

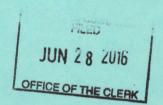
PECOS RIVER COMPACT

Report of the River Master

Water Year 2015

Accounting Year 2016

Final Report



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

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Neil S. Grigg River Master of the Pecos River 749 S. Lemay, Ste. A3, PMB 330 Fort Collins, Colorado 80524 i komunik kaj primak i saki mendek epiki

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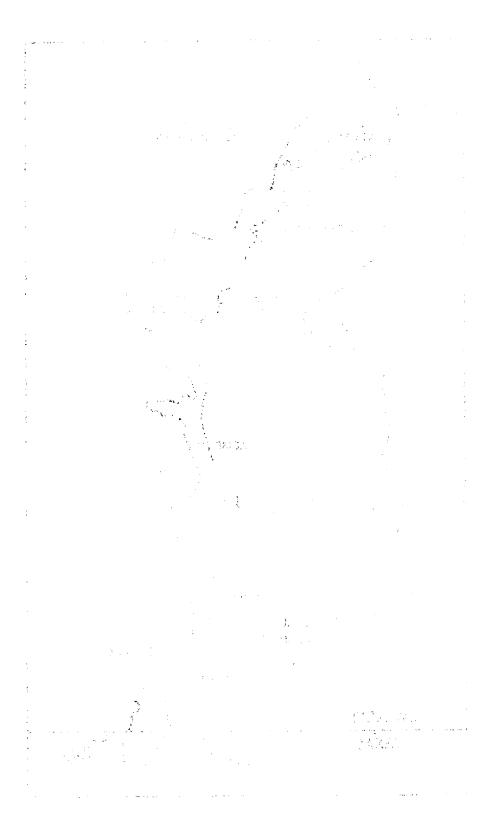
Mai	of Pecos	River	Basin	Showing	Accounting	Reaches

Purpose of the Report and Statement of Shortfall or Overage

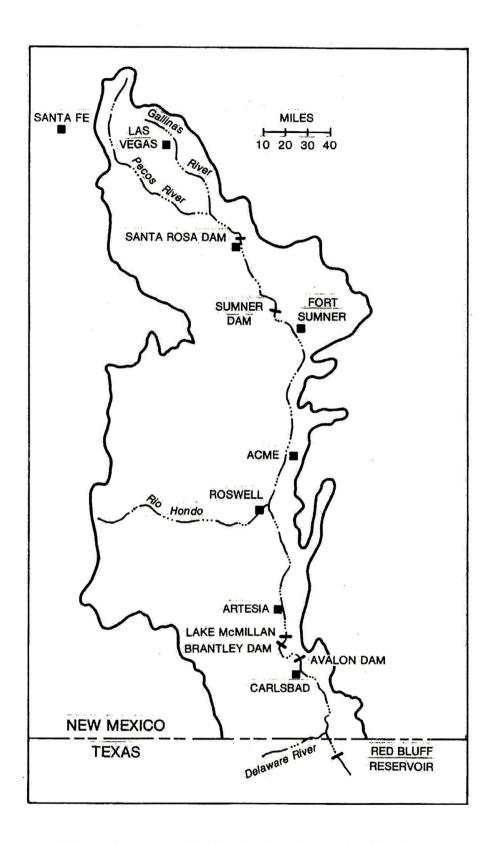
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Appendix: Response to States' Objections



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Map of Pecos River Basin Showing Accounting Reaches

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

Final Report of the River Master
Water Year 2015 - Accounting Year 2016
June 23, 2016

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 2015 was an overage of 11,900 acre-feet. The accumulated overage since the beginning of Water Year 1987 is 109,500 acre-feet.

Neil S. Grigg

River Master of the Pecos River

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	Pecos River Compact	
Acc	umulated Shortfall or Ov	erage
	June 23, 2016	
<u> </u>	04110 20, 2010	
	Annual Overage or	Accumulated Overage or
Water Year	Shortfall, AF	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
2013	-6,300	95,700
2014	1,900	97,600
2015	11,900	109,500

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Table 1. General Calculation of Annual Departures in TA	AF (B.1)		
Water Year	2015		
6/23/2016			
	WY 2013	WY 2014	WY 2015
B.1.a. Index Inflows			
(1) Annual flood inflow			
(a) Gaged flow Pecos R bel Alamogordo Dam	63.6	120.6	100.7
(b) Flood Inflow Alamogordo - Artesia (Table 2)	54.4	57.3	28.5
(c) Flood Inflow Artesia - Carlsbad (Table 3)	39.9	42.5	3.2
(d) Flood Inflow Carlsbad - State Line (Table 4)	23.2	122.8	6.2
Total (annual flood inflow)	181.1	343.2	138.6
(2) Index Inflow (3-year avg)			221.0
B.1.b. 1947 Condition Delivery Obligation			106.3
(Index Outflow)			
B.1.c. Average Historical (Gaged) Outflow			
(1) Annual historical outflow			
(a) Gaged Flow Pecos River at Red Bluff NM	51.0	146.6	101.1
(b) Gaged Flow Delaware River nr Red Bluff NM	12.2		
(c) Metered diversions Permit 3254 into C-2713	0.2		
Total Annual Historical Outflow	63.4		
(2) Average Historical Outflow (3-yr average)	-		121.7
(a) wording the content of all on (c) year ording of	-		1
B.1.d. Annual Departure	-		15.4
or the state of th			10.1
C. Adjustments to Computed Departure	-		-
Adjustments for Depletions above Alam Dam	 		
a. Depletions Due to Irrigation (Table 5)	2.0	-0.2	-3.2
b. Depl fr Operation of Santa Rosa Reservoir (Table 6)	8.6		
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	74.2	118.7	114.2
(b) Flood Inflow Alamogordo - Artesia	54.4		l
(c) Flood Inflow Artesia - Carlsbad	39.9	42.5	
(d) Flood Inflow Carlsbad - State Line	23.2		
Total (annual flood inflow)	191.7		
Recomputed Index Inflow (3-year avg)			228.4
Recomputed 1947 Condition Del Outflow			111.4
(Index Outflow)			
Recomputed Annual Departures			10.3
	-		
Credits to New Mexico			
C.2 Depletions Due to McMillan Dike			1.5
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
O.O DOMINION O.O. DOMINIO THYON TRACE			
Final Calculated Departure, TAF	+		11.9
i iliai Galodiated Departuro, 174		L	11.3

