PECOS RIVER COMPACT

Report of the River Master

Water Year 1997

Accounting Year 1998

Final Report

June 22, 1998

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

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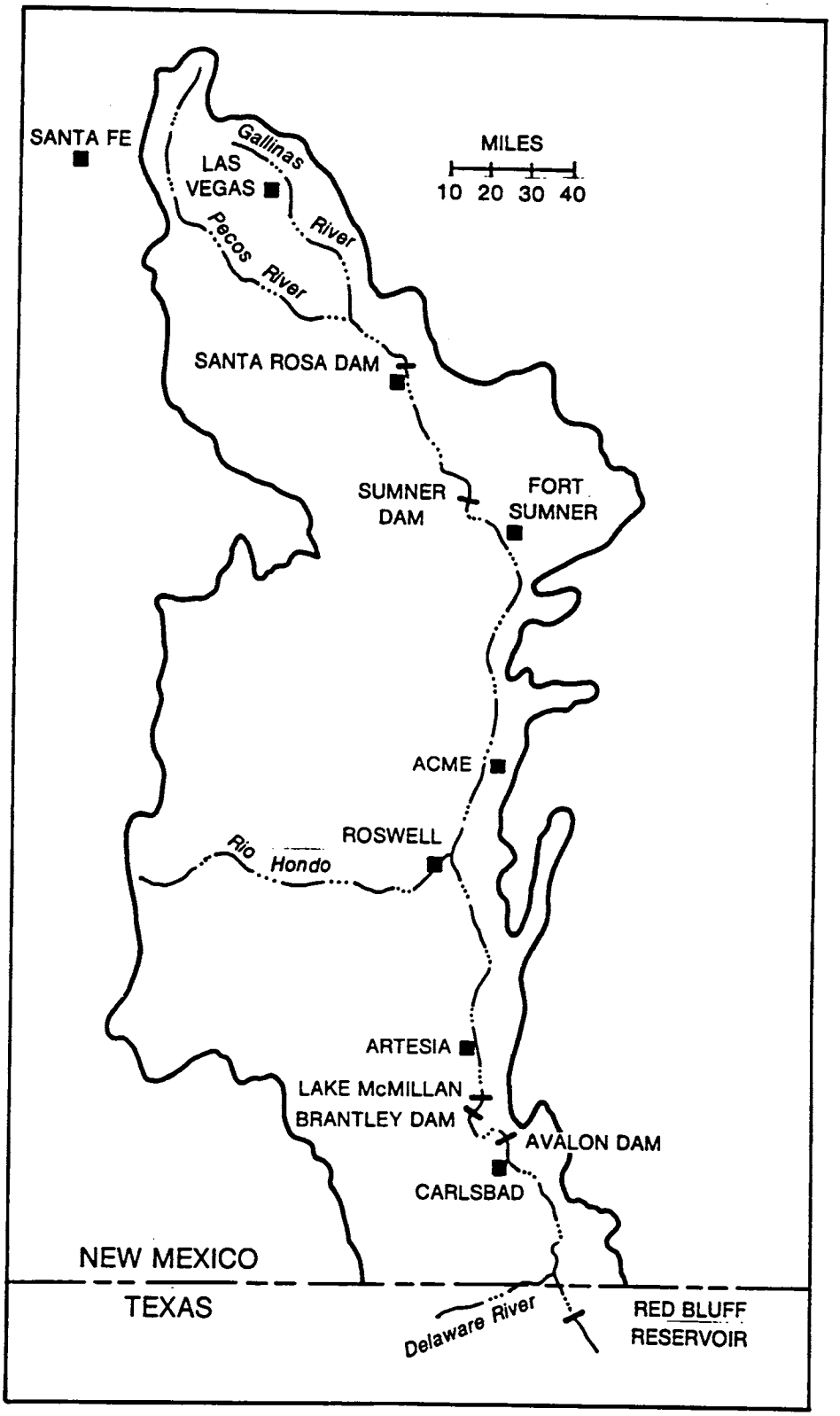
SANTA FE
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MILES
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SUMNER DAM
FORT SUMNER
ACME
ROSWELL
Rio Hondo
ARTESIA
LAKE McMILLAN
BRANTLEY DAM
AVALON DAM
CARLSBAD
NEW MEXICO
TEXAS
Delaware River
RED BLUFF RESERVOIR

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

Final Report of the River Master
Water Year 1997 - Accounting Year 1998
June 22, 1998

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 1997 was an overage of 6,100 acre-feet. The accumulated overage since the beginning of Water Year 1987 is 19,800 acre-feet.

