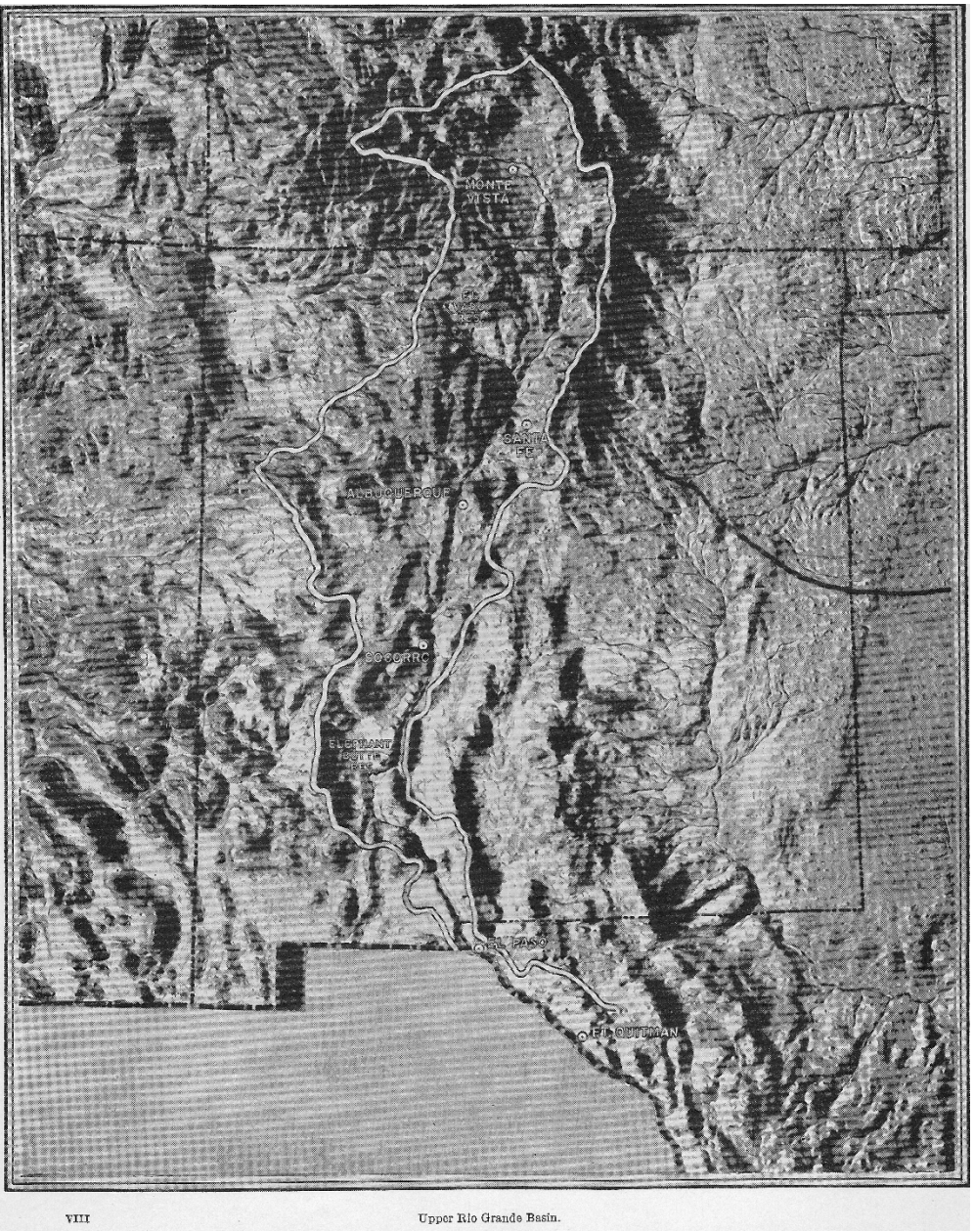


The Rio Grande Compact: A Southern New Mexico Perspective

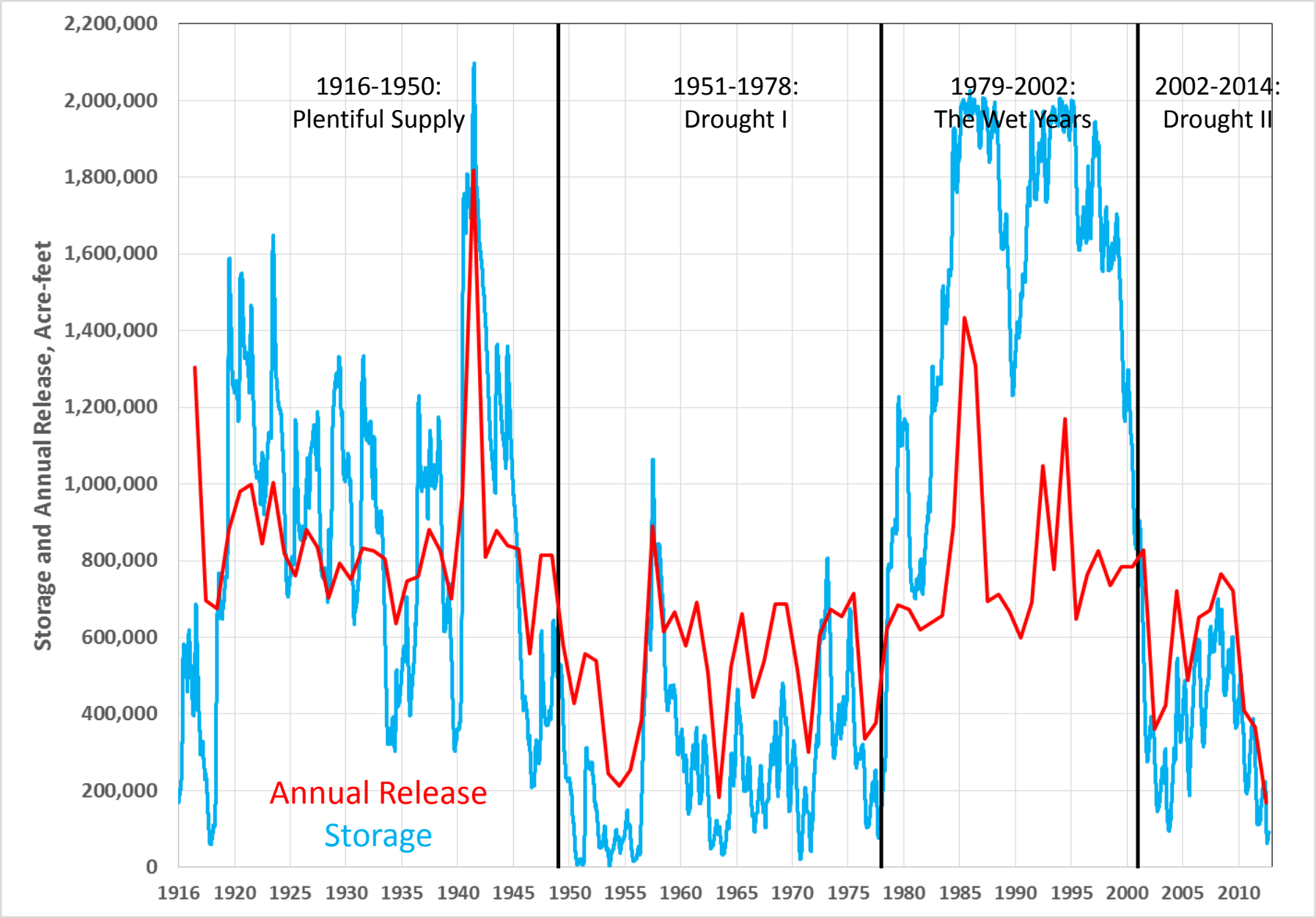
J. Phillip King, P.E., Ph.D.
Professor and Associate Department Head
Department of Civil Engineering
Consultant to Elephant Butte Irrigation District

Evolution of Water Management in Southern New Mexico

- Treaty with Mexico – 1906
- The Rio Grande Project – 1905-1916
- The Rio Grande Compact – 1938
- The Drought Years – 1951-1978
- The Wet Years – 1979-2002
- Back to Drought – 2003 - ?

