

**HYDROLOGIC DETERMINATION
2007**

**Water Availability from Navajo Reservoir and
the Upper Colorado River Basin for Use in New Mexico**

April 2007

MAY 23 2007

Date



Secretary of the Interior

I. Executive Summary

Determination as to the availability of water under long-term service contracts for uses from Navajo Reservoir involves a projection into the future of estimated water uses and water supplies. On the basis of this hydrologic investigation, water depletions by the Upper Basin states from the Upper Colorado River Basin can be reasonably allowed to rise to an annual average of 5.76 million acre-feet (maf) per year, exclusive of Colorado River Storage Project (CRSP) reservoir evaporation from Lake Powell, Flaming Gorge Reservoir, and the Aspinall Unit. This depletion level can be achieved under the same shortage criteria upon which the allowable Upper Basin yield was determined in the 1988 Hydrologic Determination.

This document determines the availability through at least 2060 of water from New Mexico's Upper Basin allocation and Navajo Reservoir to service a proposed contract for the Navajo Nation's consumptive uses in New Mexico under the Navajo-Gallup Water Supply Project in the annual amount of 20,780 acre-feet (af) and the Navajo Indian Irrigation Project (NIIP) in the amount of 270,000 af per year on average over any period of ten consecutive years. It also is likely that sufficient water will be available from Navajo Reservoir to service the proposed contract after the 2060 planning horizon, depending upon future storage, hydrologic conditions, and other factors. This determination does not guarantee that the United States will be able to deliver water under the proposed contract without shortages in deliveries, and does not obligate the United States to maintain storage facilities beyond their useful lives. The proposed contract is part of a Navajo Nation water rights settlement in the Upper Basin in New Mexico, and the settlement provides that uses made pursuant to the contract will be subject to administration in accordance with the Upper Colorado River Basin Compact and New Mexico state law. Implementation of the Navajo-Gallup Water Supply Project and the NIIP is subject to compliance with federal environmental laws including the National Environmental Policy Act and the Endangered Species Act.

II. Introduction

The State of New Mexico has proposed the Navajo-Gallup Water Supply Project to provide a renewable water supply from the San Juan River for municipal and domestic uses for Indian and non-Indian communities located within New Mexico. Uses under the project by the Jicarilla Apache Nation and the City of Gallup would be supplied through the Jicarilla Apache Nation's Navajo Reservoir water supply contract approved by Congress in 1992. Uses in New Mexico under the project by the Navajo Nation would be supplied through a proposed new Navajo Reservoir water supply contract that is a component of the San Juan River Basin in New Mexico Navajo Nation Water Rights Settlement Agreement (hereinafter referred to as the Settlement Agreement) that the State of New Mexico and the Navajo Nation executed on April 19, 2005. The new contract also would supersede the existing Navajo Reservoir water supply contract for the NIIP.


On June 19, 2003, the Upper Colorado River Commission resolved that the States of the Upper Division consent to the Navajo-Gallup Water Supply Project, provided that water diverted by the project for use in New Mexico shall be a part of the consumptive use apportionment made to the State of New Mexico by Article III(a) of the Upper Colorado River Basin Compact. The maximum amount of consumptive use through the project by the Navajo Nation in New Mexico that would be permitted in any one year under the Settlement Agreement and the proposed contract is 20,780 acre-feet.

Public Law 87-483 at section 11(a) requires that no long-term contract, except contracts for the NIIP and the San Juan-Chama Project, shall be entered into for the delivery of water stored in Navajo Reservoir, or any other waters of the San Juan River and its tributaries to which the United States is entitled, until the Secretary of the Interior has determined by hydrologic investigation that sufficient water to fulfill such contract is reasonably likely to be available for use in the State of New Mexico under the allocations made in Articles III and XIV of the Upper Colorado River Basin Compact, has submitted such determination to Congress, and Congress has approved the contract. The last such hydrologic determination was approved by the Secretary on February 2, 1989 (Hydrologic Determination, 1988, Water Availability from Navajo Reservoir and the Upper Colorado River Basin for Use in New Mexico, hereinafter referred to as the 1988 Hydrologic Determination). The 1988 Hydrologic Determination evaluated the availability of water from the Navajo Reservoir water supply for the Jicarilla Apache Nation's Navajo Reservoir water supply contract. The State of New Mexico, by letter dated May 3, 2005, requested that the 1988 Hydrologic Determination be updated to evaluate the availability of water to service the proposed Navajo-Gallup Water Supply Project.