Neil S. Grigg
River Master of the Pecos River

Pecos River Compact		
Accumulated Shortfall or Overage		
	June 22, 1998	
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

Table 1. General Calculation of Annual Departures, TAF, WY 97			
6/22/98			
	1995	1996	1997
B.1.a. Index Inflows			
(1) Annual flood inflow			
(a) Gaged flow Pecos R bel Alamogordo Dam	197.6	134.2	160.0
(b) Flood Inflow Alamogordo - Artesia (Table 2)	-5.1	9.4	13.2
(c) Flood Inflow Artesia - Carlsbad (Table 3)	-5.8	10.3	1.0
(d) Flood Inflow Carlsbad - State Line (Table 4)	5.1	10.5	6.6
Total (annual flood inflow)	191.8	164.4	180.8
(2) Index Inflow (3-year avg)			179.0
B.1.b. 1947 Condition Delivery Obligation			78.8
(Index Outflow)			
B.1.c. Average Historical (Gaged) Outflow			
Gaged Flow Pecos River at Red Bluff NM	69.2	72.8	98.1
Gaged Flow Delaware River nr Red Bluff NM	1.9	5.6	2.5
(1) Total Annual Historical Outflow	71.1	78.4	100.6
(2) Average Historical Outflow (3-yr average)			83.4
B.1.d. Annual Departure			4.6
C. Adjustments to Computed Departure			
1. Adjustments for Depletions above Alam Dam			
a. Depletions Due to Irrigation (Table 5)	-0.2	-2.2	-3.6
b. Depl fr Operation of Santa Rosa Reservoir (Table 6)	0.5	3.5	0.6
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	197.9	135.5	157.0
(b) Flood Inflow Alamogordo - Artesia	-5.1	9.4	13.2
(c) Flood Inflow Artesia - Carlsbad	-5.8	10.3	1.0
(d) Flood Inflow Carlsbad - State Line	5.1	10.5	6.6
Total (annual flood inflow)	192.1	165.7	177.8
Recomputed Index Inflow (3-year avg)			178.5
Recomputed 1947 Condition Del Outflow			78.5
(Index Outflow)			
Recomputed Annual Departures			4.9
Credits to New Mexico			
C.2 Depletions Due to McMillan Dike			1.2
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			6.1

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

Water Year 1997

6/22/98

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	TOT
Flow bel Alamog Dam	0.0	0.1	26.1	4.3	5.3	41.9	6.1	44.4	5.6	5.8	20.4	0.0	160.0
FtSumner Irrig Div	0.0	0.0	4.2	4.1	4.8	4.9	5.7	3.0	5.4	6.1	0.0	0.0	38.2
Ft Sumner ID Return	0.8	0.6	1.4	1.6	2.4	2.4	2.4	2.4	2.2	2.0	1.0	0.8	20.3
Flow past FS IDist	0.9	0.7	23.3	1.8	2.9	39.4	2.9	43.9	2.4	2.0	21.4	0.8	142.4
Channel loss	0.1	0.1	4.3	1.3	1.4	7.2	1.0	5.2	0.8	0.8	3.3	0.1	25.8
Residual Flow	0.7	0.6	18.9	0.5	1.5	32.2	1.8	38.7	1.6	1.3	18.1	0.7	116.6
Base Inflow	3.6	2.6	2.7	2.9	2.7	2.3	2.1	2.3	2.3	2.7	2.9	5.2	34.2
River Pump Divers	0.0	0.0	0.4	0.6	0.4	1.0	0.6	0.6	0.1	0.0	0.0	0.0	3.9
Residual, Artesia	4.3	3.2	21.2	2.8	3.8	33.5	3.3	40.3	3.8	3.9	21.0	5.9	146.9
Pecos Flow Artesia	4.5	3.9	18.4	8.9	5.0	34.6	6.3	41.2	5.5	5.1	19.5	7.2	160.1
Flood Inflow, AD-Art	0.2	0.8	-2.8	6.1	1.2	1.2	3.0	0.8	1.7	1.1	-1.5	1.3	13.2

Note: Whenever the computed flow past the District is less than the return flow, set the flow past the District equal to the return

Table 3. Determination of Flood Inflows, Artesia to Carsbad, WY 1997 (B.4)

4/11/98

9:04 AM

	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	0.0	0.0	0.0	0.0	0.0
South Seven Rivers 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
Rocky Arroyo at Hwy Br	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Flood Inflow, Art-DS3	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Pecos R at Dam Site 3	1.5	1.3	2.9	14.0	10.7	15.5	23.9	13.0	9.2	20.9	27.4	5.4	145.7
CB Sprgs New Water, T7	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-1.8
Total Inflow, DS3 - CB	1.4	1.2	2.7	13.8	10.5	15.3	23.8	12.9	9.1	20.7	27.2	5.3	143.9
Evap Loss, Lake Avalon, T10	0.2	0.3	0.4	0.3	0.4	0.5	0.6	0.5	0.3	0.3	0.2	0.2	4.0
Storage Chg, Lake Aval, T11	0.5	0.6	-2.5	0.5	-0.1	0.4	0.1	-0.3	-0.4	0.9	-1.5	2.3	0.5
Carls ID diversions	0.0	0.0	3.8	13.0	9.7	13.6	14.7	12.6	8.9	5.5	0.0	0.0	81.9
93% CID diver	0.0	0.0	3.6	12.1	9.1	12.7	13.7	11.7	8.3	5.1	0.0	0.0	76.2
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	0.1	0.0	0.0	0.1
Pecos b Dark Canyon	1.1	1.0	1.2	1.5	4.2	1.5	6.3	1.3	1.5	14.8	24.6	3.3	62.4
Pecos R at Carlsbad	1.1	1.0	1.2	1.5	4.2	1.5	6.3	1.3	1.5	14.7	24.6	3.3	62.3
Total Outflow	1.9	2.0	2.7	14.4	13.7	15.2	20.8	13.4	9.8	21.0	23.4	5.9	144.3
Flood Inflow, DS3-CB	0.5	0.8	0.0	0.6	3.2	-0.1	-2.9	0.6	0.7	0.3	-3.8	0.6	0.5
Flood Inflow, Art-CB	0.5	0.8	0.0	0.6	3.2	0.3	-2.9	0.6	0.7	0.3	-3.8	0.6	1.0

