STATE OF NEW MEXICO
COUNTY OF SAN JUAN
ELEVENTH JUDICIAL DISTRICT COURT

STATE OF NEW MEXICO, *ex rel.*
THE STATE ENGINEER,

Plaintiff,

vs.

THE UNITED STATES OF AMERICA, *et al.*,

Defendants.

AB-07-1
Claims of Navajo Nation

No. CV 75-184
Honorable James J. Wechsler
Presiding Judge

DESCRIPTIVE SUMMARY: The settling parties argued that evaporation from reservoirs outside of New Mexico is irrelevant in this case, but their own calculations show that evaporation from Lake Powell and Flaming Gorge reduces the amount of water available to New Mexico.

NUMBER OF PAGES: 3 + 2 page exhibit

DATE OF FILING: April 29, 2013

REPLY ON RESERVOIR EVAPORATION

The United States, the Navajo Nation, and the state engineer continue to claim that evaporation from Colorado River reservoirs outside of New Mexico is irrelevant. They continued to evaporation from these reservoirs has nothing to do with the water available for use in the San Juan basin of New Mexico.

This argument is false. As the settling parties know, New Mexico is charged with a share of the evaporation that occurs at the major Colorado River storage project reservoirs on the main stem of the Colorado River, even though those reservoirs are located outside of

New Mexico. The prime examples are Lake Powell, on the Utah - Arizona border, and Flaming Gorge Reservoir, on the Utah - Wyoming border.

As the settling parties know very well, a portion of the evaporation from these out-of-state reservoirs is charged against New Mexico's share of the Colorado River, reducing it substantially. *See* Exhibit 1 attached, pages 14 and 25 from the 2007 BOR hydrologic determination. The 2007 hydrologic determination manipulated the reservoir evaporation numbers in order to magically find enough water for the proposed Navajo settlement. This manipulation of paper water was predicted before it happened. *See* Motion for Limited Discovery Concerning 2007 BOR Hydrologic Determination (Oct. 2, 2007).

Therefore evaporation from out-of-state reservoirs is relevant and discoverable. Indeed, it is a central issue in this case, since it directly determines how much water is available from the San Juan River in New Mexico, and how often there will be shortages and priority calls on the San Juan River.

Respectfully submitted,

VICTOR R. MARSHALL & ASSOCIATES, P.C.

By /s/ Victor R. Marshall

Victor R. Marshall
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CERTIFICATE OF SERVICE

I hereby certify that on April 29, 2013, a true and correct copy of the foregoing was served on the parties and claimants by attaching a copy of said document to an email sent to the following list server: wrnavajointerse@nmcourts.gov and to the filing list referred to in the Notice of Amended Service List filed February 25, 2013.

/s/ Victor R. Marshall
Victor R. Marshall, Esq.

Upper Basin Yield Mass Balance Analysis

Run 1 - Maintain CRSP Minimum Power Pools, 8.25 maf Lower Basin Delivery, No Shortage