This hydrologic investigation is made for the purpose of contracting for water from the Navajo Reservoir water supply for the Navajo Nation's uses in New Mexico under the Navajo-Gallup Water Supply Project. The Bureau of Reclamation prepared this hydrologic investigation in consultation with the Upper Colorado River Commission because of the critical nature of this determination of the Upper Basin water supply. The Upper Colorado River Basin Compact created and defined several areas of responsibility for the Commission that directly and indirectly relate to this investigation.

III. Upper Basin Yield

A. General Upper Basin Hydrology

Based on the Bureau of Reclamation's Colorado River Simulation System (CRSS), natural flows for the period 1906-2000, the natural runoff from the Upper Colorado River Basin averages about 15.  maf per year at Lee Ferry. Of this amount, approximately 2 maf per year originates in the San Juan River Basin above Bluff, Utah. New Mexico can only develop its Upper Basin allocation from the San Juan River and its tributaries. The Bureau of Reclamation's Colorado River System Consumptive Uses and Losses Report for 1996-2000 indicates that current consumptive uses from the San Juan River Basin

average about 382,400 af per year in New Mexico and about 192,500 af per year in Colorado. Only minor amounts of depletions are made in the San Juan River Basin in Utah and Arizona.

B. Approach

This hydrologic investigation considers and uses many of the same basic assumptions as the 1988 Hydrologic Determination. Both investigations assume use of the CRSS natural flows at Lee Ferry, minimum releases from Lake Powell of between 7.48 maf and 8.23 maf annually, an allowable overall shortage of no more than 6 percent for a critical period, either maintenance or use of the minimum power pools at CRSP units, reduced storage capacity in Lake Powell due to sedimentation, and inclusion of bank storage. The CRSS natural flows at Lee Ferry for the period 1971-1980 were increased to reflect recalculation of historic irrigation depletions in the Upper Basin using the Soil Conservation Service (SCS) modified Blaney-Criddle method with SCS effective precipitation. The revised CRSS natural flows for 1971-1980 are consistent with the CRSS natural flows at Lee Ferry determined for the remainder of the 1906-2000 period of record. Also, sedimentation in Lake Powell was adjusted to reflect a 2060 planning horizon, and a 4 percent bank storage factor was used in this investigation consistent with Reclamation's current CRSS model.

Neither the Lower Division states nor the Upper Colorado River Commission agree with the modeling assumption for the objective minimum release used in this report. At the request of the Commission, this hydrologic investigation considers for planning purposes both the objective minimum release of 8.23 maf and a minimum release from Lake Powell of 7.48 maf annually. However, this hydrologic determination does not quantify the Colorado River Compact Article III(c) requirement or make or rely on a critical compact interpretation regarding Article III(c). The 1988 Hydrologic Determination also showed the Upper Basin yields under these minimum release scenarios.

Mass balance analyses were used to analyze potential water use by the Upper Basin under 2060 conditions. The mass balance considers Upper Basin reservoir storage, natural flows at Lee Ferry, deliveries to the Lower Basin, consumptive use demands in the Upper Basin, and CRSP evaporation as a function of storage volume. All existing Upper Basin storage capacity was included in the analysis because all storage supports water use in the Upper Basin and impacts stream flows. The CRSP and non-CRSP reservoirs as groups were assumed to be the same percent full each year, and CRSP storage was assumed to be distributed between units in accordance with the average historic storage distribution. The CRSP reservoir evaporation that is used in the mass balance analyses includes evaporation from Lake Powell, Flaming Gorge Reservoir, and the Aspinall Unit that is shared among the Upper Division States, but excludes evaporation from Navajo Reservoir which is chargeable to the states based on use. Shared CRSP reservoir evaporation is modeled using a regression equation relating historic shared CRSP reservoir evaporation from Lake Powell, Flaming Gorge Reservoir, and the Aspinall Unit to the aggregate historic storage volume in these reservoirs plus Navajo Reservoir. Evaporation equations were developed for both active and live storage, and were applied