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Table 2. Determination of Flood Inflows, Alamogordo Dam to Artesia (B.3)	of Floc	od Inflov	vs, Alar	nogorda	Dam 1	to Artes	ia (B.3)						
Water Year	2015												
5/8/2016													
	JAN	FEB	MAR	APR	MAY	NOS	JUL	AUG	SEPT	OCT	NOV	DEC	TOT
Flow bel Sumner Dam	1.3	1.4	3.8	13.1	5.3	25.9	7.0	25.0	5.7	10.3	9.0	1.5	100.7
FtSumner Irrig Div	0.0	0.0	3.1	5.3	3.3	5.3	5.9	4.6	5.4	3.2	0.0	0.0	36.1
Ft Sumner ID Return	0.8	9.0	1.3	1.5	2.3	2.3	2.3	2.3	2.1	1.9	1.0	0.8	19.1
Flow past FS IDist	2.0	1.9	2.0	9.2	4.3	22.8	3.4	22.7	2.4	9.0	1.6	2.3	83.7
Channel loss	0.2	0.2	9.0	2.2	1.6	4.5	1.1	3.3	0.8	1.6	0.7	0.2	17.1
Residual Flow	1.8	1.7	1.5	7.1	2.7	18.3	2.3	19.3	1.6	7.4	6.0	2.1	9.99
Base Inflow	3.0	2.3	2.5	2.1	1.8	4.1	1.0	0.9	0.7	1.6	2.3	2.6	22.2
River Pump Divers	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.5
Residual, Artesia	4.8	4.0	3.8	9.5	4.5	19.6	3.3	20.1	2.1	9.0	3.2	4.7	88.3
Pecos Flow Artesia	5.2	4.0	4.2	4.5	16.6	10.8	14.3	22.9	5.4	16.0	7.7	5.4	116.9
Flood Inflow, AD-Art	0.4	0.0	0.4	4.7	12.1	-8.9	11.0	2.8	3.3	7.0	4.6	0.7	28.5
					-1		•						
Note: Whenever the computed flow past the District is less than the return flow set the flow past the District arrist to the	nputed flow	w past the	District	is less									
return flow (Manual, B.3.d)	6		5	2				:					
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Table 3. Determination of Flood Inflows, Artesia t	esia to Carlsbad (B.4)	1 (B.4)								-			
Water Year	2015												
6/18/2016													
	JAN	FEB	MAR	APR	MAY	NOS	JQ[AUG	SEPT	OCT	NOV	DEC	T0T
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	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	0.0	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pecos R at Dam Site 3	1.4	1.3	1.8	13.0	7.7	14.9	6.6	40.9	40.1	3.2	1.2	1.3	136.6
CB Sprgs New Water (from Table 7)	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7	2.0-	-0.7	-0.7	-8.6
Total Inflow, DS3 - CB	0.7	9.0	1.1	12.2	7.0	14.2	9.1	40.1	39.3	2.5	0.5	9.0	127.9
Evap Loss, Lake Avalon (from Table 10)	0.2	0.3	0.3	0.4	0.3	0.5	0.5	0.7	0.4	0.0	0.2	0.1	3.7
Storage Chg, Lake Avalon (from Table 11)	9.0	0.3	-2.4	0.1	0.0	1.6	-0.8	2.8	0.0	-3.8	0.7	0.8	-0.2
Carls ID diversions	0.0	0.0	3.0	11.0	5.8	11.8	8.5	10.5	6.3	4.7	0.0	0.0	61.6
93% CID diver	0.0	0.0	2.8	10.3	5.4	10.9	6.7	9.7	5.9	4.4	0.0	0.0	57.3
Other depletions	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.5	0.1	0.1	0.1	0.1	4.1
Dark Canyon at Csbad	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.2	0.0	0.0	4.0
Pecos b Dark Canyon	2.0	1.9	2.0	1.9	2.4	2.2	2.1	19.9	25.3	4.8	2.6	2.3	69.3
Pecos R at Carlsbad	2.0	1.9	2.0	1.9	2.2	2.2	2.1	19.9	25.3	4.6	2.6	2.3	68.9
Total Outflow	2.8	2.5	2.8	12.8	8.0	15.2	10.0	33.3	31.7	5.5	3.6	3.3	131.1
Flood Inflow, DS3-CB	2.1	1.9	1.7	0.0	0.1	0.0	0.9	φ. 9	-7.7	2.8	3.1	2.8	3.1
Flood Inflow, Art-CB	2.1	1.9	1.7	9.0	1.0	1.0	0.9	-6.9	-7.7	2.8	3.1	2.8	3.2

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Water Year	2015				
6/18/2016					
	BCB - RB		Del R*	DC	
4	RM				
Jan	0.1		0.0	0.0	
Feb	0.0		0.0	0.0	
Mar	0.1		0.0	0.0	
Apr	0.1		0.0	0.0	
May	0.8		0.1	0.2	
Jun	0.2		0.0	0.0	
Jul	1.0		0.1	0.0	
Aug	0.0		0.0	0.0	
Sep	0.3		0.9	0.0	
Oct	0.7		1.0	0.2	
Nov	0.2		0.0	0.0	
Dec	0.2		0.0	0.0	
Total	3.6		2.2	0.4	
Summary of flood	l inflows, Carlsba	d to State Li	ne, TAF		
	sbad + Dark C R	M calcs)			4.0
Delaware River					2.2
Total Flood Inf	low, Carlsbad to	State Line			6.2
	tion was amende				