CY	CR Natural Flow at Lee Ferry (plus)	Total Carry-Over Storage (plus)	CRSP Carry-Over Storage	Lower Basin Delivery (minus)	Upper Basin Use (minus)	Shared CRSP Evap (minus)	Net Available in Storage (equals)	Spill to LC (minus)	Shortage (plus)	UC Basin Yield/ Storage (equals)	CRSP Year-end Storage
1906	16,560,021	29,530,030	24,847,704	8,250,000	5,550,000	749,290	33,530,761	4,000,731	0	29,530,030	24,847,704
1907	21,201,684	29,530,030	24,847,704	8,250,000	5,550,000	749,290	36,182,434	6,652,404	0	29,530,030	24,847,704
1908	12,216,517	29,530,030	24,847,704	8,250,000	5,550,000	723,218	27,223,329	0	0	27,223,329	22,907,009
1909	22,300,391	27,223,329	22,907,009	8,250,000	5,550,000	728,218	35,084,712	5,554,682	0	29,530,030	24,847,704
1910	14,660,856	29,530,030	24,847,704	8,250,000	5,550,000	749,290	29,631,356	101,326	0	29,530,030	24,847,704
1911	15,498,729	29,530,030	24,847,704	8,250,000	5,550,000	749,290	30,480,469	950,439	0	29,530,030	24,847,704
1912	18,823,410	29,530,030	24,847,704	8,250,000	5,550,000	749,290	33,604,150	4,074,120	0	29,530,030	24,847,704
1913	14,536,373	29,530,030	24,847,704	8,250,000	5,550,000	749,157	29,517,247	0	0	29,517,247	24,834,947
1914	21,154,914	29,517,247	24,834,947	8,250,000	5,550,000	749,187	36,232,903	6,702,873	0	29,530,030	24,847,704
1915	13,623,277	29,530,030	24,847,704	8,250,000	5,550,000	739,725	28,613,582	0	0	28,613,582	24,070,562
1916	20,142,882	28,613,582	24,070,562	8,250,000	5,550,000	739,725	34,216,739	4,686,709	0	29,530,030	24,847,704
1917	22,548,924	29,530,030	24,847,704	8,250,000	5,550,000	749,290	[illegible]	8,368,534	0	29,530,030	24,847,704
1918	15,866,139	29,530,030	24,847,704	8,250,000	5,550,000	749,290	30,846,879	1,316,849	0	29,530,030	24,847,704
1919	12,651,309	29,530,030	24,847,704	8,250,000	5,550,000	729,606	27,651,713	0	0	27,651,713	23,287,210
1920	23,387,032	27,651,713	23,287,210	8,250,000	5,550,000	729,695	36,409,550	6,879,520	0	29,530,030	24,847,704
1921	22,524,787	29,530,030	24,847,704	8,250,000	5,550,000	749,295	37,507,521	7,977,491	0	29,530,030	24,847,704
1922	18,447,102	29,530,030	24,847,704	8,250,000	5,550,000	749,290	33,137,038	3,607,008	0	29,530,030	24,847,704
1923	18,024,048	29,530,030	24,847,704	8,250,000	5,550,000	749,290	34,004,788	4,474,758	0	29,530,030	24,847,704
1924	13,877,798	29,530,030	24,847,704	8,250,000	5,550,000	742,354	28,865,474	0	0	28,865,474	24,208,521
1925	14,430,701	28,865,474	24,208,521	8,250,000	5,550,000	734,237	28,761,938	0	0	28,761,938	24,201,210
1926	16,213,731	28,761,938	24,201,210	8,250,000	5,550,000	740,264	29,426,280	0	0	29,426,280	24,747,882