Table 4. Summary Table for Computations, Carlsbad to State Line - WY 97

6/22/98

	RedBluff RM	Below CB RM	CB - RB RM	CB - RB USGS*	Del R USGS	DC
Jan	0	0	0	0	0	0
Feb	313	61	252	182	0	0
Mar	0	0	0	107	0	0
Apr	553	272	282	222	22	0
May	321	46	450	115	89	0
Jun	1008	282	726	809	696	0
Jul	1101	48	1053	1220	696	0
Aug	918	163	756	936	62	0
Sep	589	327	262	466	0	0
Oct	1022	422	599	530	286	96
Nov	125	105	20	0	0	0
Dec	268	30	238	133	0	0
Total	6218	1755	4637	4720	1851	96

Summary of flood inflows, Carlsbad to State Line, TAF

Carlsbad - Red Bluff + Dark C	4.7
Delaware River (USGS Computation	1.9
Total Flood Inflow, Carlsbad to State Line	6.6

* Corrected per USGS letter dated May 21, 1998.

Table 5. Depletions Due to Irrigation Above Alamogordo Dam - WY 1997 (C.1.a)								
4/11/98								
9:07	APR	MAY	JUN	JUL	AUG	SEPT	OCT	TOTAL
Precip Las Vegas FAA AP	1.53	1.05	2.69	3.74	2.72	5.62	0.32	17.67
Eff prec Las Veg FAA AP	1.43	1.02	2.36	3.12	2.39	3.99	0.31	14.62
Precip Pecos Natl Monument	1.46	0.13	2.23	3.24	4.46	2.40	0.64	14.56
Eff Precip Pecos RS	1.37	0.13	2.01	2.76	3.58	2.14	0.63	12.62
Precip Santa Rosa	4.20	2.15	3.55	3.54	2.76	4.09	0.30	20.59
Eff Precip Santa Ro	3.43	1.95	2.99	2.98	2.41	3.37	0.29	17.42
Average eff precip, ft	0.17	0.09	0.20	0.25	0.23	0.26	0.03	1.24
Consumptive use, ft	0.19	0.36	0.36	0.30	0.27	0.18	0.11	1.77
CU less eff precip, ft	0.02	0.27	0.16	0.05	0.04	0.00	0.08	0.61
Acres (most recent inventory)	11761							
Streamflow depletion, AF	7213							
1947 depletion, AF	10804							
Difference, TAF	3.6							
Adjustment to Gaged Flow Pecos River below Alamogordo Dam =						-3.6		

Table 6. Depletions Due to Santa Rosa Reservoir Operations - WY 1997 - (C.1.b)

4/11/98

9:08

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	TOTAL
Lk Sumner ga ht, avg	55.96	57.87	57.16	54.06	55.60	58.01	57.58	57.19	58.20	57.86	50.21	50.86	55.88
LS content, AF, avg	30946	35488	33755	26819	30133	35836	34774	33827	36312	35463	19791	20883	
LS area, acres, avg	2278	2478	2404	2051	2241	2493	2448	2407	2513	2477	1655	1705	2263
LS evap, inches	2.47	2.13	9.33	8.24	11.22	15.22	18.28	12.64	11.03	7.45	3.94	1.56	103.51
.77 LS Evap	1.90	1.64	7.18	6.34	8.64	11.72	14.08	9.73	8.49	5.74	3.03	1.20	79.70
LS Precip, inches	0.41	1.19	0.08	5.10	1.12	3.10	3.54	1.90	2.07	0.48	0.90	2.04	21.93
Net LS Evap, inches	1.49	0.45	7.10	1.24	7.52	8.62	10.54	7.83	6.42	5.26	2.13	-0.84	57.77
LSum Evaploss, TAF	0.28	0.09	1.42	0.21	1.40	1.79	2.15	1.57	1.35	1.09	0.29	-0.12	11.53
L S Rosa ga ht, avg	23.72	24.13	23.49	22.42	33.27	42.81	41.57	41.00	41.47	43.61	43.84	44.29	35.47
LSR content, AF, avg	38385	39185	37940	35926	60138	89286	85061	83161	84727	92079	92892	94499	
LSR area, acres, avg	1945	1974	1925	1839	2625	3454	3357	3310	3349	3527	3550	3591	.
LSR evap, inches	3.72	5.04	8.5	5.86	8.73	9.88	11.93	9.2	7.51	5.81	3.75	3.66	83.59
.77 LSR Evap	2.86	3.88	6.55	4.51	6.72	7.61	9.19	7.08	5.78	4.47	2.89	2.82	64.36
LSR precip, inches	0.97	1.35	0.15	3.99	1.59	3.69	3.27	4.79	5.43	0.02	0.91	2.81	28.97
Net LSR Evap, inches	1.89	2.53	6.40	0.52	5.13	3.92	5.92	2.29	0.35	4.45	1.98	0.01	35.39
LSR Evaploss, TAF	0.31	0.42	1.03	0.08	1.12	1.13	1.66	0.63	0.10	1.31	0.59	0.00	8.36
Total evaploss, TAF	0.59	0.51	2.45	0.29	2.53	2.92	3.80	2.20	1.44	2.39	0.88	-0.12	19.89
Sum contents, AF	69331	74673	71695	62745	90271	125122	119835	116988	121039	127542	112683	115382	
1947 area, acres	2980	3130	3060	2825	3525	4450	4300	4225	4330	4535	4120	4185	
1947 evaploss, TAF	0.37	0.12	1.81	0.29	2.21	3.20	3.78	2.76	2.32	1.99	0.73	-0.29	19.27
current-1947evaploss	0.22	0.39	0.64	0.00	0.32	-0.28	0.03	-0.55	-0.87	0.41	0.15	0.18	0.62
						Annual adjustment for excess evaporation =							0.6