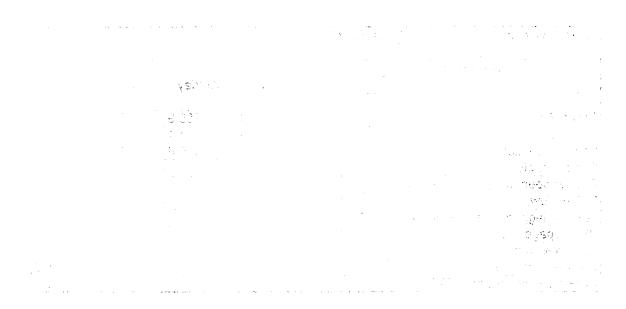
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Table 5. Depletions Due to Irrigation Above Sumner Dam (C.1.a)	nner Dan	n (C.1.8) (E					
Water Year	2015							
5/8/2016								
	APR	MAY	NOC	JUL	AUG	SEPT	OCT	OCT TOTAL
Precip Las Vegas FAA AP	0.57	4.43	3.95	3.29	2.60	0.50	4.28	19.62
Eff prec Las Veg FAA AP	0.56	3.55	3.27	2.80	2.29	0.49	3.47	16.43
Precip Pecos Natl Monument	0.13	2.82	1.32	4.52	2.27	0.43	3.73	15.22
Eff Precip Pecos RS	0.13	2.46	1.25	3.61	2.04	0.42	3.11	13.02
Precip Santa Rosa	0.63	5.13	1.62	4.83	3.35	0.46	3.93	19.95
Eff Precip Santa Ro	0.62	3.86	1.51	3.75	2.84	0.45	3.26	16.29
Average eff precip, ft	0.04	0.27	0.17	0.28	0.20	0.04	0.27	1.27
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	0.15	0.09	0.19	0.02	0.07	0.14	0.00	0.66
Acres (most recent inventory)	11529							
Streamflow depletion (actual use), AF	7641.2							
1947 depletion, AF	10804							
Difference (actual use - 1947 depletion), TAF	-3.2							
Adjustment to Gaged Flow, Pecos River below Sumner Dam, TAF =	Sumner	Dam, T	AF =			-3.2		