1905-1916 The Rio Grande Project

Release and Storage in the Rio Grande Project, 1917-2013



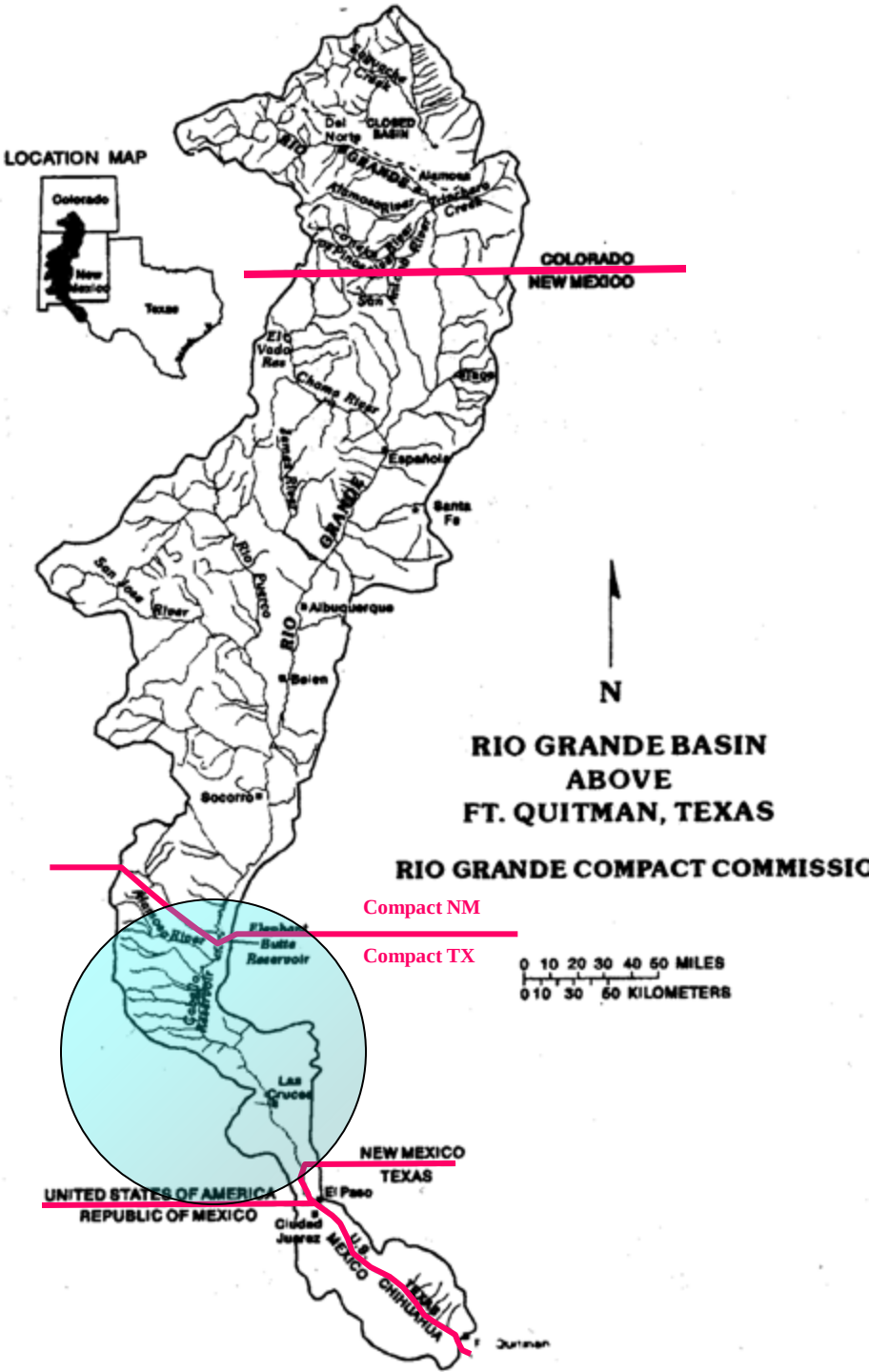
1929-1938: The Rio Grande Compact

- Compact for

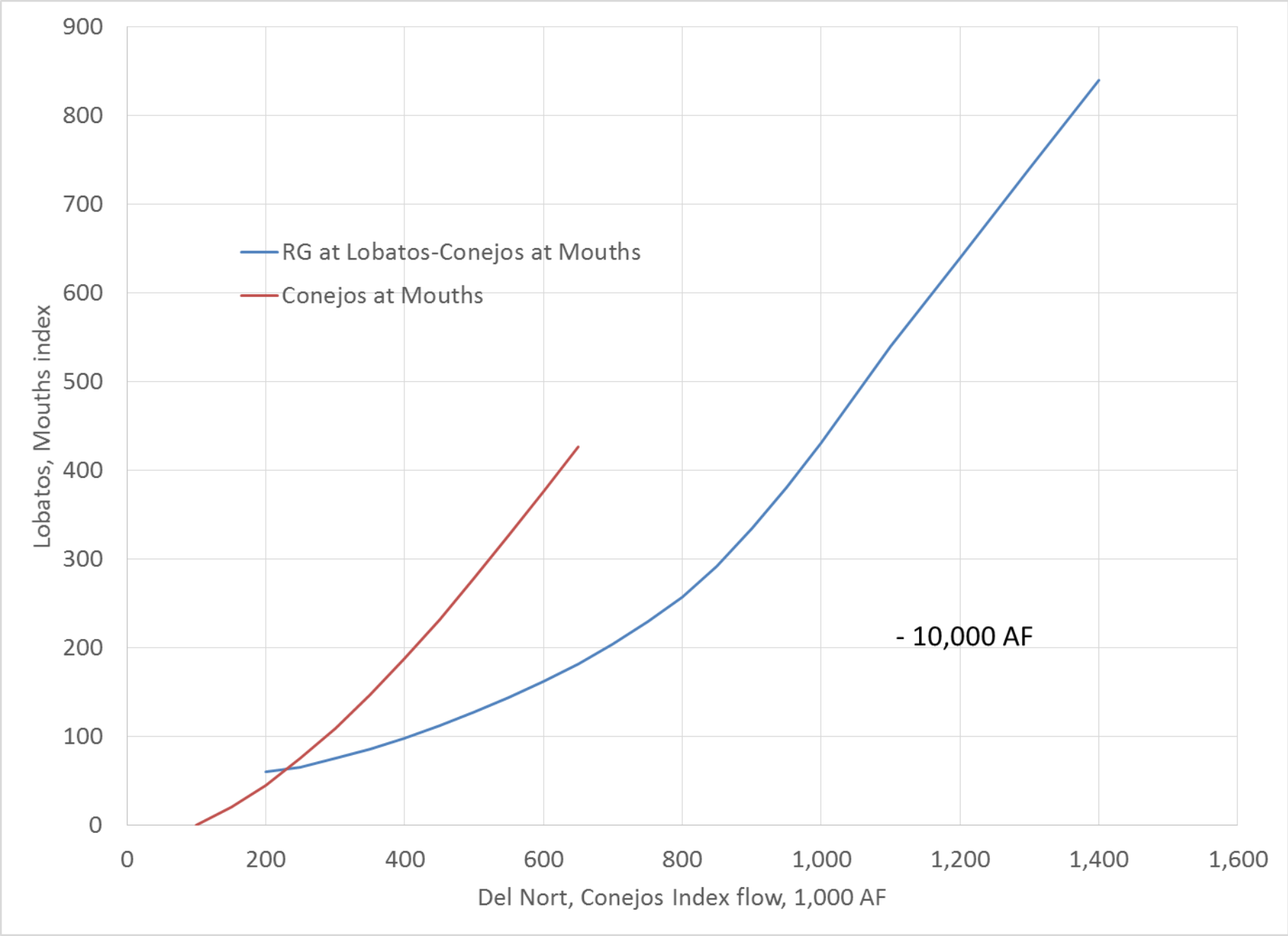
Surface Water Apportionment

  - Colorado
  - New Mexico
  - "Texas"

