	9.1	3.9	3.0	4.5	1.0	1.1	1.3	40.7
Pecos bel Avalon Dam	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Carlsbad Main Canal	0.0	0.0	0.0	7.9	5.2	7.9	3.2	1.8	3.8	0.0	0.0	0.0	29.7
Dark Canyon at Carlsbad	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pecos below Dark Canyon	0.8	0.7	0.7	0.5	0.7	0.5	0.5	0.5	0.5	0.6	0.6	0.7	7.4
Pecos R at Red Bluff	1.9	1.7	1.6	1.3	1.6	0.8	1.3	1.0	1.2	1.7	1.7	1.9	17.7
Delaware R nr Red Bluff	0.1	0.1	0.1	0.1	0.3	0.0	0.9	0.0	0.0	0.0	0.1	0.1	1.7
GAGE HEIGHTS													
Avalon gage ht, end mo	75.10	75.40	75.50	73.60	73.10	73.70	73.40	73.90	73.60	74.00	74.50	75.00	
Avalon gage ht, avg	75.01	75.28	75.46	73.60	73.58	73.30	74.13	73.56	73.62	73.81	74.30	74.76	
Sumner Lake ga ht, end mo	47.16	49.38	37.85	33.06	34.51	36.55	31.91	36.99	36.21	35.04	40.12	44.34	
Sumner Lake gage ht, avg	45.72	48.37	45.43	36.06	33.55	35.53	34.16	32.82	36.04	35.71	37.76	42.41	
Lake S Rosa ga ht, end mo*	100.90	100.85	93.89	107.23	103.18	95.04	94.47	90.19	90.14	90.62	90.52	90.53	
Lake S Rosa ga ht, avg*	100.92	100.91	96.82	101.18	107.62	101.29	94.77	93.07	90.01	90.70	90.56	90.51	
* values are referred to 4600 foot level													
PRECIPITATION, INCHES													
Brantley Lake	0.11	0.17	0.14	0.90	2.82	0.02	3.65	1.04	2.38	0.07	0.05	0.16	11.51
Las Vegas FAA AP	0.07	0.13	0.25	0.53	1.10	0.82	1.60	1.67	0.84	0.36	0.03	0.20	7.60
Pecos National Monument	0.65	0.06	0.09	0.63	0.59	0.88	1.57	1.64	1.17	0.41	0.20	1.09	8.98
Santa Rosa*	0.00	0.21	0.13	0.05	1.52	0.15	1.71	1.48	1.96	0.40	0.00	0.40	8.01
Lake Santa Rosa	0.00	0.16	0.11	0.23	1.10	0.31	0.65	2.80	1.40	0.38	0.00	0.71	7.85
Sumner Lake	0.00	0.24	0.19	0.00	0.21	0.16	0.41	2.97	0.29	0.24	0.00	0.41	5.12
	* Note: data from Santa Rosa dam was substituted for missing Santa Rosa data												
PAN EVAPORATION, INCHES													
Lake Santa Rosa	3.72	5.16	9.27	8.97	13.12	14.12	12.63	11.34	9.16	6.87	5.44	3.76	103.56
Lake Sumner	4.77	4.45	10.60	12.93	16.63	18.70	16.11	15.53	11.09	9.51	6.76	4.68	131.76
Brantley Lake	4.65	5.80	9.98	12.42	14.59	16.64	13.19	14.09	9.85	8.19	4.80	4.34	118.54
OTHER REPORTS													
Base Acme-Art, TAF (USGS)	2.4	1.6	1.7	1.9	1.6	0.4	0.1	0.0	0.1	0.9	0.7	1.4	12.9
Pump depl Ac-Artesia, TAF	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.5
Pumping, C-2713, Malaga Bend	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NM irrig inv, acres (3/9/2000)													11529
NM Transfer water use, TAF													
NM salvaged water, TAF													0.00
Texas, water stored NM, TAF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Texas, use Del water, TAF													

APPENDIX

RIVER MASTER'S RESPONSE TO STATES' OBJECTIONS

RESPONSE TO STATES' OBJECTIONS

Final Report, Accounting Year 2013

NEW MEXICO'S OBJECTIONS

1. Table 2. Determination of Flood Inflows, Alamogordo Dam to Artesia (B.3), WY 2012

New Mexico reported that the USGS report of base inflow (Tables 2 and 12) carried forward the values from Water Year 2011. The report provided new values for Water Year 2012 but did not place them on the summary of rounded values. New Mexico's objection is accepted, and the revised values are shown on Tables 2 and 12.