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Widner Vear Colin Colin Widner Vear Colin	Water Year			ממין שמין	Table 6. Depletions Due to Santa Rosa Reservoir Operations (C. 1.0)	ממוסווא	ر ز						_	
Markey M		2015												
The property of the property o	6/18/2016													
The Chief Berry and 4,200 feet to value shown; LSR 1997 fables used (COE), Aid 4,700 feet to value shown; LSR 1997 fables used (COE), Aid 4,700 feet to value shown; LSR 1997 fables used (COE), Aid 4,700 feet to value shown; LSR 1997 fables used (COE), Aid 4,700 feet to value shown; LSR 1997 fables used (COE), Aid 4,700 feet to value shown; LSR 1997 fables used (COE), Aid 4,700 feet to value shown; LSR 1997 fables used (COE), Aid 4,700 feet to value shown; LSR 1998 fables used (COE), Aid 4,700 feet to value shown; LSR 1999 fables used (COE), Aid 4,700 fables used (COE		JAN	FEB	MAR	APR	MAY	NOS	JUL	AUG	SEPT	OCT	NOV	DEC	TOTAL
## and ##	LS 2001 table (USBR),	add 4,200	feet to val	ue shown;	LSR 1997	tables use	d (COE); /	dd 4,700 i	eet to valu	ie shown				
as acres, avg 2756 2890 2842 2887 3572 34287 28592 2289 32443 30889 32443 30889 3244 3089 3244 470 470 470 470 470 470 470 470 470 4	Lk Sumner ga ht, avg	63.3	64.3	64.9	63.9	8.09	60.2	59.5	60.5	59.4	28.7	61.4	63.3	
## actions	LS content, AF, avg	42209		46778	43887	35722	34287	31994	34999	32443	30889	37205	42209	
Second contents	LS area, acres, avg	2758	2880	2942	2837	2431	2353	2238	2392	2260	2182	2510	2758	
E'exp. inches 140 234 477 8.83 8.45 6.91 7.89 7.89 6.05 7.89 6.05 0.78 0.05	LS evap, inches	1.8	3.8	6.2	11.5	11.0	11.6	12.1	12.1	9.7	6.7	4.2	3.7	94.37
Secial inches 151 0.67 0.59 0.18 2.95 4.39 6.05 1.75 6.15 0.59 0.59 SEVERy inches -0.11 2.27 4.18 6.55 1.50 1.50 1.16 4.83 0.59 0.59 0.59 0.59 SEVERy inches -0.01 2.27 4.18 8.65 1.30 1.757 4.60 4.60 4.60 0.52 0.43 0.69 0.48 0.49 0.68 0.55 0.43 0.69 0.78 0.48 0.69 0.78 0.78 0.69 0.78 0.69 0.78 0.69 0.78 0.69 0.78 0.69 0.78 0.68 0.78 0.69 0.78 0.66 0.78 <t< td=""><td>.77 LS Evap</td><td>1.40</td><td>2.94</td><td>4.77</td><td>8.83</td><td>8.45</td><td>8.91</td><td>9.35</td><td>9.29</td><td>7.48</td><td>5.15</td><td>3.21</td><td>2.88</td><td>72.67</td></t<>	.77 LS Evap	1.40	2.94	4.77	8.83	8.45	8.91	9.35	9.29	7.48	5.15	3.21	2.88	72.67
SE Verap, Inches -0.11 2.27 4.18 8.65 5.50 4.52 3.30 7.53 6.32 0.22 2.62 1.89 Tevaploss, TAF -0.02 0.55 1.03 2.06 1.11 0.89 0.62 1.50 1.19 0.60 0.62 1.50 0.62 1.50 0.63 0.643 0.65 1.71 0.60 0.62 1.60 0.65 0.63 0.64 0.65 0.65 0.65 0.64 0.65 <td< td=""><td>LS Precip, inches</td><td>1.51</td><td>0.67</td><td>0.59</td><td>0.18</td><td>2.95</td><td>4.39</td><td>6.05</td><td>1.76</td><td>1.16</td><td>4.83</td><td>0.59</td><td>0.99</td><td>25.67</td></td<>	LS Precip, inches	1.51	0.67	0.59	0.18	2.95	4.39	6.05	1.76	1.16	4.83	0.59	0.99	25.67
Perapices, TAF Color Col	Net LS Evap, inches	-0.11	2.27	4.18	8.65	5.50	4.52	3.30	7.53	6.32	0.32	2.62	1.89	47.00
Cost ga Ht, avg 36 60 37.57 36.67 37.95 46.19 44.75 45.84 46.02 46.52 44.94 content, AF, avg 69359 72256 69666 73416 81099 101447 96160 100180 100865 1062 46.50 3682 3682 avap, inches 2.84 3.031 2.86 3.70 3.26 8.77 6.08 3.74 1.75 6.68 3.31 3.74 2.86 SR Evap, inches 1.41 1.24 0.66 6.27 7.06 6.88 3.77 6.68 3.77 6.89 3.31 3.74 2.86 SR Evap, inches 1.44 0.66 6.64 2.72 6.66 6.68 2.07 1.14 1.35 6.68 3.77 6.68 3.77 6.89 3.31 3.74 2.66 SR Evap, inches 1.41 0.36 1.42 1.42 1.62 4.83 3.32 3.31 3.74 2.66 SR Evap, inches </td <td>LSum Evaploss, TAF</td> <td>-0.02</td> <td>0.55</td> <td>1.03</td> <td>2.05</td> <td>1.11</td> <td>0.89</td> <td>0.62</td> <td>1.50</td> <td>1.19</td> <td>90.0</td> <td>0.55</td> <td>0.43</td> <td>9.94</td>	LSum Evaploss, TAF	-0.02	0.55	1.03	2.05	1.11	0.89	0.62	1.50	1.19	90.0	0.55	0.43	9.94
Configured, A.P., and endinger, and endinger endinger, and endinger endinger,	S Rosa da ht avo	36.60	37.57	36.67	37.95	40.37	46.19	44.75	45.84	46.02	46.50	45.24	44.94	
Street, access 145 2943 3031 2949 3070 3266 3780 3632 3746 3764 3808 3681 3650 3878 3778 3788	I SR content AF avo	69359		69565	73416	81089	101497	96160	100180	100856	102672	97954	96852	
## Size Fig. 8.7	I SR area acres avo	2943		2949	3070	3266	3780	3632	3746	3764	3808	3681	3650	
SREVABLE 2.86 3.86 6.72 7.05 7.25 8.20 8.60 7.70 6.58 3.31 3.74 2.86 SREVABLE 1.45 1.24 0.66 6.42 2.12 2.62 4.83 3.35 0.46 3.35 0.135 0.064 SREVABLINCHES 1.45 1.45 0.66 6.42 2.12 2.13 1.65 3.35 0.135 0.062 EVAPIOSS, TAF 0.36 0.67 1.49 0.66 4.2 2.12 2.50 1.14 1.36 1.32 0.02 2.22 EVAPIOSS, TAF 0.35 0.67 1.49 1.64 0.58 2.07 1.14 1.35 0.15 0.02 0.73 0.068 EVAPIOSS, TAF 0.35 1.21 2.52 3.69 1.69 2.07 1.14 1.35 0.15 0.07 0.07 EVAPIOSS, TAF 0.35 1.27 2.52 3.69 1.69 2.07 1.14 1.35 0.05 0.07 0.07 EVAPIOSS, TAF 0.35 1.27 2.52 3.69 1.69 2.07 1.14 1.35 0.05 0.07 EVAPIOSS, TAF 0.35 1.1237 1.15343 1.17303 1.16811 1.35734 1.28154 1.35179 1.35299 1.35169 1.30101 CONTINUEL, AF 1.106 0.63 -0.24 1.23 0.50 -0.03 0.69 -0.26 0.28 0.39 EVAPORATION 0.41 1.06 0.63 -0.24 1.23 0.50 0.03 0.69 -0.26 0.28 0.39 EVAPORATION 0.41 1.05 0.63 -0.24 1.23 0.50 0.03 0.69 -0.26 0.28 0.39 EVAPORATION 0.41 1.05 0.63 -0.24 1.23 0.50 0.03 0.69 -0.26 0.28 0.39 EVAPORATION 0.41 0.41 0.41 0.41 0.41 0.41 0.41 0.41 0.41 0.41 0.41 EVAPORATION 0.42 0.4	LSR evap, inches	3.7		8.7	9.2	9.4	10.7	11.2	10.0	8.5	4.3	4.9	3.7	89.30
Precip, inches 141 124 0.66 0.63 5.13 1.62 4.83 3.35 0.46 3.93 1.35 0.64 Fixed, inches 145 2.64 6.06 6.42 2.12 6.58 3.77 4.35 6.12 -0.20 0.73 0.88 Fixed, inches 145 2.64 6.06 6.42 2.12 6.58 3.77 4.35 6.12 -0.20 0.73 0.88 Fixed, inches 145 2.64 1.64 0.58 0.68 1.76 4.35 1.92 -0.20 0.73 0.88 Fixed, inches 145 0.36 1.27 1.49 1.64 0.58 0.70 1.41 1.36 1.92 -0.20 0.73 0.88 Fixed, inches 146 1.25 1.25 3.69 1.69 2.96 1.76 2.86 3.11 -0.14 1.28 1.11 Contents A 4082 4.23 4.20 4.23 4.20 4.22 4.22 4.60 4.60 4.60 4.60 4.60 4.60 Fixed, acres 14082 4.23 4.20 4.23 4.20 4.22 4.22 4.22 4.60 4.60 4.60 4.60 Fixed, acres 14082 0.37 0.41 1.05 0.63 0.24 1.23 0.50 0.03 0.69 -0.26 0.28 0.39 Int-1947evaploss, TAF 0.04 0.80 1.47 2.04 4.20 4.12 0.05 0.03 0.69 0.03 0.69 0.03 Fixed, acres 14082 6.25 4.20 4.22 4.22 4.22 4.22 4.20 6.03 0.69 0.03 0.69 0.03 Fixed, acres 14082 6.20 4.20 4.22 4.22 4.22 4.22 4.22 4.22 4	.77 LSR Evap	2.86	3.88	6.72	7.05	7.25	8.20	8.60	7.70	6.58	3.31	3.74	2.86	68.76