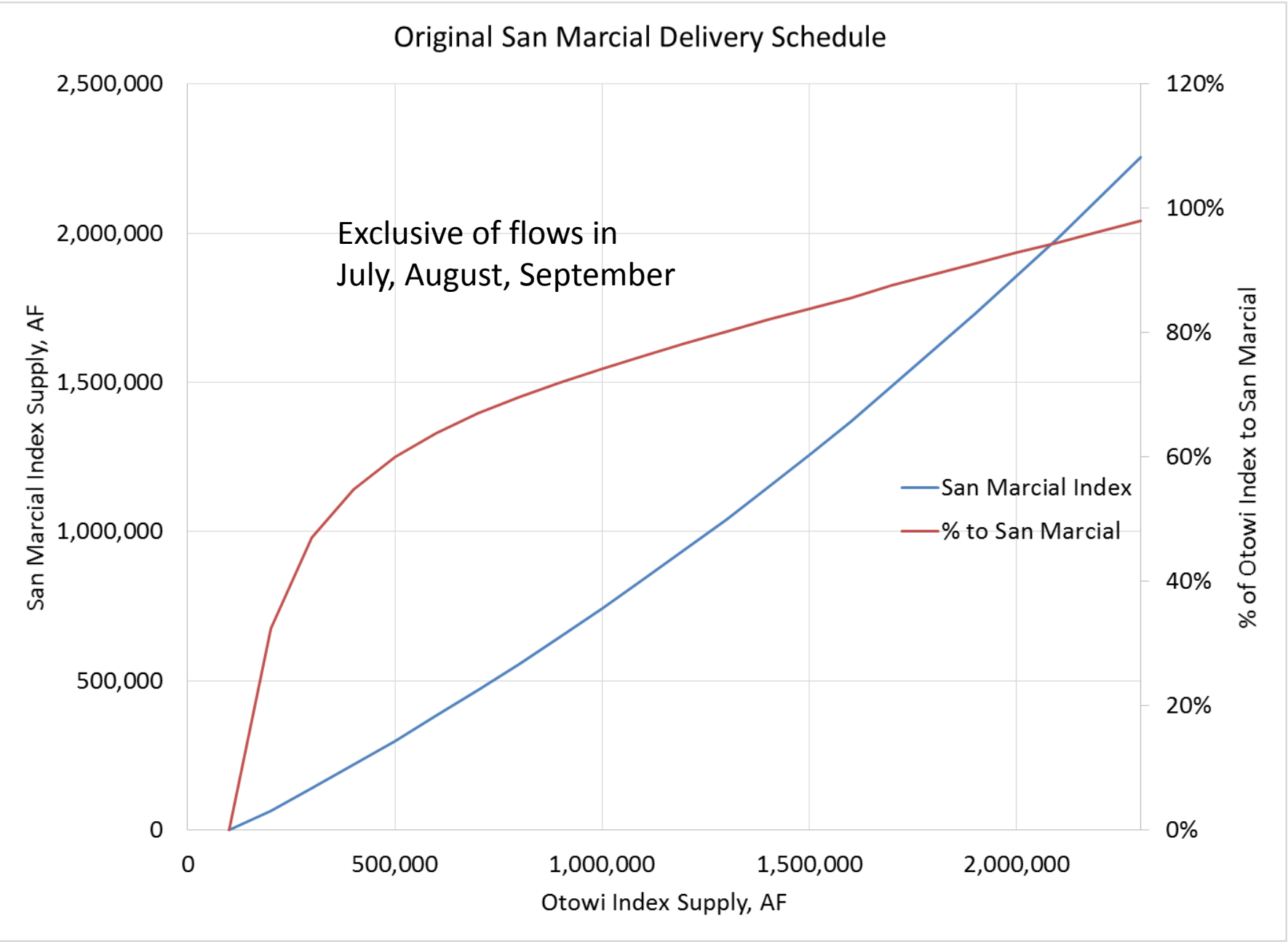
- Colorado delivery to New Mexico
- New Mexico Delivery to Texas
- No man's land: EBID