ADJUSTMENT FOR EXCESSIVE STORAGE IN SANTA ROSA RESERVOIR

			1996	1996	1997	1997
			Gage	Storage	Gage	Storage
EndYear Sumner Sto			4254.73	28224	4252.54	23856
EndYear S R Sto			4723.48	37921	4744.58	95544
Sum				66145		119400
Sto Adjustment, AF						0
Adjustm Ex Evap, TAF						0.6
Total Adjustment,TAF						0.6

Table 7. Carlsbad Springs New Water WY 1996 - (B.4.c)				
4/11/98				
8:21		TAF	cfs	Totals
Pecos R bel DC, cfs		62.4	86.2	86.2
Dark Canyon, cfs		0.1	0.0	0.0
Pecos R bel Lake Av, c		44.6	61.6	61.6
Depletion, cfs				2.0
CID lag seep, cfs (Table 8)				8.1
Return flow, cfs				1.0
Lake Av lagged seep, cfs (Table 9)				17.0
PR seepage, cfs				3.0
Carls new water, cfs				-2.5
Carls new wat, TAF				-1.8
Carls new wat monthly, TAF				-0.2

Table 8. Carlsbad Main Canal Seepage Lagged - WY 1997 - [B.4.c.(1)(e)]													
4/11/98													
8:13	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	TOTAL
WY 1997													
CID, TAF	0.0	0.0	3.8	13.0	9.7	13.6	14.7	12.6	8.9	5.5	0.0	0.0	81.9
days/mo	31	28	31	30	31	30	31	31	30	31	30	31	365
cfs	0.0	0.0	62.5	218.1	158.4	229.2	238.7	204.6	150.2	89.3	0.0	0.0	112.6
cfs, qtr avg			21.5			201.4			198.4			30.1	
1996		1Q	2Q	3Q	4Q								
FLOWS, cfs				154.6	62.3								
SEVEN %				10.8	4.4								
1997		1Q	2Q	3Q	4Q								
FLOWS, cfs		21.5	201.4	198.4	30.1								
SEVEN %		1.5	14.1	13.9	2.1								
LAG		4.0	8.3	11.9	8.0	Avg =	8.1	cfs					

Table 9. Lake Avalon Leakage Lagged - WY 1997 - B.4.c.(1)(g)													
4/11/98													
8:17													
WY 1997	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	TOT
ga ht, avg	17.63	18.20	18.18	15.71	15.68	15.66	16.20	16.24	15.66	16.69	15.72	16.73	
cfs	22.3	25.0	24.9	13.1	13.0	12.9	15.4	15.6	12.9	17.8	13.1	18.0	
days	31	28	31	30	31	30	31	31	30	31	30	31	365
cfs avg	24.0			13.0			14.7			16.3			17.0
1996		1Q	2Q	3Q	4Q								
cfs				18.9	15.0								
1997		1Q	2Q	3Q	4Q								
cfs		24.0	13.0	14.7	16.3								
lag cfs		20.2	17.0	15.7	15.2	Avg =	17.0	cfs					

Table 10. Evaporation Loss at Lake Avalon - WY 1997													
4/11/98													
8:56	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOT
Avalon ga ht, avg, ft	17.63	18.20	18.18	15.71	15.68	15.66	16.20	16.24	15.66	16.69	15.72	16.73	
Avg area Avalon, ac.	713	751	750	596	594	593	624	626	593	653	596	656	
Panevap Brantley, in.	5.00	6.74	7.94	10.10	12.52	15.85	15.75	13.18	12.18	9.25	5.23	6.40	120.14
Lakeevap Brantley, in.	3.85	5.19	6.11	7.78	9.64	12.20	12.13	10.15	9.38	7.12	4.03	4.93	92.51
Precip Brantley, in.	0.35	1.14	0.05	1.93	1.64	2.63	0.77	0.81	2.81	2.39	0.43	2.06	17.01
Netevap, inches	3.50	4.05	6.06	5.85	8.00	9.57	11.36	9.34	6.57	4.73	3.60	2.87	75.50
Evaploss Av, TAF	0.2	0.3	0.4	0.3	0.4	0.5	0.6	0.5	0.3	0.3	0.2	0.2	4.0