SR Evap, Inches 1.45 2.64 6.06 6.42 2.12 6.68 3.77 4.35 6.12 -0.62 2.39 2.22 Evaploss, TAF 0.36 0.67 1.49 0.58 2.07 1.14 1.36 6.12 -0.62 0.73 0.68 evaploss, TAF 0.33 1.21 2.52 3.69 1.76 1.86 1.17 0.14 1.26 0.20 0.73 0.68 contents, AF 111568 117287 11634 16.81 1.3614 135179 133299 133661 135169 139061 area acres 4002 423 4204 420 4600 <td< td=""><td>LSR precip, inches</td><td>1.41</td><td>1.24</td><td>99.0</td><td>0.63</td><td>5.13</td><td>1.62</td><td>4.83</td><td>3.35</td><td>0.46</td><td>3.93</td><td>1.35</td><td>0.64</td><td>25.25</td></td<>	LSR precip, inches	1.41	1.24	99.0	0.63	5.13	1.62	4.83	3.35	0.46	3.93	1.35	0.64	25.25
Evaploss, TAF 0.36 0.67 1.49 1.64 0.58 2.07 1.14 1.36 1.92 0.0.20 0.73 0.68 evaploss, TAF 0.33 1.21 2.52 3.69 1.69 2.96 1.76 2.86 3.11 0.0.14 1.28 1.11 contents, AF 111568 117287 116343 117303 116811 135784 128154 135299 133561 135159 139061 area, acres 4092 4233 4209 4234 4221 4600 4500 4500 4500 4500 evaploss, TAF 0.04 0.14 1.05 0.63 0.53 0.24 0.03 0.69 0.03 0.69 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.0	Net LSR Evap, inches	1.45		90.9	6.42	2.12	6.58	3.77	4.35	6.12	-0.62	2.39	2.22	43.51
Storage adjustment, TAF Storage adjustment Tok Storage adjustment, TAF Storage adjustment, TAF Storage adjustment, TAF Storage adjustment Tok Storage	LSR Evaploss, TAF	0.36	0.67	1.49	1.64	0.58	2.07	1.14	1.36	1.92	-0.20	0.73	0.68	12.44
contents, AF 111568 117287 116811 135784 128154 135179 1335199 135159 135159 135169 139061 area, acres 4092 4223 4229 4234 4221 4600 <td>Total evaploss, TAF</td> <td>0.33</td> <td>1.21</td> <td>2.52</td> <td>3.69</td> <td>1.69</td> <td>2.96</td> <td>1.76</td> <td>2.86</td> <td>3.11</td> <td>-0.14</td> <td>1.28</td> <td>1.11</td> <td>22.38</td>	Total evaploss, TAF	0.33	1.21	2.52	3.69	1.69	2.96	1.76	2.86	3.11	-0.14	1.28	1.11	22.38
STATE 111566 117287 116343 117303 116811 135784 126154 135129 133299 133611 136159 139061 States, acres 4092 4233 4234 4221 4600 4500 4600 4600 4600 4600 4600 4600 States, acres 4092 4233 4234 4336 43										_				
area, acres 4092 4233 4204 4521 4600 4559 4600	Sum contents, AF	111568	117287	116343	117303	116811	135784	128154	135179	133299	133561	135159	139061	
Storage adjustment, TAF Storage adjustment to rest from 129.3 TAF Storage adjustment to rest from 129.3 TAF Storage adjustment to rest from 129.3 TAF, subtract from current year less than 129.3 TAF, subtract from current year less than 129.3 TAF, previous year from 129.3 TAF, previous year from 129.3 TAF, previous year from 229.3 TAF, previous year from 229.3 TAF, subtract than 129.3 TAF, previous year from 129.3 TAF, subtract than 129.3 TAF, previous year from 129.3 TAF, subtract than 129.3 TAF, previous year from 129.3 TAF, subtract than 129.3 TAF, previous year from 229.3 TAF, subtract than 129.3 TAF, s	1947 area, acres	4092		4209	4234	4221	4600	4559	4600	4600	4600	4600	4600	
National Columbia 1.05 0.63 -0.24 1.23 0.50 -0.03 0.69 -0.26 0.28 0.39 5	1947 evaploss, TAF	-0.04		1.47	3.05	1.93	1.73	1.25	2.89	2.42	0.12	1.0	0.72	17.37
STMENT FOR EXCESSIVE STORAGE IN SANTA ROSA RESERVOIR Ear Sumner Sto 2014 2015 2015 2015 2015 2015 2015 2015 2016 2014 2014 2016 2015 2015 2016	current-1947evaploss	0.37	0.41	1.05	0.63	-0.24	1.23	0.50	-0.03	0.69	-0.26	0.28	0.39	5.01
ear Sumner Sto ear Sumner Sto djustment, TAF Adjustment, TAF Adjustment, TAF Both great Both great Current ye						,	Annual adj	ustment fo	r excess e	vaporation				5.0
ear Sumner Sto ear S R Sto djustment, TAF Adjustment, TAF Adjustment, TAF Adjustment, TAF Adjustment, TAF Storage at Both equal Both great														
ear Sumner Sto ear S R Sto djustment, TAF Adjustment, TAF Adjustment, TAF Storage at Both equal Both great Current ye	ADJUSTMENT FOR E	XCESSIVE		E IN SANT	A ROSA F	ESERVOI								
ear Sumner Sto ear S R Sto djustment, TAF Adjustment, TAF Adjustment, TAF Storage at Both equal Both great Current ye				2014	2014	2015	2015							
djustment, TAF Adjustment, TAF Adjustment, TAF Adjustment, TAF Storage at Both equal Both great Beath great Both great Current year.				Gage	Storage	Gage	Storage				-		;	
djustment, TAF Adjustment, TAF Adjustment, TAF Storage at Both equal Both great Both great Both great Current ye	EndYear Sumner Sto			4262.55	42006	4263.90	43887							
djustment, TAF Adjustment, TAF Adjustment, TAF Storage at Both equal Both great Both great Current years	EndYear S R Sto			4736.55	69211	4745.00	97072							
Storage ad Both equal Both great Current ye	Sum				111217		140959							
Storage ac Both equa Both great Current ye	Sto Adjustment, TAF						11.7							
Storage ac Both equa Both great Current ye	Adjustm Ex Evap, TAF						5.0							
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 year less than 129.3 TAF, subtract 129.3 TAF from current year	Total Adjustment, TAF						16.7							
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 year less than 129.3 TAF, subtract 129.3 TAF from current year greater than 129.3 TAF, previous year less than 129.3 TAF, subtract 129.3 TAF from current year						1								
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		Storage	adjustmen											
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		Both equ	ial or less	han 129.3	TAF, adjus	tment is ze	970			-				
Current year greater than 129.3 TAF, previous year less than 129.3 TAF, subtract 129.3 TAF from current year		Current	der tran	29.3 Trif.	AE previo	ovidus ito	than 120	TAF Sub	tract previo	Tre vear fr	T 29 3 T	AF.		
		Current	rear greate	r than 129.	3 TAF, pre	vious year	less than	129.3 TAF	subtract	129.3 TAF	from curre	ıt year		
)											