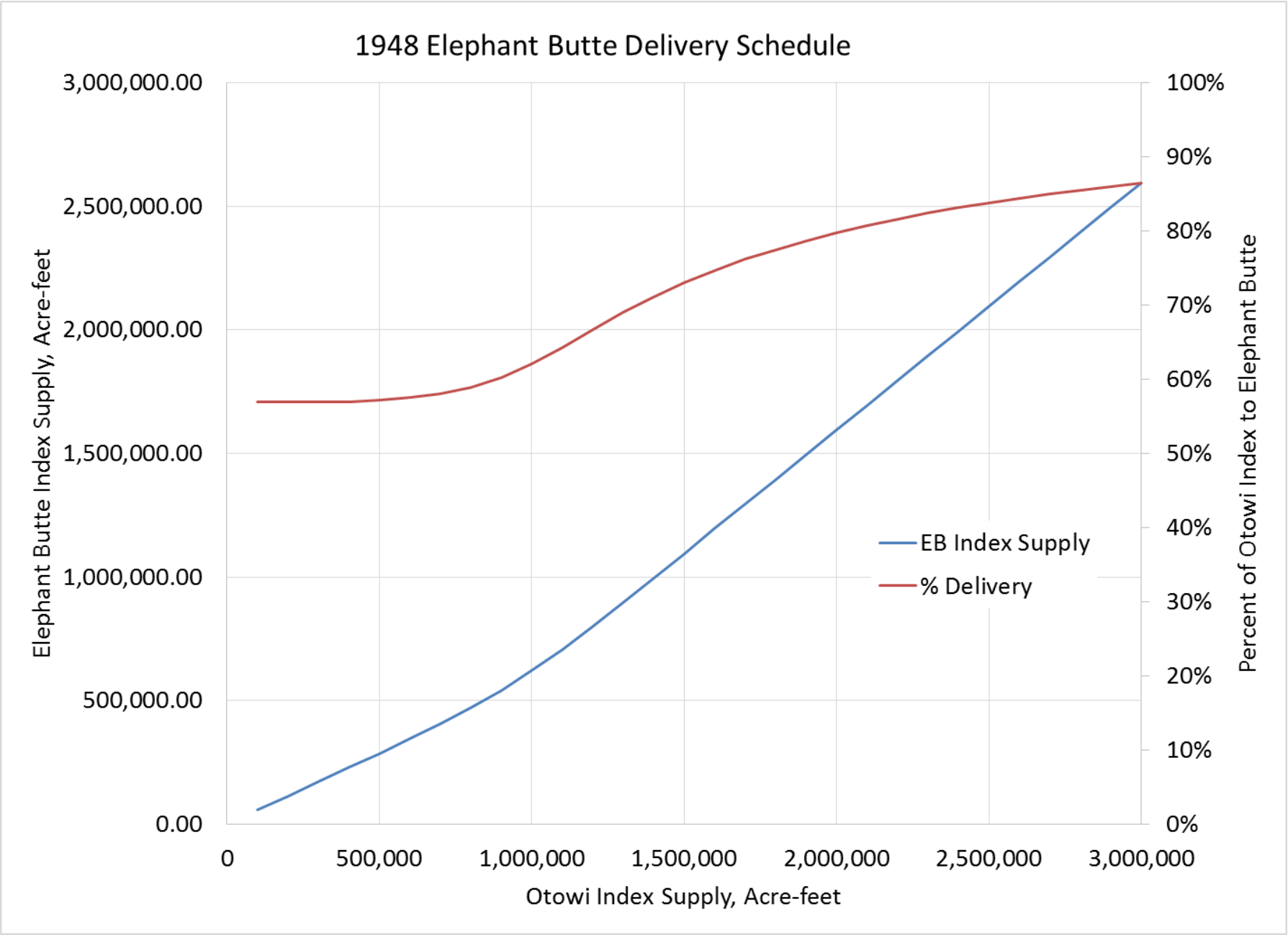
Colorado delivery to New Mexico

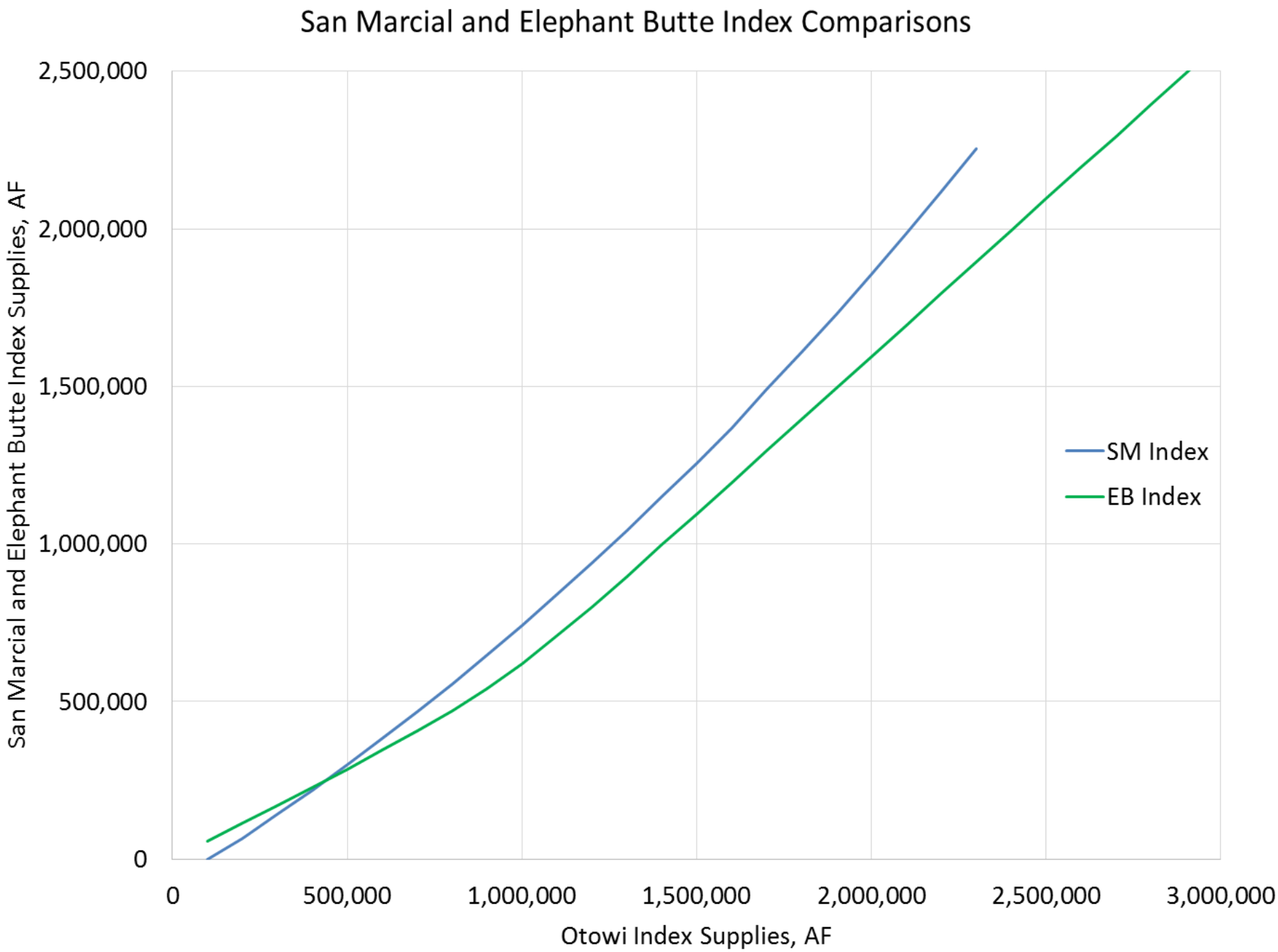


Upstate New Mexico delivery to “Texas”



Upstate New Mexico delivery to “Texas”