to estimate annual shared CRSP evaporation based upon yearly reservoir storage volume (surface area). The 1988 Hydrologic Determination considered variations in shared CRSP reservoir evaporation with storage for conducting statistical trace analyses to evaluate possible frequencies and magnitudes of shortages; however, it deducted a long-term average shared CRSP reservoir evaporation of 0.52 maf per year from the critical-period Upper Basin yield of at least 6.0 maf/yr to determine the amount of water available for Upper Basin uses through the critical period.

C. Results

Mass balance analyses were performed for various combinations of storage, Lower Basin deliveries, and overall shortages to evaluate the allocation of water to the Upper Basin (see mass balance analyses provided in Appendix A). The following is a summary of the results of the analyses:

<u>Storage Assumption</u>	Minimum Lower Basin Delivery (maf)	Yield without Shortages (maf)	Yield with 6% Overall Shortages (maf)
Maintain minimum power pools	8.25	5.55	5.79
	7.50	6.30	6.57
Use minimum power pools	8.25	5.72	5.98
	7.50	6.47	6.76

The yield for this analysis is defined as the amount of water available at Lee Ferry for use, on average, by the Upper Basin, exclusive of shared CRSP reservoir evaporation. Shortages in the above table are defined as 6 percent or less overall computed shortage for any period of 25 consecutive years consistent with the 1988 Hydrologic Determination. Results are shown for minimum Lower Basin deliveries of 8.25 maf and 7.50 maf as was done in the 1988 Hydrologic Determination. The analyses in this investigation should not be construed to prejudice the positions of either the Upper Colorado River Commission or the States of the Lower Division as to the interpretation or administration of Article III of the Colorado River Compact.

For those analyses that use an allowable or tolerable overall shortage of 6 percent or less of the use over any period of 25 consecutive years, the results indicate that there would be 5 years of shortage to meet all demands on the Upper Basin out of 95 years of record used in this investigation. However, the annual amounts of computed shortages for those five years would not fully materialize because Upper Basin consumptive uses will be below average under critical period hydrology due to physical water supply shortages at the sites of use in the Upper Basin. For example, the natural flow at Lee Ferry for 1977 was only 5.55 maf, and severe water supply shortages occurred throughout the Upper Basin in that year. The computations of shortage in this analysis give conservatively large estimates of annual shortages at Lee Ferry and do not fully reflect all factors,

including physical shortages in the Upper Basin that might contribute or relate to a shortage condition at any given time. The computed shortages in this investigation do not equate to administrative calls to curtail Upper Basin uses.

D. Comparison to 1988 Hydrologic Determination

The 1988 Hydrologic Determination concluded that the total Upper Basin yield, including CRSP reservoir evaporation, is at least 6.0 maf per year for the 1953-1977 critical period hydrology with a 6 percent allowable overall shortage for the period. Under the conditions assumed in the current investigation, the shared CRSP evaporation varies with CRSP storage assumptions and storage levels. Assuming an average annual Upper Basin use of 5.79 maf, an annual Lower Basin delivery of 8.25 maf, and maintenance of the power pools, the shared CRSP evaporation would range from an average of about 0.25 maf per year over the worst 25-year period of reservoir storage draw down (1953-1977) to an average of about 0.49 maf per year over the period of record used in the analysis (1906-2000). Thus, the total Upper Basin depletion, including both Upper Basin uses and CRSP reservoir evaporation, would average about 6.04 maf per year or more over any period of 25 consecutive years. The total Upper Basin depletion amount for this scenario for the 1953-1977 period is comparable to the total Upper Basin depletion of 6.0 maf per year determined to be available for the period by the 1988 Hydrologic Determination. The difference is due to the revisions made to the CRSS natural flows for 1971-1980. If the minimum power pools are used, the shared CRSP reservoir evaporation is reduced due to increased reservoir storage draw downs.