Table 11. Change in Storage, Lake Avalon - 1997														
(Gage heights are end of month)														
4/11/98														
8:59														
	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	TOT
	1996													
Gage EOM, ft	17.2	17.9	18.7	14.9	15.7	15.6	16.3	16.4	16.0	15.3	16.7	13.6	17.9	
Storage, AF	1925	2420	3027	509	966	907	1333	1397	1147	732	1590	84	2420	
Change sto, TAF		0.5	0.6	-2.5	0.5	-0.1	0.4	0.1	-0.3	-0.4	0.9	-1.5	2.3	0.5

Table 12. Data Required for River Master Manual Calculations, Water Year 1997													
6/22/98													
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	TOTAL
STREAMFLOW GAGING RECORDS, TAF													
Pecos R b Sumner Dam	0.0	0.1	26.1	4.3	5.3	41.9	6.1	44.4	5.6	5.8	20.4	0.0	160.0
Fort Sumner Main C	0.0	0.0	4.2	4.1	4.8	4.9	5.7	3.0	5.4	6.1	0.0	0.0	38.2
Pecos R nr Artesia	4.5	3.9	18.4	8.9	5.0	34.6	6.3	41.2	5.5	5.1	19.5	7.2	160.1
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	0.0	0.0	0.0	0.0	0.0
South Seven Rivers nr Lkwd	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
Rocky Arroyo at Hwy Br nr	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Pecos R at Dam Site 3	1.5	1.3	2.9	14.0	10.7	15.5	23.9	13.0	9.2	20.9	27.4	5.4	145.7
Pecos bel Avalon Dam	0.0	0.0	0.0	0.0	0.0	0.0	5.8	0.0	0.0	12.9	23.9	2.0	44.6
Carlsbad Main Canal	0.0	0.0	3.8	13.0	9.7	13.6	14.7	12.6	8.9	5.5	0.0	0.0	81.9
Dark Canyon at Carlsbad	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1
Pecos below Dark Canyon	1.1	1.0	1.2	1.5	4.2	1.5	6.3	1.3	1.5	14.8	24.6	3.3	62.4
Pecos R at Red Bluff	4.6	4.0	3.5	3.3	3.6	4.0	9.5	4.2	3.9	15.5	33.9	8.1	98.1
Delaware R nr Red Bluff	0.1	0.1	0.1	0.1	0.1	0.7	0.7	0.1	0.0	0.3	0.1	0.1	2.5
GAGE HEIGHTS													
													DEC96
Avalon gage ht, end mo	17.9	18.7	14.9	15.7	15.6	16.3	16.4	16.0	15.3	16.7	13.6	17.9	
Avalon gage ht, avg	17.63	18.20	18.18	15.71	15.68	15.66	16.20	16.24	15.66	16.69	15.72	16.73	
Alamogordo ga ht, end mo	57.05	58.75	53.98	55.49	55.28	58.21	57.81	57.98	58.50	57.31	48.97	52.54	
Alamogordo gage ht, avg	55.96	57.87	57.16	54.06	55.60	58.01	57.58	57.19	58.20	57.86	50.21	50.86	
Lake S Rosa ga ht, end mo	23.95	24.37	21.05	25.54	40.59	41.46	42.00	40.26	43.35	43.72	43.99	44.58	
Lake S Rosa ga ht, avg	23.72	24.13	23.49	22.42	33.27	42.81	41.57	41.00	41.47	43.61	43.84	44.29	
PRECIPITATION, INCHES													
Brantley Lake	0.35	1.14	0.05	1.93	1.64	2.63	0.77	0.81	2.81	2.39	0.43	2.06	17.01
Las Vegas FAA AP				1.53	1.05	2.69	3.74	2.72	5.62	0.32			17.67
Pecos National Monument				1.46	0.13	2.23	3.24	4.46	2.40	0.64			14.56
Santa Rosa				4.20	2.15	3.55	3.54	2.76	4.09	0.30			20.59
Lake Santa Rosa	0.97	1.35	0.15	3.99	1.59	3.69	3.27	4.79	5.43	0.02	0.91	2.81	28.97
Sumner Lake	0.41	1.19	0.08	5.10	1.12	3.10	3.54	1.90	2.07	0.48	0.90	2.04	21.93
PAN EVAPORATION, INCHES													
Lake Santa Rosa	3.72	5.04	8.5	5.86	8.73	9.88	11.93	9.2	7.51	5.81	3.75	3.66	83.59
Lake Sumner	2.47	2.13	9.33	8.24	11.22	15.22	18.28	12.64	11.03	7.45	3.94	1.56	103.51
Brantley Lake	5.00	6.74	7.94	10.10	12.52	15.85	15.75	13.18	12.18	9.25	5.23	6.40	120.14
OTHER REPORTS													
Base Acme-Art, TAF (USGS)	3.3	2.8	2.7	2.5	2.3	2.3	2.1	2.3	2.0	2.6	3.4	4.1	32.4
Pump depl Ac-Artesia, TAF	0.0	0.0	0.4	0.6	0.4	1.0	0.6	0.6	0.1	0.0	0.0	0.0	3.9
NM irrigation inv, acres													11761
NM Transfer water use, TAF													0
NM salvaged water, TAF													0
Texas, water stored NM, TAF	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
Texas, use Del water, TAF													