Water Year	2015	3			
6/18/2016					
		TAF	AF/day	cfs	Totals
Pecos R bel DC		69.3	189.9	95.7	95.7
Dark Canyon		0.4	1.1	0.6	0.6
Pecos R bel Lake Avalon		53.2	145.8	73.5	73.5
Depletion, cfs					2.0
CID lag seep, cfs (from Table 8)					5.9
Return flow, cfs					1.0
Lake Av lagged seep, cfs (from Table 9)					25.7
PR seepage, cfs					3.0
Carls new water, cfs					-11.9
Carls new wat, TAF					-8.6
Carls new wat monthly, TAF					-0.7

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Table 8. Carlsbad Main	bad Mair	າ Canal Seepage Lagged [B.4.c.(2)(e)]	eebade	Lagged	[B.4.c.(;	5)(e)]							
Water Year	2015												
5/8/2016													
	JAN	FEB	MAR	APR	MAY	NNS	JUL	AUG	SEPT	OCT	NOV	DEC	TOTAL
WY 2015													:
CID, TAF	0.0	0.0	3.0	11.0	5.8	11.8	8.5	10.5	6.3	4.7	0.0	0.0	61.6
days/mo	31	28	31	30	31	30	31	31	30	31	30	31	365
cfs	0	0.0	49.3	185.5	94.0	197.6	138.7	170.0	106.2	76.1	0.0	0.0	84.8
cfs, qtr avg			17.0			158.3			138.6			25.6	
WY 2014		Q Q	2Q	30	4Q								
FLOWS, cfs				123.5	21.5								
SEVEN %				8.6	1.5								
		•											•••
WY 2015 lagged	eq	ā	2Q	ဗ္က	4								
FLOWS, cfs		17.0	158.3	138.6	25.6								
SEVEN %		1.2	11.1	9.7	1.8								
LAG		2.5	6.2	8.7	6.0	Avg =	5.9	cfs					

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Table 9. Lake Avalon	Avalon I	Leakage	.eakage Lagged [B.4.c.(2)(g)]	[B.4.c.(2	(6)]								
Water Year	2015												
5/8/2016													
WY 2015	JAN	FEB	MAR	APR	MAY	NUC	JUL	AUG	SEPT	ОСТ	NOV.	DEC	TOT
4. 5. MIN	75 00	77 77	70.04	70.40	70 50	07.72	76 63	77 50	1000	1	100	1	
Tiev ivivi repu	0.63	10.47	10.07	0.45	00.00	74.49	/0.0/	00.77	0.00	0.62	73.00	4.00	
ga ht, avg*	18.99	19.47	19.31	16.43	16.56	17.49	18.57	20.50	21.00	18.93	16.60	17.68	
cfs	28.8	31.1	30.3	16.5	17.2	21.6	26.8	36.0	38.4	28.5	17.3	22.5	
days	31	28	31	30	31	30	31	31	30	31	30	31	365
cfs avg	30.0			18.4			33.7			22.8			26.2
WY 2014		á	20	gg	40								
cfs				23.2	22.2								
WY 2015 lagged	Jed Jed	ά	20	gg	40								
cfs		30.0	18.4	33.7	22.8				-				
lag cfs		26.3	22.9	28.0	25.7	25.7 Avg =	25.7 cfs	cfs					
* Computed as WS elev by NM Report minus Gage datum at 3157.0 (USBR datum)	s WS ele	v by NM	Report n	ninus Ge	age datu	m at 315	7.0 (USI	3R datur	(F				