IV. Water Use Projections

A. Upper Basin

The Upper Colorado River Commission last approved depletions schedules for the Upper Division States for planning purposes in 1999. The depletions schedules, dated January 2000, project that the total Upper Basin use exclusive of shared CRSP reservoir evaporation will average about 5.37 maf per year under 2060 development conditions. Unless additional Upper Basin water development occurs by 2060 as compared to the January 2000 depletions schedules, the Upper Basin use may average less than about 5.40 maf per year from now through 2060. The time required to develop the Upper Basin allocation reduces risk of shortage within the 2060 planning horizon.

B. State of New Mexico

For use in this investigation, the New Mexico Interstate Stream Commission provided the Bureau of Reclamation with a preliminary revised schedule of anticipated depletions through 2060 from the Upper Basin in New Mexico dated May 2006 (see Appendix B). The revised depletions schedule includes irrigation depletions calculated using the SCS modified Blaney-Criddle method with SCS effective precipitation so that demands and supply for this hydrologic investigation are evaluated using consistent methodologies.

The irrigation depletions for the Navajo Nation's irrigation projects are water right depletion amounts provided by the Settlement Agreement. Both this hydrologic investigation and the 1988 Hydrologic Determination assume use of the full depletion amount for the NIIP. This is a conservative assumption because the total NIIP depletion right is not expected to be fully utilized under normal farm management practices. The revised depletions schedule does not include New Mexico's allocation of shared CRSP reservoir evaporation. The revised New Mexico depletions schedule shows a total anticipated depletion of 642,000 af per year, on average, for uses in New Mexico under 2060 development conditions. This represents an increase in New Mexico's total Upper Basin depletion, excluding shared CRSP reservoir evaporation, of 23,000 af per year, or about 0.02 maf per year, as compared to the January 2000 depletions schedules.

V. Probabilities of Calls to Curtail Upper Basin Uses

The 1988 Hydrologic Determination included a probabilistic risk analysis of administrative calls to curtail Upper Basin uses that indicated that: (1) such calls would occur rarely at an Upper Basin demand level of 6.1 maf per year, though their effects could have significant impact to the Upper Basin; and (2) the frequency and magnitude of such calls would diminish rapidly below this demand level. The risk analysis was made using the CRSS model. It is not necessary for this investigation to duplicate such a risk analysis.

The computations of shortage in this current investigation give conservatively large estimates of annual shortages at Lee Ferry and do not fully reflect all factors, including physical shortages in the Upper Basin that might contribute or relate to a shortage condition at any given time. While this investigation uses a 2060 reservoir storage sedimentation condition for Lake Powell, a risk analysis should vary the storage development and sedimentation conditions over time. In addition, it will take decades to develop the Upper Basin allocation. Therefore, risk of shortage is reduced within a 2060 planning horizon. Even using the CRSS model, computed shortages would not necessarily equate to administrative calls to curtail Upper Basin uses.

VI. Physical Availability of Water from Navajo Reservoir

The Bureau of Reclamation, using a detailed hydrologic model for the San Juan River Basin, has evaluated the physical availability of water from Navajo Reservoir and the San Juan River for the Navajo-Gallup Water Supply Project, taking into account, among other things, the habitat needs of San Juan River populations of fish species listed as endangered under the Endangered Species Act. The physical water supply analysis contained in the Biological Assessment, Navajo-Gallup Water Supply Project, dated August 16, 2005, indicates that sufficient water is likely to be available from the Navajo Reservoir water supply for the Navajo Nation's uses under the project. Although the depletions for individual uses in New Mexico that were used in the Biological Assessment differ slightly from those in New Mexico's May 2006 revised depletions

schedule, the physical water supply analysis in the Biological Assessment assumes up to about 640,500 af per year of depletion, on average, in New Mexico from the San Juan River. This amount of total average depletion in New Mexico is not significantly different than the amount of total average depletion in New Mexico shown in the May 2006 revised New Mexico depletions schedule under 2060 development conditions.