APPENDIX

RIVER MASTER'S RESPONSE TO STATES' OBJECTIONS

RESPONSE TO STATES' OBJECTIONS
Final Report, Accounting Year 1998

NEW MEXICO'S OBJECTIONS

1. Base Inflow, Acme to Artesia

New Mexico objected to some of USGS' decisions about hydrograph scalping, primarily where the base flow lines should be drawn. I discussed this issue in last year's Final Report, and repeat here some of the discussion for context:

"The differences in USGS's and New Mexico's results are caused by assumptions in separating base inflow from total flow. This matter was evaluated in New Mexico's Amended First Motion to Modify the River Master's Manual, and the Technical Representatives of the States could not agree on a common approach. USGS monitored the discussion at a meeting at which the states' technical representatives discussed the approaches to hydrograph scalping. The current approach, as outlined in the modified River Master's Manual, is to use the USGS determination for the Preliminary Report, and then for the River Master to make any adjustments based on consideration of the states' objections. USGS is to submit a statement outlining the procedures they used, which they did, in their item 11 furnished with their data package. However, USGS's statement does not give much detail" (1997 Final Report).

Another point I would like to make this year is about the difficulty of using USGS' graphs, which are very difficult to read and analyze. I have sent a letter to the USGS District Chief asking for a clearer plot of their analysis.

My review of New Mexico's objections resulted in the following conclusions:

January-February. In the January-February time frame, I find New Mexico's arguments valid, but I believe that New Mexico should have drawn the base flow line for Artesia Plus Pumping slightly lower, to correspond more closely with the lowest points on the hydrograph (see attached graph). For this reason, I accept New Mexico's figure for January and February, but with deductions of 130 AF and 30 AF respectively, as shown on the attached graph.

March. There is only 62 acre-feet of difference between USGS' and New Mexico's estimates for March. Both estimates involve a degree of judgment, and I do not find a compelling reason to change the USGS estimate, so I have retained it.

April-May. In the April-May time frame, I again find New Mexico's arguments to be convincing, but have adjusted their Artesia Plus Pumping line somewhat, resulting in deductions from New Mexico's estimates of 40 AF for April and 50 AF in May (see graph).

June-August. New Mexico did not object to USGS' values for this period.

September-November. In this period, New Mexico's estimates departed significantly from USGS'. My analysis, as shown on that attached graph, lies between the two estimates. I did not understand why New Mexico drew the lines for Artesia Plus Pumping and for Acme so high in October. Rather than recompute the flows for the period, which would have produced a third set of numbers, I observed that my lines are about half way between USGS and New Mexico for these three months, so I have averaged their estimates for the period.

December. I generally agree with New Mexico's analysis for December but have adjusted their number with a deduction of 40 acre-feet, as shown on the graph.

Overall results in acre-feet are as shown on this table and I have adopted a value of 34.2 TAF for the Base Inflow.

	NM	USGS	Diff	RM
Jan	3689	3320	369	3559
Feb	2610	2832	-222	2580
Mar	2767	2705	62	2705
Apr	2975	2499	476	2935
May	2767	2337	430	2717
Jun	2261	2261	0	2261
Jul	2091	2091	0	2091
Aug	2275	2275	0	2275
Sep	2678	1964	714	2321
Oct	2767	2644	123	2706
Nov	2380	3392	-1012	2886
Dec	5227	4058	1169	5187
	34487	**32378**	**2109**	**34223**