1927	16,626,212	29,426,280	24,747,882	8,250,000	5,550,000	748,301	34,425,197	4,895,167	0	29,530,030	24,847,704
1928	18,804,294	29,530,030	24,847,704	8,250,000	5,550,000	749,290	31,936,074	2,406,044	0	29,530,030	24,847,704
1929	21,829,585	29,530,030	24,847,704	8,250,000	5,550,000	749,290	36,810,325	7,280,295	0	29,530,030	24,847,704
1930	14,621,041	29,530,030	24,847,704	8,250,000	5,550,000	749,290	29,601,781	71,751	0	29,530,030	24,847,704
1931	8,474,134	29,530,030	24,847,704	8,250,000	5,550,000	686,736	23,517,428	0	0	23,517,428	19,788,636
1932	17,422,187	23,517,428	19,788,636	8,250,000	5,550,000	654,758	26,485,055	0	0	26,485,055	22,289,045
1933	12,183,501	26,485,055	22,289,045	8,250,000	5,550,000	661,949	24,206,607	0	0	24,206,607	20,288,371
1934	8,178,192	24,206,607	20,288,371	8,250,000	5,550,000	552,849	18,031,950	0	0	18,031,950	15,188,900
1935	10,672,349	18,031,950	15,188,900	8,250,000	5,550,000	492,618	14,411,681	0	0	14,411,681	12,136,542
1936	14,648,673	14,411,681	12,136,542	8,250,000	5,550,000	437,898	14,822,456	0	0	14,822,456	12,472,271
1937	14,306,358	14,822,456	12,472,271	8,250,000	5,550,000	442,943	14,885,871	0	0	14,885,871	12,526,376
1938	18,146,319	14,885,871	12,526,376	8,250,000	5,550,000	453,936	18,780,056	0	0	18,780,056	15,777,016
1939	11,184,050	18,780,056	15,777,016	8,250,000	5,550,000	481,625	15,682,481	0	0	15,682,481	13,145,944
1940	9,852,185	15,682,481	13,145,944	8,250,000	5,550,000	414,784	11,320,882	0	0	11,320,882	9,541,797
1941	20,116,078	11,320,882	9,541,797	8,250,000	5,550,000	421,645	17,220,520	0	0	17,220,520	14,494,230
1942	17,225,136	17,220,520	14,494,230	8,250,000	5,550,000	522,737	20,127,925	0	0	20,127,925	16,938,410
1943	13,731,401	20,127,925	16,938,410	8,250,000	5,550,000	546,609	19,512,717	0	0	19,512,717	16,418,781
1944	15,382,622	19,512,717	16,418,781	8,250,000	5,550,000	539,919	20,531,321	0	0	20,531,321	17,275,843
1945	14,140,828	20,531,321	17,275,843	8,250,000	5,550,000	589,168	20,312,681	0	0	20,312,681	17,091,871
1946	11,089,432	20,312,681	17,091,871	8,250,000	5,550,000	523,198	17,084,935	0	0	17,084,935	14,375,823
1947	16,439,496	17,084,935	14,375,823	8,250,000	5,550,000	511,717	19,212,705	0	0	19,212,705	16,166,302
1948	15,139,294	19,212,705	16,166,302	8,250,000	5,550,000	542,244	20,009,755	0	0	20,009,755	16,838,978
1949	16,833,384	20,009,755	16,838,978	8,250,000	5,550,000	577,243	22,466,096	0	0	22,466,096	18,907,082
1950	13,140,418	22,466,096	18,907,082	8,250,000	5,550,000	580,873	21,318,638	0	0	21,318,638	17,939,792
1951	12,505,894	21,318,638	17,939,792	8,250,000	5,550,000	558,486	19,462,047	0	0	19,462,047	16,378,867