VII. Conclusions

It is concluded that based on the analysis performed by Reclamation in consultation with the Upper Colorado River Commission, the Upper Basin yield and New Mexico water allocation needed to support New Mexico's revised Upper Basin depletions schedule are reasonably likely to be available. The mass balance analyses results are sufficient to conclude that: (1) the Upper Basin yield is at least 5.76 maf per year, on average, excluding shared CRSP reservoir evaporation; (2) New Mexico's Upper Basin allocation is at least 642,400 af per year, excluding shared CRSP reservoir evaporation; and (3) the total anticipated average annual consumptive use in New Mexico from the Upper Basin, including Navajo Reservoir evaporation of 642,000 af per year as shown in the revised New Mexico depletions schedule is not likely to exceed New Mexico's Upper Basin allocation. This conclusion is reached assuming full use of the Navajo Nation's proposed depletion rights under the Settlement Agreement for both the Navajo-Gallup Water Supply Project and the NIIP.

Based upon this hydrologic investigation for a planning horizon through 2060, the May 2006 revised New Mexico depletions schedule, and the Biological Assessment for the Navajo-Gallup Water Supply Project, sufficient water is reasonably likely to be available from the Navajo Reservoir water supply through at least 2060 to fulfill the contract that is proposed by the Settlement Agreement to provide water for the Navajo Nation's uses in New Mexico under the Navajo-Gallup Water Supply Project and the NIIP. If the term of the contract extends beyond 2060, or is perpetual as proposed by the Settlement Agreement, the risk of shortages in deliveries under the contract may increase after 2060 depending upon future storage, hydrologic conditions, and other factors. Section 11(a) of Public Law 87-483 allows for contracting of water from Navajo Reservoir up to a total amount that, in the event of shortage, still results in a reasonable amount of water being available for the diversion requirements of the NIIP and the San Juan-Chama Project.

VIII. Disclaimers

A. Interstate Compacts and Federal Laws

Nothing in this report is intended to interpret the provisions of the Colorado River Compact (45 Stat. 1057), the Upper Colorado River Basin Compact (63 Stat. 31), the Water Treaty of 1944 between the United States of America and the United Mexican States (59 Stat. 1219), the decree entered by the Supreme Court of the United States in *Arizona v. California, et al.* (376 U.S. 340), the Boulder Canyon Project Act (45 Stat.

1057), the Boulder Canyon Project Adjustment Act (54 Stat. 774), the Colorado River Storage Project Act (70 Stat. 105), or the Colorado River Basin Project Act (82 Stat. 885). Implementation of the Navajo-Gallup Water Supply Project and the NIIP is subject to compliance with federal environmental laws including the National Environmental Policy Act and the Endangered Species Act.

B. Proposed Navajo Reservoir Water Contract

This determination is not to be construed as acceptance by the Department of the Interior of the terms of the Settlement Agreement, including the terms of the proposed contract. This determination also does not guarantee that the United States would be able to deliver water under the proposed contract without shortages in deliveries on account of drought or other causes outside the control of the Secretary. Nothing in this determination shall be construed to impose on the United States any obligation to maintain CRSP storage facilities, including Navajo Dam and Reservoir, or NIIP or Navajo-Gallup Water Supply Project facilities beyond their useful lives or to take extraordinary measures to keep these facilities operating.