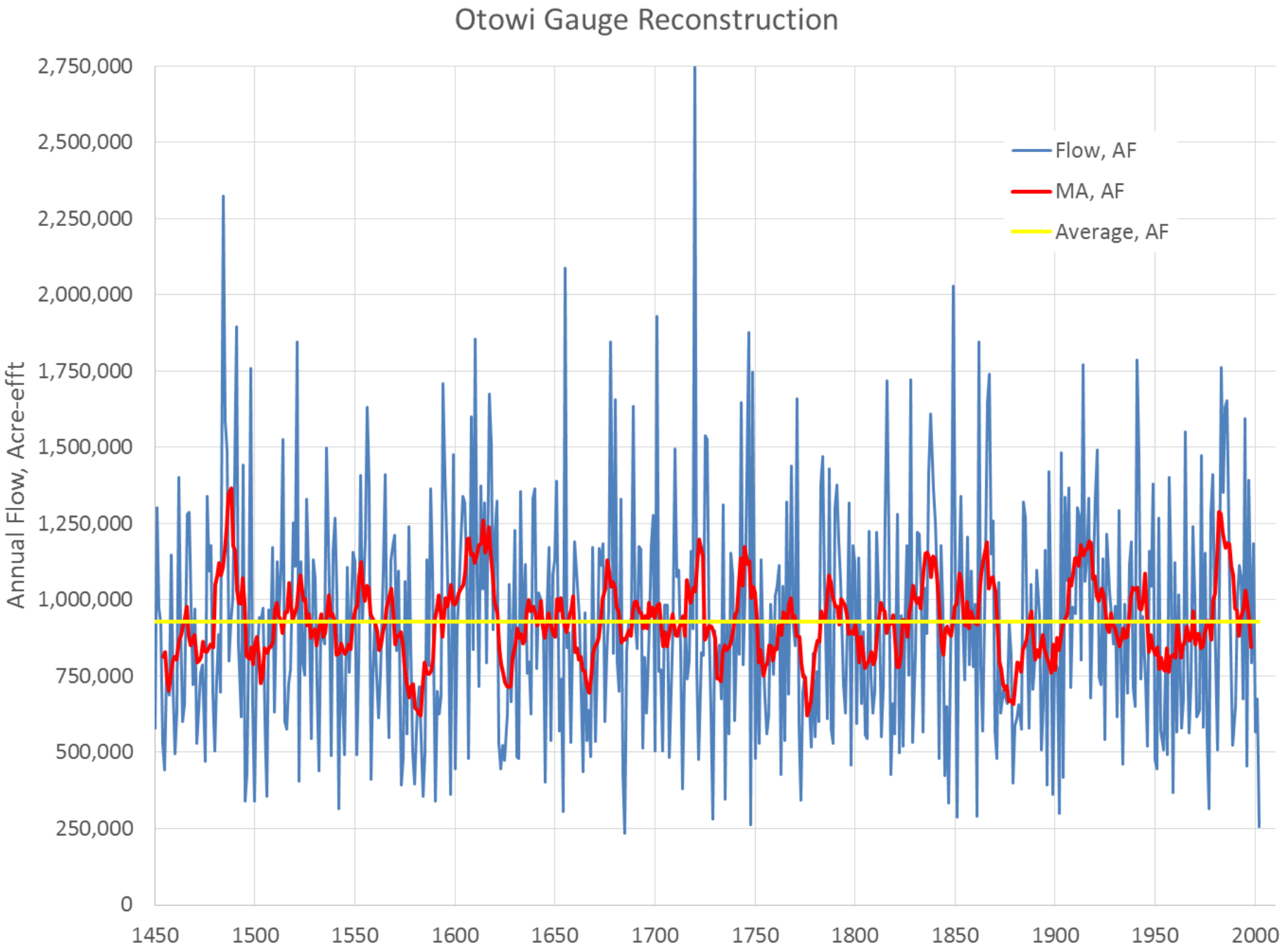



San Marcial and Elephant Butte Index Comparisons
San Marcial and Elephant Butte Index Supplies, AF
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
0
500,000
1,000,000
1,500,000
2,000,000
2,500,000
3,000,000