1952	20,823,432	19,462,047	16,378,867	8,250,000	5,550,000	603,642	25,882,337	0	0	25,882,337	21,781,722
1953	11,096,419	25,882,337	21,781,722	8,250,000	5,550,000	608,372	22,569,374	0	0	22,569,374	19,007,360
1954	8,490,192	22,569,374	19,007,360	8,250,000	5,550,000	543,381	16,742,994	0	0	16,742,994	14,087,442
1955	9,410,906	16,742,994	14,087,442	8,250,000	5,550,000	432,968	11,923,937	0	0	11,923,937	10,033,239
1956	11,426,874	11,923,937	10,033,239	8,250,000	5,550,000	333,322	9,197,489	0	0	9,197,489	7,739,121
1957	21,500,963	9,197,489	7,739,121	8,250,000	5,550,000	401,055	16,497,397	0	0	16,497,397	13,881,844
1958	15,050,311	16,497,397	13,881,844	8,250,000	5,550,000	463,620	18,088,708	0	0	18,088,708	15,204,678
1959	9,588,159	18,088,708	15,204,678	8,250,000	5,550,000	461,825	13,402,132	0	0	13,402,132	11,277,011
1960	11,324,190	13,402,132	11,277,011	8,250,000	5,550,000	364,665	10,742,407	0	0	10,742,407	9,039,076
1961	10,019,559	10,742,407	9,039,076	8,250,000	5,550,000	314,281	6,638,386	0	0	6,638,386	5,585,793
1962	17,377,869	6,638,386	5,585,793	8,250,000	5,550,000	305,587	9,910,298	0	0	9,910,298	8,338,990
1963	8,840,000	9,910,298	8,338,990	8,250,000	5,550,000	255,014	4,666,284	0	0	4,666,284	3,926,391
1964	10,863,596	4,666,284	3,926,391	8,250,000	5,550,000	197,571	1,532,309	0	0	1,532,309	1,294,735
1965	19,879,627	1,532,309	1,289,395	8,250,000	5,550,000	225,909	7,381,417	0	0	7,381,417	6,211,900
1966	10,659,844	7,381,417	6,211,900	8,250,000	5,550,000	231,764	4,009,497	0	0	4,009,497	3,373,745
1967	11,870,820	4,009,497	3,373,745	8,250,000	5,550,000	192,341	1,887,976	0	0	1,887,976	1,420,335
1968	13,730,032	1,887,976	1,420,335	8,250,000	5,550,000	165,784	1,490,184	0	0	1,490,184	1,230,321
1969	15,272,158	1,490,184	1,230,321	8,250,000	5,550,000	176,916	2,787,407	0	0	2,787,407	2,320,194
1970	15,314,135	2,787,407	2,320,194	8,250,000	5,550,000	204,417	4,097,125	0	0	4,097,125	3,447,478
1971	15,493,659	4,097,125	3,447,478	8,250,000	5,550,000	233,638	5,557,146	0	0	5,557,146	4,678,986
1972	12,196,837	5,557,146	4,678,986	8,250,000	5,550,000	209,970	4,703,812	0	0	4,703,812	3,957,988
1973	16,450,199	4,703,812	3,957,988	8,250,000	5,550,000	275,778	9,273,029	0	0	9,273,029	7,804,034
1974	13,298,435	9,273,229	7,804,834	8,250,000	5,550,000	317,661	8,442,664	0	0	8,442,664	7,104,142
1975	17,072,881	8,442,664	7,104,142	8,250,000	5,550,000	329,725	11,375,790	0	0	11,375,790	9,572,028
1976	11,313,051	11,375,790	9,572,028	8,250,000	5,550,000	340,822	8,548,024	0	0	8,548,024	7,193,057
1977	5,551,188	8,548,024	7,193,057	8,250,000	5,550,000	222,609	78,813	0	0	78,813	66,333