List of Appendices

APPENDIX A - Mass Balance Analysis

APPENDIX B - Reservoir Storage

APPENDIX C - CRSP Evaporation Analysis

APPENDIX D - New Mexico Depletion Schedule

APPENDIX E - Upper Colorado River Commission Resolution

APPENDIX A - Mass Balance Analysis

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 to Store (subtotal)	Spill to LC (minus)	Shortage (plus)	UC Basin Year-end Storage (equals)	CRSP Year- end Storage	Variables	
1906	18,550,021	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	Storage	30,167,576 af
1907	21,201,694	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	Sedimentation Rate (Active)	24,292 af/yr
1908	12,218,817	29,530,030	24,847,704	8,250,000	5,550,000	725,218	27,223,629	0	0	27,223,629	22,907,009	Bank Storage	4%
1909	22,356,301	27,223,629	22,907,009	8,250,000	5,550,000	725,218	35,054,712	5,524,682	0	29,530,030	24,847,704	Adjusted Storage (2060)	29,530,030 af
1910	14,650,616	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	UB Demand Level	5,550,000 af/yr
1911	15,499,729	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	LB Delivery	8,250,000 af/yr
1912	18,623,410	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	24,836,947		
1914	21,354,814	29,517,247	24,836,947	8,250,000	5,550,000	749,157	36,322,904	6,792,873	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	24,076,569	Results	
1916	20,142,892	28,613,582	24,076,569	8,250,000	5,550,000	739,725	34,216,749	4,686,719	0	29,530,030	24,847,704	Average CRSP Evap	527,920 af/yr
1917	22,942,804	29,530,030	24,847,704	8,250,000	5,550,000	749,290	37,923,544	8,393,514	0	29,530,030	24,847,704	Total Yield w/ CRSP evap	6,077,920 af/yr
1918	15,865,939	29,530,030	24,847,704	8,250,000	5,550,000	749,290	30,846,679	1,316,649	0	29,530,030	24,847,704		
1919	12,651,369	29,530,030	24,847,704	8,250,000	5,550,000	729,686	27,651,713	0	0	27,651,713	23,267,216	Shortage Years	Shortage
1920	22,287,632	27,651,713	23,267,216	8,250,000	5,550,000	729,686	35,409,659	5,879,629	0	29,530,030	24,847,704		
1921	22,526,781	29,530,030	24,847,704	8,250,000	5,550,000	749,290	37,507,521	7,977,491	0	29,530,030	24,847,704	1963	0 af
1922	18,447,198	29,530,030	24,847,704	8,250,000	5,550,000	749,290	33,427,938	3,897,908	0	29,530,030	24,847,704	1964	0 af
1923	19,024,046	29,530,030	24,847,704	8,250,000	5,550,000	749,290	34,004,786	4,474,756	0	29,530,030	24,847,704	1967	0 af
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	24,288,521	1968	0 af
1925	14,430,701	28,865,474	24,288,521	8,250,000	5,550,000	734,337	28,761,839	0	0	28,761,839	24,201,318	1977	0 af
1926	15,213,731	28,761,839	24,201,318	8,250,000	5,550,000	740,284	29,435,286	0	0	29,435,286	24,767,982		
1927	19,539,212	29,435,286	24,767,982	8,250,000	5,550,000	748,301	34,426,197	4,896,166	0	29,530,030	24,847,704		
1928	16,954,334	29,530,030	24,847,704	8,250,000	5,550,000	749,290	31,935,074	2,405,044	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	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.	618,750 af/yr
1931	8,474,134	29,530,030	24,847,704	8,250,000	5,550,000	686,538	23,517,626	0	0	23,517,626	19,788,636		
1932	17,422,187	23,517,626	19,788,636	8,250,000	5,550,000	654,758	26,485,055	0	0	26,485,055	22,285,545		
1933	12,183,500	26,485,055	22,285,545	8,250,000	5,550,000	661,949	24,206,607	0	0	24,206,607	20,368,371		
1934	6,178,192	24,206,607	20,368,371	8,250,000	5,550,000	552,849	16,031,950	0	0	16,031,950	13,489,900		
1935	12,630,349	16,031,950	13,489,900	8,250,000	5,550,000	450,618	14,411,681	0	0	14,411,681	12,126,543	Total Upper Basin depletion, inc. CRSP evap:	
1936	14,648,873	14,411,681	12,126,543	8,250,000	5,550,000	437,996	14,822,558	0	0	14,822,558	12,472,271	1953-1977	5,870,057 af/yr
1937	14,306,056	14,822,558	12,472,271	8,250,000	5,550,000	442,943	14,885,671	0	0	14,885,671	12,525,376	1931-1977	5,971,255 af/yr
1938	18,148,319	14,885,671	12,525,376	8,250,000	5,550,000	483,935	18,750,055	0	0	18,750,055	15,777,018	1906-2000	6,077,920 af/yr