2. Table 7. Carlsbad Springs New Water WY 2012- (B.4.c)

New Mexico reported a potential leap year error. However, the calculation for Pecos R. bel DC for AF/day already used a 366 day year so this objection is rejected.

3. Table 9. Lake Avalon Leakage Lagged - WY 2012 - B.4.c.(1)(g)

New Mexico reported a potential leap year error and provided a revised table. A check shows this to be a valid objection, and it is accepted.

4. Table 12. Data Required for River Master Manual Calculations, Water Year 2012

As noted for Objection 1, Table 12 has been corrected.

5. Table 1. General Calculation of Annual Departures, TAF, WY 2012

Table 1 has been modified to take into account New Mexico's objections.

TEXAS'S OBJECTIONS

1. Table 2. Determination of Flood Inflows, Alamogordo Dam to Artesia (B.3), WY 2012

Texas reported the same error as New Mexico, relative to the base inflows. Texas also found a leap year error in the USGS table and noted the need to round off to the nearest acre-foot, consistent with the River Master's Manual. Texas's revised table of USGS computations is accepted. Tables 2 and 12 in the Preliminary Report, which report the base inflow in TAF, remain the same, when rounded to the nearest 0.1 TAF.

Texas also noted the need to revise the line on Table 12 to read: "Pumping, C-2713, Malaga Bend Project." This revision has been made with an abbreviation to retain the formatting of the table.

2. Table 11. Change in Storage, Lake Avalon - WY 2012 - (B.4.g).

Texas noted that Table 11, which refers to the original section of the River Master's Manual, should refer to Section B.4.d.(2). This suggestion and those in Texas comments 3, 4, and 5 are accepted. The designation for Table 7 has also been changed for the same

reason and the Annual Report Tables now refer to section numbers in the updated version of the Manual. An appendix is added to these responses to comprise an explanation and crosswalk between the old and new Manual section numbers.

3. Table 10. Evaporation Loss at Lake Avalon - WY 2012 - (B.4.f)
See comment 2 above.

4. Table 9. Lake Avalon Leakage Lagged - WY 2012 - B.4.c.(1)(g)
See comment 2 above.

5. Table 8. Carlsbad Main Canal Seepage Lagged - WY 2012.1 - [B.4.c.(1)(e)]
See comment 2 above.

6. Table 1. General Calculation of Annual Departures in TAF (B.1) and Table 4. Summary Table for Computations, Carlsbad to State Line (B.5).
Texas identified precipitation events on gages other than those near Carlsbad, and suggested a correlation between the events and hydrograph rises that were not counted as flood inflow in the Preliminary Report. The main events identified, as shown on Texas' Exhibit E, comprise six episodes in mid-February, early- to mid-March, early- to mid-April, early-June, mid-October, and mid-December. These total some 3,000 AF, according to Texas' estimate. The largest of these, from inspection of the graphs on Exhibit E, are in early- to mid-April and mid-October.

Due to the small sizes and similar colors of the bar graphs on Exhibit E, my conclusion about the additional events starting about April 3 and about April 13 is that Texas' has correlated them with the raingage called Roswell Climate. Apparently, Texas correlated the event starting about October 10 with the raingage at Caprock. Both the Roswell Climate and Caprock gages appear to be well to the north of Carlsbad. Although Caprock is shown on Texas' Exhibit B as south of Roswell, the town of Caprock is actually about at the same latitude as Roswell. This information indicates that runoff from rainfall in those areas would appear at Carlsbad and should not be accounted as runoff in the Carlsbad to State Line reach.