1978	15,336,969	78,813	66,333	8,250,000	5,550,000	148,655	1,466,760	0	0	1,466,760	1,231,669
1979	17,925,429	1,466,760	1,231,669	8,250,000	5,550,000	203,322	5,388,867	0	0	5,388,867	4,447,736
1980	17,027,076	5,388,867	4,447,736	8,250,000	5,550,000	283,332	8,129,617	0	0	8,129,617	7,002,011
1981	9,010,300	8,129,617	7,002,011	8,250,000	5,550,000	270,584	4,074,132	0	0	4,074,132	3,429,132
1982	17,489,400	4,074,132	3,429,132	8,250,000	5,550,000	283,778	7,509,754	0	0	7,509,754	6,318,986
1983	24,381,699	7,509,754	6,318,986	8,250,000	5,550,000	395,742	17,676,091	0	0	17,676,091	14,873,288
1984	25,300,078	17,676,091	14,873,288	8,250,000	5,550,000	616,044	28,519,314	0	0	28,519,314	24,031,393
1985	21,248,108	28,519,314	24,031,393	8,250,000	5,550,000	738,789	35,325,637	5,795,607	0	29,530,030	24,847,704
1986	23,013,448	29,530,030	24,847,704	8,250,000	5,550,000	749,290	37,994,188	8,464,158	0	29,530,030	24,847,704
1987	15,640,478	29,530,030	24,847,704	8,250,000	5,550,000	749,290	30,621,218	1,091,188	0	29,530,030	24,847,704
1988	11,456,097	29,530,030	24,847,704	8,250,000	5,550,000	717,342	26,469,044	0	0	26,469,044	22,272,873
1989	9,921,847	26,469,044	22,272,873	8,250,000	5,550,000	638,257	21,952,634	0	0	21,952,634	18,471,781
1990	9,739,802	21,952,634	18,471,781	8,250,000	5,550,000	642,041	17,250,397	0	0	17,250,397	14,516,148
1991	15,170,021	17,250,397	14,516,148	8,250,000	5,550,000	471,035	18,149,382	0	0	18,149,382	15,272,273
1992	10,893,860	18,149,382	15,272,273	8,250,000	5,550,000	414,407	11,830,495	0	0	11,830,495	9,954,934
1993	18,150,118	11,830,495	9,954,934	8,250,000	5,550,000	420,941	15,759,672	0	0	15,759,672	13,259,206
1994	11,123,509	15,759,672	13,259,206	8,250,000	5,550,000	429,698	12,653,549	0	0	12,653,549	10,647,383
1995	20,047,164	12,653,549	10,647,383	8,250,000	5,550,000	457,693	18,455,891	0	0	18,455,891	15,528,749
1996	14,302,293	18,455,891	15,528,749	8,250,000	5,550,000	520,011	18,437,284	0	0	18,437,284	15,662,128
1997	21,622,438	18,437,284	15,662,128	8,250,000	5,550,000	597,222	25,882,098	0	0	25,883,399	21,781,816
1998	16,799,278	25,883,399	21,781,816	8,250,000	5,550,000	698,754	28,184,023	0	0	28,184,023	23,698,203
1999	15,912,210	28,184,023	23,698,203	8,250,000	5,550,000	733,033	29,563,200	33,170	0	29,530,030	24,847,704
2000	10,846,528	29,530,030	24,847,704	8,250,000	5,550,000	709,978	25,866,580	0	0	25,866,580	21,767,888
Total									0		
Averages:											
1953-1977	13,068,628			8,250,000	5,550,000	320,057		0	0	8,451,410	7,111,242
1931-1977	13,584,580			8,250,000	5,550,000	421,355		0	0	13,501,780	11,360,018
1906-2000	15,284,742			8,250,000	5,550,000	527,920		997,480	0	18,904,884	15,907,222