Otowi Index Supplies, AF
SM Index
EB Index

The 2013 Release

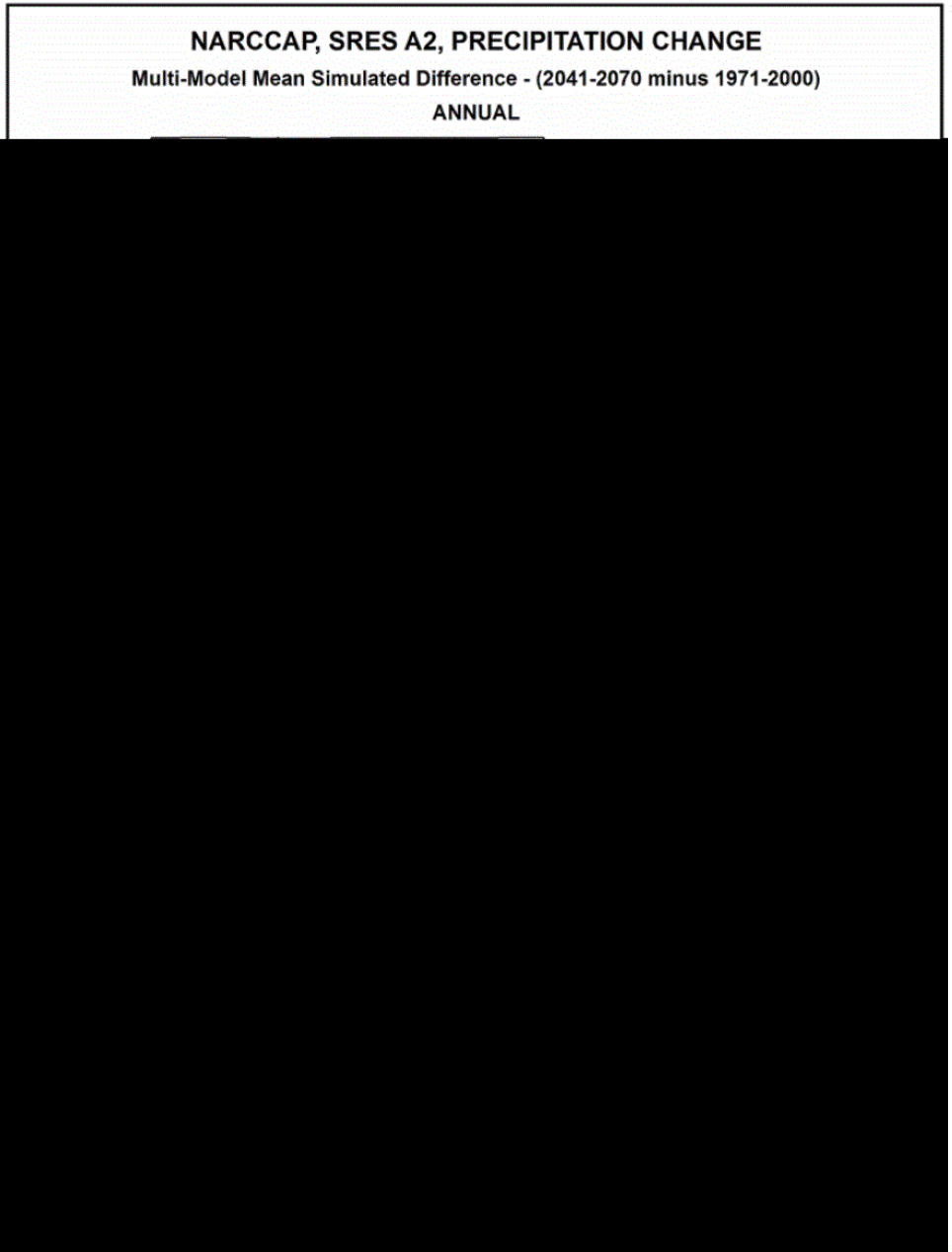
	Allocation	Used	+/-
EBID	53,713	54,002	-289
EPCWID	43,223	51,561	-8,338
Mexico	3,665	3,709	-44
Totals	100,601	109,272	-8,671
Caballo release		168,607	
Diversion ratio		64.8%	