1939	11,164,059	18,750,055	15,777,018	8,250,000	5,550,000	491,625	15,622,489	0	0	15,622,489	13,145,364		
1940	9,931,657	15,622,489	13,145,364	8,250,000	5,550,000	414,284	11,339,862	0	0	11,339,862	9,541,797		
1941	20,116,678	11,339,862	9,541,797	8,250,000	5,550,000	431,015	17,225,525	0	0	17,225,525	14,494,220	Flow Adjustments:	
1942	17,225,136	17,225,525	14,494,220	8,250,000	5,550,000	522,737	20,127,925	0	0	20,127,925	16,936,410	1971	203,226 af
1943	13,731,401	20,127,925	16,936,410	8,250,000	5,550,000	546,608	19,512,717	0	0	19,512,717	16,418,751	1972	226,985 af
1944	15,369,422	19,512,717	16,418,751	8,250,000	5,550,000	550,819	20,531,321	0	0	20,531,321	17,275,843	1973	252,377 af
1945	14,140,528	20,531,321	17,275,843	8,250,000	5,550,000	559,168	20,312,681	0	0	20,312,681	17,091,871	1974	196,384 af
1946	11,095,453	20,312,681	17,091,871	8,250,000	5,550,000	523,198	17,084,936	0	0	17,084,936	14,375,923	1975	246,665 af
1947	16,439,486	17,084,936	14,375,923	8,250,000	5,550,000	511,717	19,212,705	0	0	19,212,705	16,166,309	1976	173,250 af
1948	15,139,294	19,212,705	16,166,309	8,250,000	5,550,000	542,244	20,009,755	0	0	20,009,755	16,836,978	1977	112,291 af
1949	16,933,584	20,009,755	16,836,978	8,250,000	5,550,000	577,243	22,566,096	0	0	22,566,096	18,987,982	1978	152,187 af
1950	13,140,416	22,566,096	18,987,982	8,250,000	5,550,000	590,873	21,315,639	0	0	21,315,639	17,935,799	1979	153,559 af
1951	12,505,894	21,315,639	17,935,799	8,250,000	5,550,000	558,486	19,463,047	0	0	19,463,047	16,376,957	1980	161,893 af
1952	20,805,422	19,463,047	16,376,957	8,250,000	5,550,000	605,942	25,862,527	0	0	25,862,527	21,761,725		
1953	11,165,419	25,862,527	21,761,725	8,250,000	5,550,000	638,572	22,589,374	0	0	22,589,374	19,007,568		
1954	8,496,102	22,589,374	19,007,568	8,250,000	5,550,000	543,381	16,742,094	0	0	16,742,094	14,087,442		
1955	9,413,908	16,742,094	14,087,442	8,250,000	5,550,000	432,065	11,923,937	0	0	11,923,937	10,033,259		
1956	11,426,874	11,923,937	10,033,259	8,250,000	5,550,000	353,322	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	13,881,544		
1958	15,862,511	16,497,397	13,881,544	8,250,000	5,550,000	493,620	18,066,288	0	0	18,066,288	15,201,670		
1959	9,598,169	18,066,288	15,201,670	8,250,000	5,550,000	461,325	13,403,132	0	0	13,403,132	11,277,911		
1960	11,524,160	13,403,132	11,277,911	8,250,000	5,550,000	384,885	10,742,407	0	0	10,742,407	9,039,075		
1961	10,010,259	10,742,407	9,039,075	8,250,000	5,550,000	314,281	6,638,386	0	0	6,638,386	5,585,793		
1962	17,377,609	6,638,386	5,585,793	8,250,000	5,550,000	305,597	9,910,398	0	0	9,910,398	8,338,990		
1963	8,840,900	9,910,398	8,338,990	8,250,000	5,550,000	285,014	4,666,284	0	0	4,666,284	3,926,391		
1964	10,863,586	4,666,284	3,926,391	8,250,000	5,550,000	197,571	1,532,299	0	0	1,532,299	1,289,335		
1965	19,875,027	1,532,299	1,289,335	8,250,000	5,550,000	225,909	7,381,417	0	0	7,381,417	6,211,008		
1966	10,679,844	7,381,417	6,211,008	8,250,000	5,550,000	251,764	4,009,497	0	0	4,009,497	3,373,745		
1967	11,670,830	4,009,497	3,373,745	8,250,000	5,550,000	192,341	1,687,986	0	0	1,687,986	1,420,336		
1968	13,739,932	1,687,986	1,420,336	8,250,000	5,550,000	165,754	1,462,164	0	0	1,462,164	1,230,321		
1969	15,272,159	1,462,164	1,230,321	8,250,000	5,550,000	176,916	2,757,407	0	0	2,757,407	2,320,188		
1970	15,344,136	2,757,407	2,320,188	8,250,000	5,550,000	204,417	4,097,125	0	0	4,097,125	3,447,479		
1971	15,493,659	4,097,125	3,447,479	8,250,000	5,550,000	233,638	5,557,146	0	0	5,557,146	4,675,996		
1972	13,186,637	5,557,146	4,675,996	8,250,000	5,550,000	239,970	4,703,812	0	0	4,703,812	3,957,968		
1973	18,650,193	4,703,812	3,957,968	8,250,000	5,550,000	278,776	9,275,229	0	0	9,275,229	7,804,534		
1974	13,285,426	9,275,229	7,804,534	8,250,000	5,550,000	317,801	8,442,854	0	0	8,442,854	7,104,142		
1975	17,072,661	8,442,854	7,104,142	8,250,000	5,550,000	339,725	11,375,790	0	0	11,375,790	9		