Variables

Storage	30,157,376 af
Sedimentation Rate (Active)	24,292 af/yr
Bank Storage	4%
Adjusted Storage (2000)	29,530,030 af
UB Demand Level	5,550,000 af/yr
LB Delivery	8,250,000 af/yr

Results:

Average CRSP Evap	527,920 af/yr
Total Yield w/ CRSP evap	6,077,920 af/yr

Shortage Years	Shortage
1963	0 af
1964	0 af
1967	0 af
1968	0 af
1977	0 af

NM allocation w/o evap = 618,780 af/yr

Note: NM allocation is exclusive of its portion of CRSP evaporation. Navajo evaporation would be primarily charged against NM's allocation. Shared CRSP evaporation is already removed from UC demands.

Total Upper Basin depletion, inc. CRSP evap:

1953-1977	5,870,057 af/yr
1931-1977	5,971,355 af/yr
1906-2000	6,077,920 af/yr

Flow Adjustments:

1971	300,229 af
1972	226,986 af
1973	282,377 af
1974	138,384 af
1975	346,685 af
1976	173,250 af
1977	112,891 af
1978	162,187 af
1979	153,658 af
1980	101,693 af

Percentage shortage =
0.00%
0.00%
0.00%

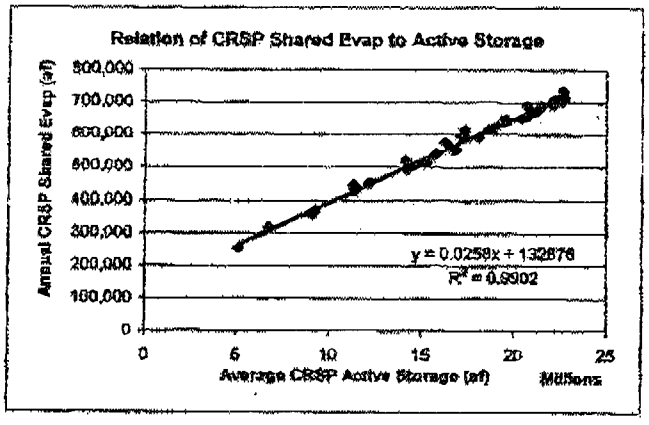
EXHIBIT
1

Relationships of CRSP Shared Reservoir Evaporation to Total CRSP Storage

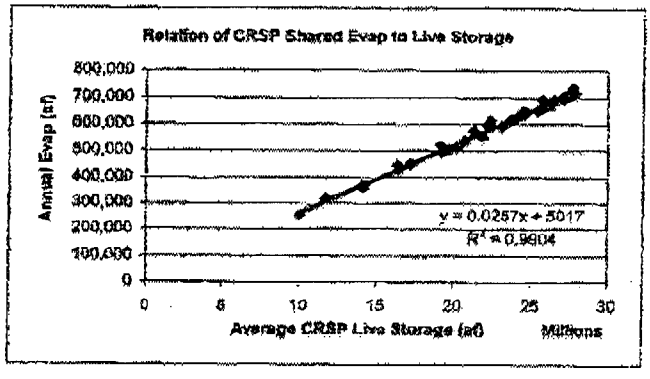
Year	Average CRSP Live Storage (af)	Average CRSP Active Storage (af)	CRSP Shared Evap (af)
1968	10,006,534	5,123,250	251,646
1969	11,701,142	6,784,000	315,083
1970	14,222,401	9,231,741	357,164
1971	16,417,858	11,354,088	442,260
1972	17,229,715	12,165,945	449,544
1973	19,709,068	14,639,298	504,409
1974	22,158,563	17,094,793	590,940
1975	23,634,096	18,570,326	613,612
1976	24,105,743	19,041,973	626,694
1977	20,730,592	15,672,536	537,408
1978	19,158,460	14,106,380	519,065
1979	22,336,514	17,284,414	612,639
1980	25,709,770	20,657,670	688,502
1981	26,392,308	20,340,205	648,525
1982	25,835,729	20,783,629	686,691
1983	27,692,454	22,640,354	734,416
1984	27,759,588	22,707,488	714,727
1985	27,819,938	22,567,838	702,973
1986	27,414,909	22,362,909	706,131
1987	27,163,464	22,101,364	705,172
1988	26,485,039	21,413,539	689,455
1989	24,540,351	19,468,251	634,821
1990	21,806,134	16,754,034	549,702
1991	20,141,572	15,089,472	510,689
1992	19,208,740	14,156,640	491,352
1993	21,297,584	16,245,484	573,884
1994	23,080,796	18,028,696	589,440
1995	24,500,724	19,448,624	649,206
1996	26,252,053	21,199,953	671,123
1997	26,416,641	21,364,541	681,115
1998	27,174,302	22,122,202	693,294
1999	27,050,819	21,998,719	694,007
2000	25,830,330	20,778,230	660,575
2001	23,802,258	18,750,158	614,583
2002	20,256,954	15,204,854	512,030
2003	16,472,537	11,420,437	427,526
2004	14,180,551	9,108,451	355,545

Regression Analyses

Active Storage:



Live Storage:



Notes:

(1) Historic calendar year data from Bureau of Reclamation. Average storage values are based on the average of the end-of-year storage amounts for the year indicated and for the previous year. Storage amounts include storage in all CRSP units, including Lake Powell, Flaming Gorge Reservoir, Navajo Reservoir and the Aspinall Unit (Blue Mesa, Morrow Point and Crystal reservoirs).

(2) CRSP shared evaporation includes lake evaporation for Lake Powell, Flaming Gorge Reservoir and the Aspinall Unit reservoirs, and is shared between the Upper Division States in proportions to their Upper Colorado River Basin Compact Article III(a) apportionments. CRSP shared evaporation is approximately 10,000 af at zero live CRSP storage (5,000 af based on the regression analyses) and approximately 130,000 af if storage in all CRSP reservoirs were at the top of the inactive pools (133,000 af based on the regression analysis). Lake evaporation for Navajo Reservoir is not included in CRSP shared evaporation.

(3) Data for the period 1968-2004 were used in the regression analyses. Data prior to 1968 do not reflect a normal distribution of storage between CRSP unit reservoirs under future operational conditions (for example, Navajo Reservoir storage remained below the top of the inactive pool required for operation of the Navajo Indian Irrigation Project diversion from 1962 when it began storing water until 1968, and Morrow Point Reservoir began operation in 1968). For the period 1968-1977, the historic average end-of-year CRSP storage and annual CRSP evaporation amount were increased to reflect the average storage of 15,670 af and average evaporation amount of 340 af occurring at Crystal Reservoir after its initial filling in 1978.