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Table 10. Evaporation Loss at Lake Ava	Loss at L	ake Ava	llon [B.4.d.(1)]	d.(1)]										
Water Year	2015													
5/8/2016														
	JAN	FEB	MAR	APR	MAY	NOC	JUL	AUG	SEP	OCT	NOV	DEC	TOT	
Av WS NM Rept	75.99	76.47	76.31	73.43	73.56	74.49	75.57	77.50		78.00 75.93	73.60	74.68		
Avalon ga ht, avg, ft*	18.99	19.47	19.31	16.43	16.56	17.49	18.57	20.50	21.00	18.93	16.60	17.68		
Avg area Avalon, ac**	806	841	829	829	646	704	111	918	956	802	648	716	•	
Panevap Brantley, in.	4.65	5.60	5.73	10.14	11.34	11.34 12.01	12.60	12.47	8.71	5.90	4.80	4.34	98.29	
Lakeevap Brantley, in.	3.58	4.31	4.41	7.81	8.73	9.25	9.70	9.60	6.71	4.54	3.70	3.34	75.68	
Precip Brantley, in.	1.09	0.16	0.37	1.04	3.28	1.01	1.92	0.83	2.14	5.08	0.19	0.86	17.97	
Netevap, inches	2.49	4.15	4.04	6.77	5.45	8.24	7.78	8.77	4.57	-0.54	3.51	2.48	57.71	
Evaploss Av, TAF	0.17	0.29	0.28	0.36	0.29	0.48	0.50	0.67	0.36	-0.04	0.19	0.15	3.71	
* Computed as WS elev by NM Report minus Gage datum at 3157.0 (USBR datum	v by NM	Report r	minus Ga	age datuı	m at 315	7.0 (USE	3R datun	J)						
** Based on USBR Area and Capacity Table in effect January 1, 1997	a and Ca	apacity T	able in e	ffect Jan	uary 1,	1997								

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Table 11. Change in Storage, Lake	Storage	, Lake A	Avalon [B.4.d.(2)]	.4.d.(2)]										
(Gage heights are end of month)	om jo pr	nth)												
Water Year	2015													
5/8/2016														
								,						-
	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT OCT		NOV	DEC	TOT
	2014	2015										i		
WS NM Rept	75.6	76.3	76.6	73.3	73.5	73.5	7.5.7	74.7	78.0	78.0	73.2		75.3	
Gade FOM #*	186						1	17.7	21.0	21.0	16.2	17.2	18.3	٠
Storage AF**	2948	``	ļ					2275	}	5026	1271	1925	2718	
Change sto. TAF					1	1		-0.8	2.8	0.0	-3.8	0.7	0.8	-0.2
* Computed as WS elev by NM Report minus Gage datum at 3157.0 (USBR datum)	elev by N	IM Repo	rt minus	Gage da	itum at 3	157.0 (U	ISBR dat	(mn						
** Based on USBR Area and Capacity Table in effect January 1, 1997	Area and	Capacity	/ Table ir	ר effect	lanuary '	1, 1997								

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Table 12. Data Required f	or Rive	r Masi	ter Ma	nual C	alculat	ions					Ι	<u></u>	
Water Year	2015												
6/18/2016		_											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	TOTAL
	<u> </u>												
STREAMFLOW GAGING RECO	DRDS, T	AF										<u> </u>	
Pecos R b Sumner Dam	1.3	1.4	3.8	12.1	5.3	25.0	7.0	25.0	6.7	10.2	0.0	4.5	100.7
Fort Sumner Main C	0.0	1.4 0.0	3.6		3.3	25.9 5.3	5.9	25.0 4.6	5.7 5.4	10.3 3.2	0.6		100.7 36.1
Pecos R nr Artesia	5.2	4.0	4.2	4.5	16.6	10.8	14.3	22.9	5.4	16.0		5.4	116.9
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
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
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
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
Pecos R at Dam Site 3	1.4	1.3	1.8	13.0	7.7	14.9	9.9	40.9	40.1	3.2	1.2	1.3	136.6
Pecos bel Avalon Dam	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22.4	29.2	1.6	0.0	0.0	53.2
Carlsbad Main Canal	0.0	0.0	3.0	11.0	5.8	11.8	8.5	10.5	6.3	4.7	0.0	0.0	61.6
Dark Canyon at Carlsbad	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.4
Pecos below Dark Canyon	2.0	1.9	2.0	1.9	2.4	2.2	2.1	19.9	25.3	4.8	2.6	2.3	69.3
Pecos R at Red Bluff	4.9	4.2	4.5	4.3	5.3	4.0	4.3	19.6	27.8	11.7	5.5		101.1
Delaware R nr Red Bluff	0.3	0.3	0.4	0.3	0.3	0.2	0.2	0.2	1.0	1.4	0.4	0.4	5.4
												ļ	
GAGE HEIGHTS										-	-	ļ	-
Avaion gage ht, end mo	76.3	76.6	73.3	73.5	73.5	75.7	74.7	78.0	78.0	73.2	74.2	75.3	
Avalon gage ht, avg	76.0	76.5	76.3	73.4	73.6	74.5		77.5	78.0	75.2	<u> </u>		
Sumner Lake ga ht, end mo	63.9	64.7	64.7	61.0	60.7	59.7	59.8	60.0	58.9	57.5			
Sumner Lake gage ht, avg	63.3	64.3	64.9	63.9	60.8	60.2		60.5		58.7		 	1
Lake S Rosa ga ht, end mo	36.6	36.6	37.1	38.3	44.0	43.4		46.2	45.9	47.4		+	
Lake S Rosa ga ht, avg	36.6	37.6	36.7	37.9	40.4	46.2	44.8	45.8	46.0	46.5	 	<u> </u>	
PRECIPITATION, INCHES													
	4.00	0.40	0.07	4.04	2.00	4.04	4.00	0.00	0.44	5.00	0.40	0.00	47.07
Brantley Lake	1.09 0.70	0.16 1.08	0.37 1.21	1.04 0.57	3.28 4.43	1.01 3.95	1.92 3.29	0.83 2.60	<u> </u>	5.08 4.28			17.97 23.54
Las Vegas FAA AP Pecos National Monument	1.25	1.23	1.16		2.82	1.32				3.73			
Santa Rosa	1.41	1.23	0.66		5.13	1.62				3.73	+		
Lake Santa Rosa	1.41					I	1		1				1
Sumner Lake	1.51	0.67	0.59		2.95								
PAN EVAPORATION, INCHES													
	<u> </u>		<u> </u>	<u> </u>									
Lake Santa Rosa	3.7											 	
Lake Sumner	1.8		-		 								94.4
Brantley Lake	4.7	5.6	5.7	10.1	11.3	12.0	12.6	12.5	8.7	5.9	4.8	4.3	98.3
OTHER REPORTS	 		-		-	<u> </u>	 		-				
O THEIR INCE ON TO	-		-		-	 					-		
Base Acme-Art, TAF (USGS)	3.0	2.3	2.5	2.1	1.8	1.4	1.0	0.9	0.7	1.6	2.3	2.6	22.2
Pump depl Ac-Artesia, TAF	0.0					0.1	 	 	+				1
Pumping, C-2713, Malaga B													0.2
NM irrig inv, acres (3/9/2000)													11529
NM Transfer water use, TAF													
NM salvaged water, TAF													0.00
Texas, water stored NM, TAF	0.0	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	<u> </u>										<u> </u>	<u></u>	