The current Manual language about flood inflow in the Carlsbad to State Line reach resulted from the modification determination for New Mexico's Sixth Motion, and is dated November 25, 1991. To evaluate the Sixth Motion, the River Master considered both accuracy and consistency in annual accounting. Accuracy requires that relevant information be considered to identify flood events in the reach and consistency requires that these be identified using procedures that are similar to those leading to the Manual's formulas that determine New Mexico's delivery obligation under the Amended Decree. This means that rainfall in the reach should be significant and that additional data, such as runoff from tributaries to the reach should be considered. None of the tributaries named in the current Manual language show significant increased runoff in the April and October periods considered. Figure 5 in Texas Exhibit 108 dated November 30, 1987 shows how the past analysts evaluated the hydrographs with indications of "operational rise" to show events that were not runoff caused by precipitation in the Carlsbad-Red

Bluff area. Consistency with this approach, which was adopted by the Court in the Amended Decree, requires adherence to these requirements. Therefore, this objection is rejected. There is therefore no need to amend Table 1 as mentioned in Texas' objection, although Texas' Table 1 shows the same delivery obligation as the River Master and New Mexico, that is, an overage of 1.9TAF.

7. Table 4. Summary Table for Computations, Carlsbad to State Line (B.5).
Texas presented a table to correct apparent errors in the USGS calculations. This correction of apparent errors is noted and a note placed on Table 4. However, Table 4 will retain the same numbers as the original report to show the results of USGS's calculations, which are not used directly in runoff accounting and do not require correction.

The River Master also notes that in Texas' proposed Table 4 values based on its computations a value of 2.2 TAF is presented, which is slightly different than the 2.3 TAF noted in its objection number 6. This is noted here only for the record.

FINAL CALCULATED DEPARTURE

The Preliminary Report's Final Calculated Departure was an overage of 2.0 TAF. After considering the states' objections, the Final Determination is an overage of 1.9 TAF.

Crosswalk between 1988 River Master's Manual and current version

June 20, 2013

The Pecos River Master's Manual has been used for annual accounting since the first year of the Amended Decree, which was Accounting Year 1988. The Manual originated as Texas Exhibit 108 during the proceedings before the Special Masters and the Supreme Court. During those proceedings, computations were prepared using computer programs based on Fortran coding and explained in Texas Exhibit 79.

After the Amended Decree and with the availability of spreadsheet technology, it was possible to make the computations more user-friendly and transparent by displaying them on tables. The tables in the annual report were based on the computations that form the basis for the Court-approved River Master's Manual procedures. The tables were organized to display the results of computations in a clear and logical sequence that follows the organization of the Manual.

Subsequent to 1988, several motions were approved with changes in the numbering in the River Master's Manual, which was republished in 2003. Although the motions changed some computational procedures, the tables in the River Master's annual report remain unchanged, except for minor alterations. For the Final Report of Accounting Year 2013, slight changes were made in the headings of these tables to conform to the current version of the Manual. The following listing is a crosswalk to coordinate the old and new titles of the tables.

Table		1988 RMM	Current RMM
1	General Calculation of Annual Departures, TAF	B.1	B.1
2	Determination of Flood Inflows, Alamogordo Dam to Artesia	B.3	B.3
3	Determination of Flood Inflows, Artesia to Carlsbad	B.4	B.4
4	Summary Table for Computations, Carlsbad to State Line	B.5	B.5
5	Depletions Due to Irrigation Above Sumner Dam	C.1.a	C.1.a
6	Depletions Due to Santa Rosa Reservoir Operations	C.1.b	C.1.b
7	Carlsbad Springs New Water	B.4.c	B.4.c.(2)
8	Carlsbad Main Canal Seepage Lagged	B.4.c.(1)(e)	B.4.c.(2)(e)
9	Lake Avalon Leakage Lagged	B.4.c.(1)(g)	B.4.c.(2)(g)
10	Evaporation Loss at Lake Avalon	B.4.f	B.4.d.(1)
11	Change in Storage, Lake Avalon	B.4.g	B.4.d.(2)
12	Data Required for River Master Manual Calculations		