D2 Diversion Ratio	80.4%
Drought-adjusted D2 DR	62.7%



Data from Connie A. Woodhouse, 2012.

Looking Ahead – NOAA TR NESDIS 142-5



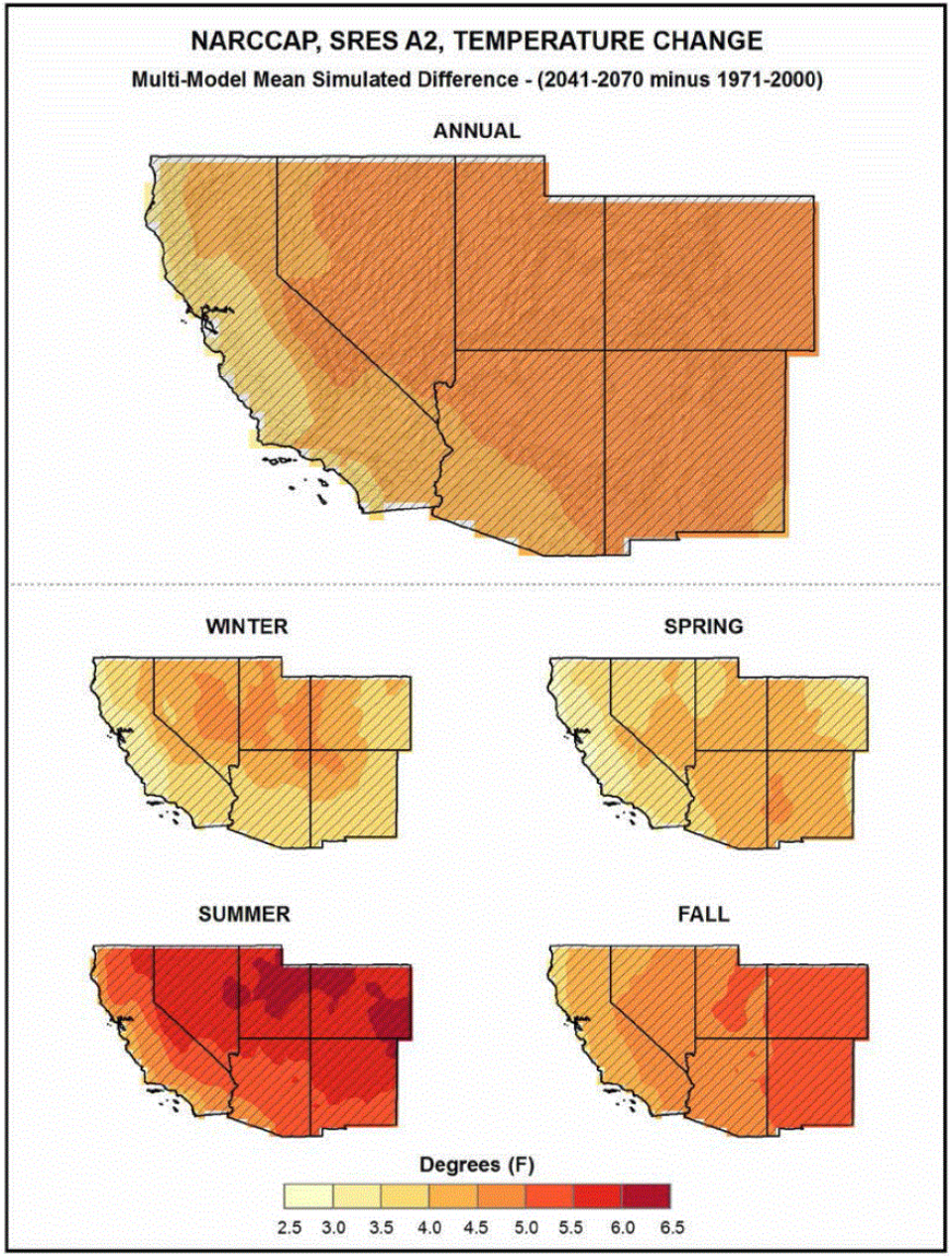
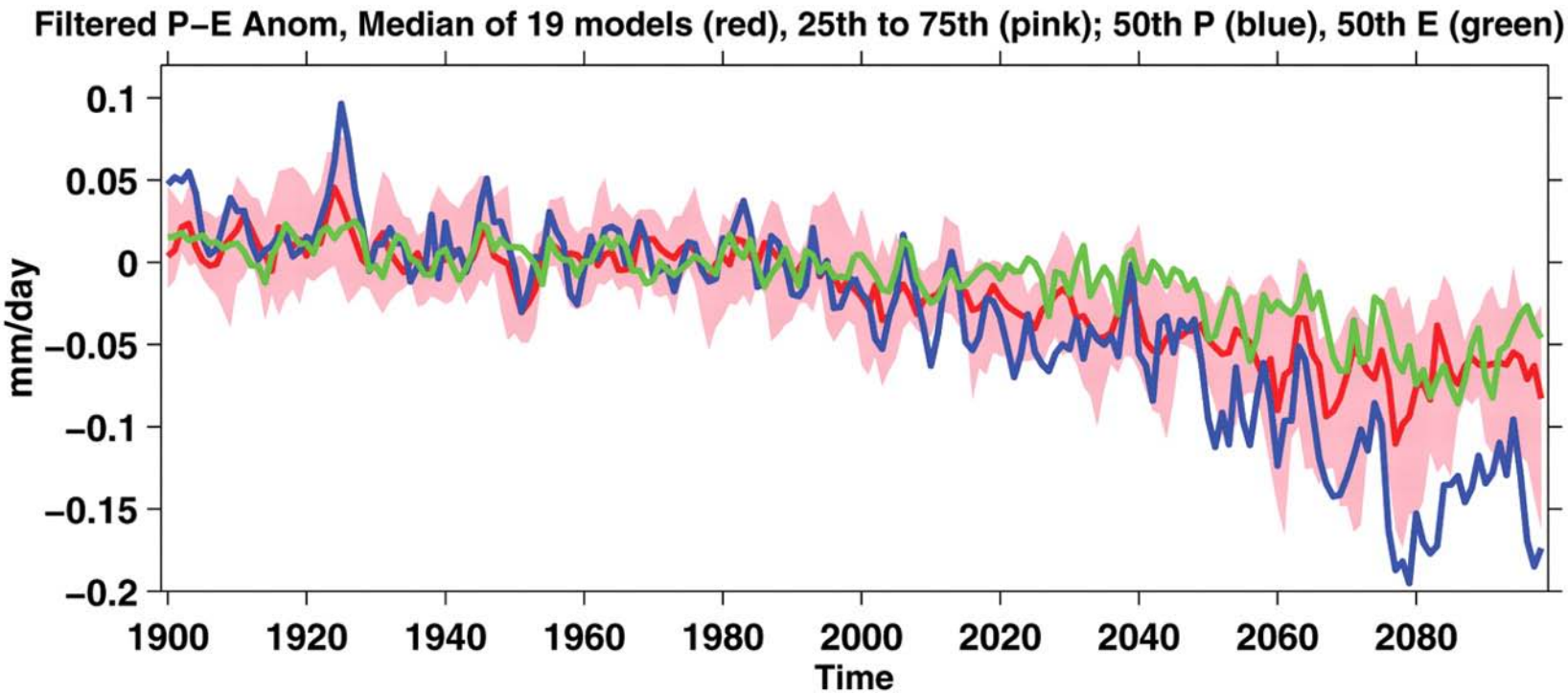