2. Flood Inflow, Carlsbad to Stateline.

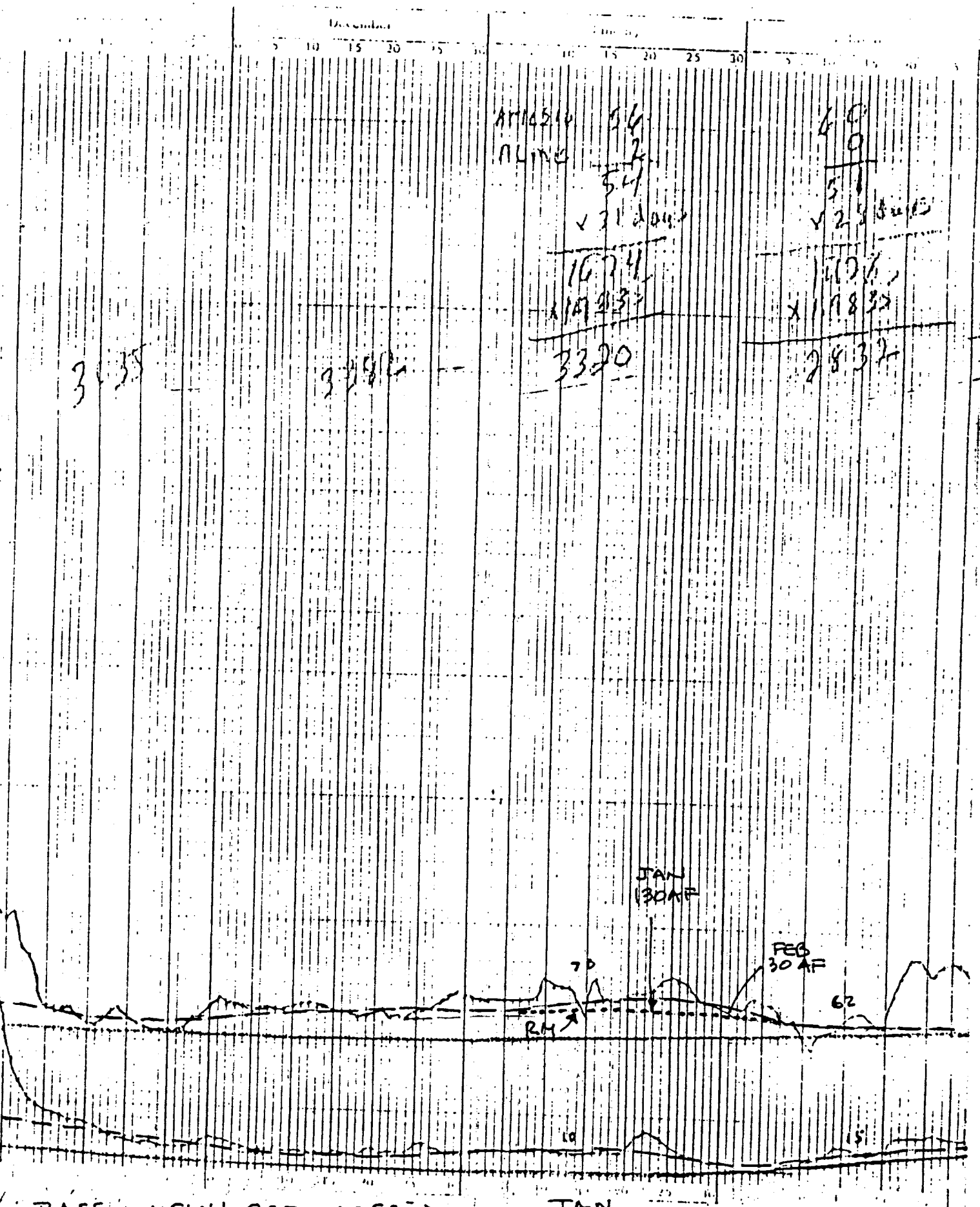
USGS submitted a correction for the gaged flow at Pecos River below Dark Canyon. I accept New Mexico's computation of the added flood inflow which increases the May inflow from 276 to 450 acre-feet.

3. **Final Calculated Departure**.

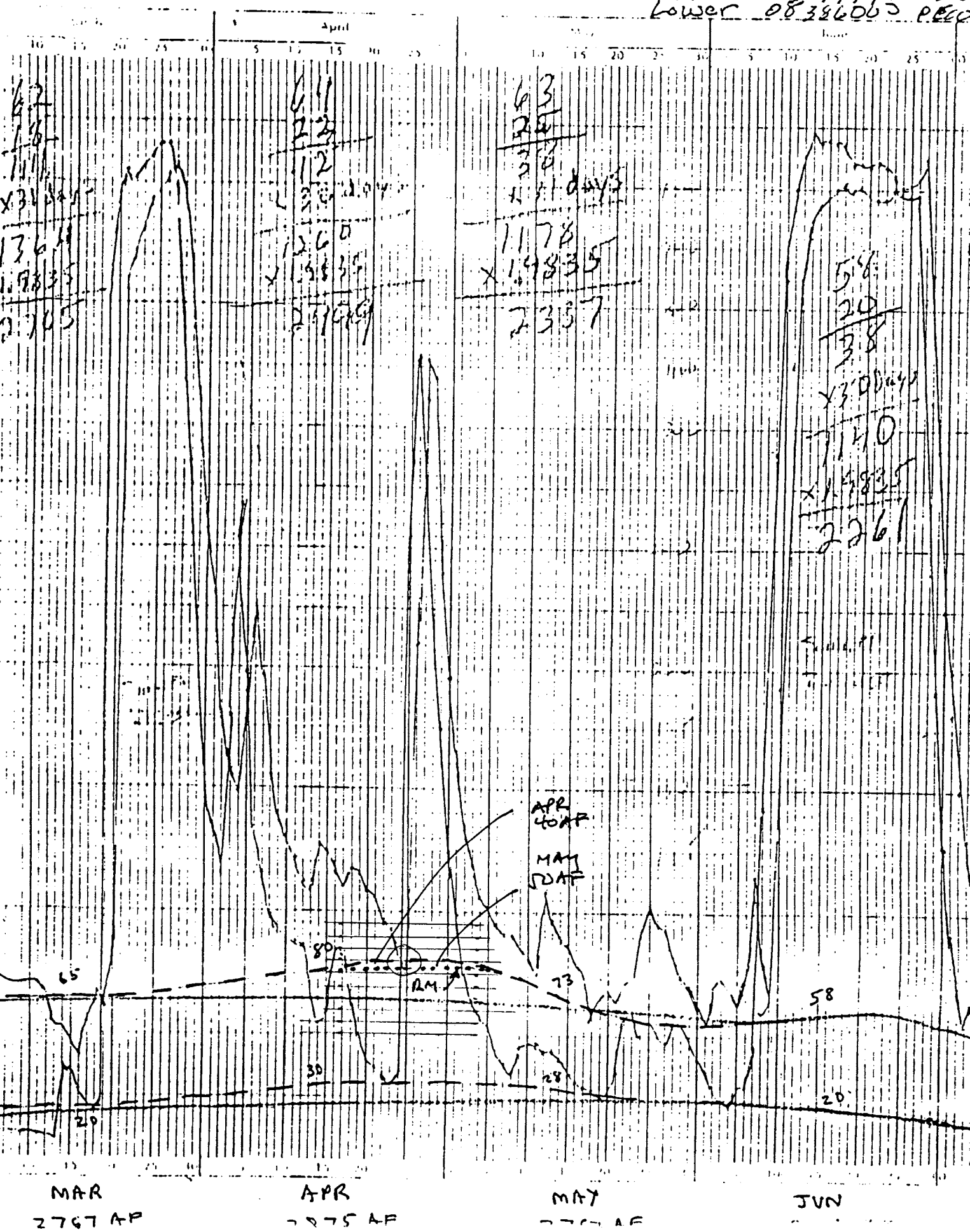
New Mexico arrived at +6.2 TAF and the Final Determination is +6.1 TAF after the River Master's determinations.