APPENDIX

RESPONSE TO STATES' OBJECTIONS

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RESPONSE TO STATES' OBJECTIONS

Final Report, Accounting Year 2016

NEW MEXICO OBJECTIONS

1. Table 3. Determination of Flood Inflows, Artesia to Carlsbad.

New Mexico noted an error in Table 3 where 2014 data were used incorrectly for Carlsbad Irrigation District (CID) diversions. The objection is accepted and the 2015 data were inserted into a revised Table 3. See also response to Texas objection 2.

2. Table 4. Flood Inflow, Carlsbad to State Line.

a. New Mexico noted that values listed on Table 4 as Delaware River flood inflow were incorrect because they include the entire flow of the river instead of the scalped flood Inflows. The objection is accepted and values have been revised. See also response to Texas objection 3

New Mexico wrote that the Preliminary Report flood inflow analysis appeared inconsistent with the procedure in B.5.a.(3) of the River Masters Manual for periods when Dark Canyon Draw was flowing. The River Master checked this for the dates mentioned (May 5-6 and October 8) but on all of those dates the scalped flows were positive, so the revised procedures for Section B.5.a.(3) were not needed.

3. Monthly Precipitation and Pan Evaporation for WY 2015

New Mexico reported that Table RM3 provided by the NMISC was incorrect due to an error in pan evaporation data for Sumner Reservoir for November and December. The correct data were inserted into revised Tables 6 and 12.

TEXAS OBJECTIONS

Texas entered a general objection related to unresolved issues from unusual flooding that occurred during WY 2014. These issues were the subject of a meeting between the states' Technical Representatives and the River Master on February 11, 2016. Notes from the meeting as transmitted by Ms. Hannah Riseley-White indicated that the states would work together to determine accounting for 2014-2015 and send to the River Master along with the necessary data adjustment for Dark Canyon Draw. As indicated in its general objection, Texas will contact New Mexico to resolve any issues related to WY 2014 for presentation to the River Master. If another meeting with the River Master is needed to resolve the issues, it can be held at the convenience of the states.

1. Table 7. Carlsbad Springs New Water [B.4.c.(2)]. WY 2015:

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Texas noted an incidence where the leap year had not been returned to the 365 day year. This error has been corrected, and the objection is accepted. Tables 3 and 7 have been revised.

2. Table 3. Determination of Flood Inflows, Artesia to Carlsbad [B.4], WY 2015.

The same objection was made by New Mexico (See NM #1 above). The objection is accepted and corrections have been made.

3. Table 4. Summary Table for Computations, Carlsbad to State Line (B.5)

- a. Scalped Delaware River Flood Inflows.
- 1). Texas noted that the River Master had included all Delaware River flows and not only scalped flood flows. This is the same as New Mexico objection 2a above, and is accepted.
- 2). Texas made an independent calculation of Delaware River flood inflows by using a larger scale than USGS. This resulted in identification of additional flood inflows, which were verified by the River Master. The objection is accepted and the value used is 2.2 TAF for Delaware River flood inflows.
- b. Scalped Flood Flows for Carlsbad to Red Bluff.
 Texas noted several instances where values in the appendix did not look correct.
- 1) Texas is correct that values for January 30-31 were not included. This omission was corrected.
- 2) March and April values were also checked and all numbers calibrated, as outlined by Texas.
- 3) Texas suggested use of incorrect values for December 14-31 for the Pecos River below Dark Canyon gage. This was to be due to changes in the final approved streamflow values. The River Master has not received notification of any such changes and found a May 17, 2016 email message from Jeff Cordova of USGS to Texas that stated "I do not anticipate changes to any of the Pecos gage records for CY15." In any event, as noted by Texas, the totals would change very slightly even if the revisions had been made.
- 4). Texas noted an indication from the Black River hydrograph that there was flood inflow in the Carlsbad to Red Bluff reach in the late September time period (see Texas Exhibit E). The River Master analyzed this time period and agrees with Texas's assertion that 0.3 TAF of flood inflow should be added as a result of the September flows. However, Texas did not show any added flood inflow for August.

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FINAL CALCULATED DEPARTURE

The Preliminary Report's Final Calculated Departure was an overage of 11.9 TAF. After considering the states' objections, the Final Determination is an overage of 11.9 TAF.

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