Fig. 1. Modeled changes in annual mean precipitation minus evaporation over the American Southwest (125°W to 95°W and 25°N to 40°N, land areas only), averaged over ensemble members for each of the 19 models.



R Seager et al. Science 2007;316:1181-1184

Published by AAAS

The State's Case

Year	EBID Alloc	EBID % of US	EP1 Alloc	EP1 % of US	MX Alloc	EBID 57%	EP1 43%	EBID Δ
2006	211,385	47%	241,657	53%	27,112	257,211	195,831	45,826
2007	311,517	44%	403,491	56%	51,245	405,940	309,068	94,423
2008	324,990	39%	517,455	61%	56,048	478,291	364,154	153,301
2009	345,817	38%	552,987	62%	58,688	510,289	388,515	164,472
2010	305,871	36%	532,159	64%	56,883	475,785	362,245	169,914
2011	77,104	22%	267,814	78%	25,650	195,825	149,094	118,720
2012	126,427	48%	136,380	52%	23,188	149,207	113,600	22,780
Total	1,703,111		2,651,943		298,814			769,436
Total Allocation			4,653,868					

The Problem: Math

Total Allotment	4,653,868 AF		
Total Release	3,867,137 AF		
Difference	786,731 AF	112,390 AF	per year
Total Diversion Charges	3,669,625 AF		
Difference	984,243 AF	140,606 AF	per year

Primary Culprit: Multiple Counting of Carryover

	EBID Carryover	EP1 Carryover	Total Carryover
2006	0	36,200	36,200
2007	0	106,982	106,982
2008	0	232,985	232,985
2009	40,343	232,985	273,328
2010	20,015	224,348	244,363
2011	17,333	9,042	26,375
2012	0	9,483	9,483
Total	77,691	852,025	929,716

Charge + ΔCarryover

Year	EBID Total	EP1 Total	Total	EBID %	EP1 %	57%	43%	EBID Δ
2006	211,841	213,383	425,224	50%	50%	241,417	183,807	-29,576
2007	302,665	349,034	651,699	46%	54%	369,997	281,702	-67,332
2008	329,294	405,176	734,470	45%	55%	416,989	317,481	-87,695
2009	345,818	360,426	706,244	49%	51%	400,964	305,280	-55,146
2010	261,754	275,972	537,726	49%	51%	305,290	232,436	-43,536
2011	57,089	40,784	97,873	58%	42%	55,567	42,306	1,523
2012	117,053	110,005	227,058	52%	48%	128,910	98,148	-11,858
Total	1,625,514	1,754,780	3,380,294	48%	52%	1,919,135	1,461,159	-293,621
Average	232,216	250,683	482,899			274,162	208,737	-41,946