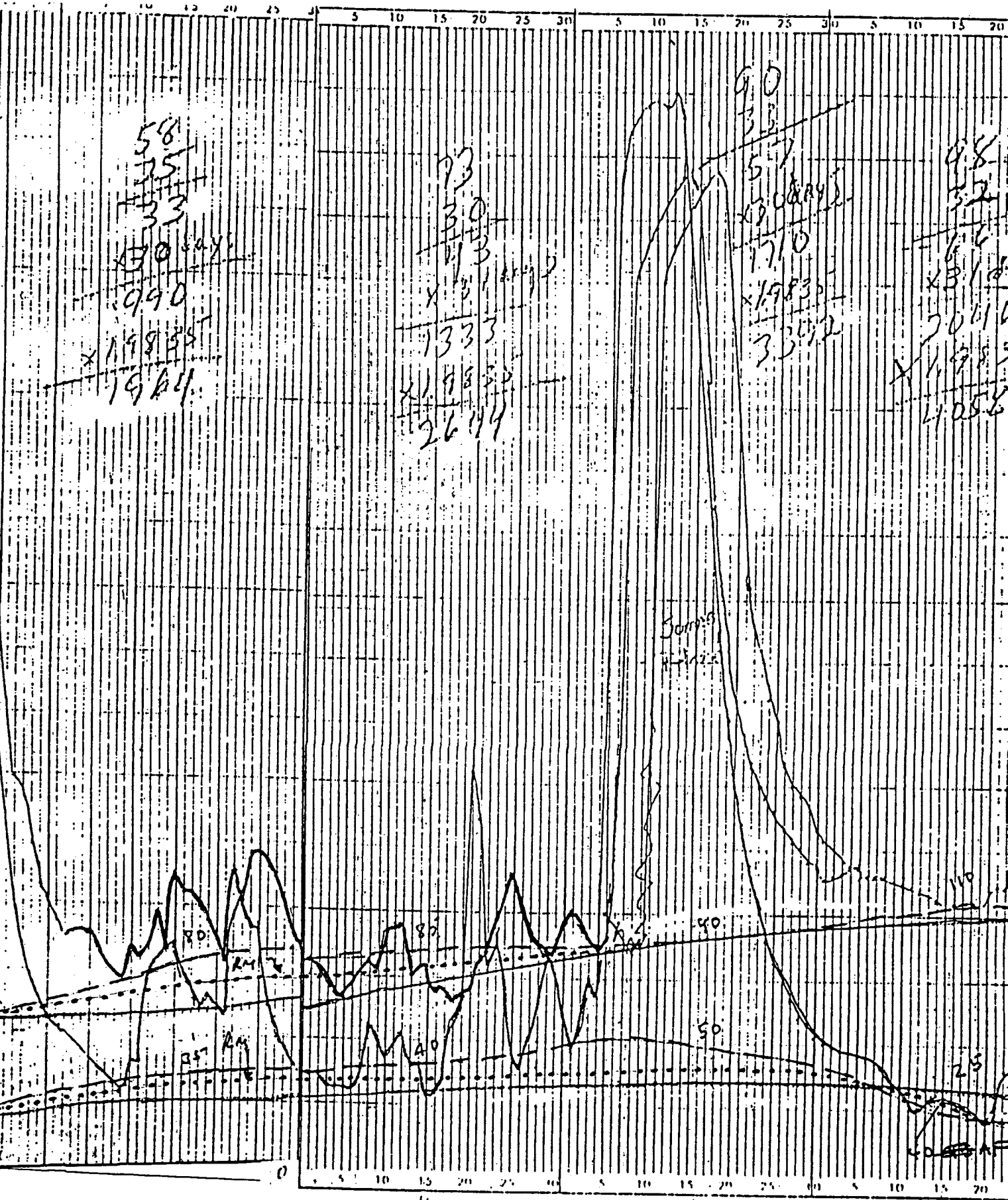
TEXAS' OBJECTIONS

Texas did not have any objections to the Preliminary Report.


December
5 10 15 20 25
10 15 20 25 30
5 10 15 20
ARMSTRONG 54
ALINE 2
54
x 31 days
1674
x 19.83
3320
3135
3484
46
9
55
x 28 days
1540
x 18.83
2832
JAN
130AF
FEB
30 AF
70
62
RM
10
15

1997 PRC BASEflow upper 44444444 PEC
lower 08386003 PEC




OCT
2767
NOV
2380
DEC
5227