Upper Basin Yield Mass Balance Analysis

Run 2 - Maintain CRSP Minimum Power Pools, 8.25 maf Lower Basin Delivery, 6% Overall 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 to Store (subtotal)	Spill to LC (minus)	Shortage (plus)	UC Basin Year-end Storage (equals)	CRSP Year- end Storage	Variables	
1906	18,550,021	29,530,030	24,847,704	8,250,000	5,790,000	749,290	33,290,761	3,760,731	0	29,530,030	24,847,704	Storage	30,167,576 af
1907	21,201,694	29,530,030	24,847,704	8,250,000	5,790,000	749,290	35,942,434	6,412,404	0	29,530,030	24,847,704	Sedimentation Rate (Active)	24,292 af/yr
1908	12,218,817	29,530,030	24,847,704	8,250,000	5,790,000	722,739	26,986,108	0	0	26,986,108	22,707,150	Bank Storage	4%
1909	22,356,301	26,986,108	22,707,150	8,250,000	5,790,000	722,739	34,579,670	5,049,640	0	29,530,030	24,847,704	Adjusted Storage (2060)	29,530,030 af
1910	14,650,616	29,530,030	24,847,704	8,250,000	5,790,000	747,858	29,392,789	0	0	29,392,789	24,732,223	UB Demand Level	5,790,000 af/yr
1911	15,499,729	29,392,789	24,732,223	8,250,000	5,790,000	747,858	30,104,660	574,629	0	29,530,030	24,847,704	LB Delivery	8,250,000 af/yr
1912	18,623,410	29,530,030	24,847,704	8,250,000	5,790,000	749,290	33,364,150	3,834,120	0	29,530,030	24,847,704		
1913	14,536,373	29,530,030	24,847,704	8,250,000	5,790,000	746,678	29,279,726	0	0	29,279,726	24,637,088		
1914	21,354,814	29,279,726	24,637,088	8,250,000	5,790,000	746,678	35,847,862	6,317,832	0	29,530,030	24,847,704		
1915	13,623,277	29,530,030	24,847,704	8,250,000	5,790,000	737,246	28,376,061	0	0	28,376,061	23,876,710	Results	
1916	20,142,892	28,376,061	23,876,710	8,250,000	5,790,000	737,246	33,741,707	4,211,677	0	29,530,030	24,847,704	Average CRSP Evap	491,413 af/yr
1917	22,942,804	29,530,030	24,847,704	8,250,000	5,790,000	749,290	37,683,544	8,153,514	0	29,530,030	24,847,704	Total Yield w/ CRSP evap	6,281,413 af/yr
1918	15,865,939	29,530,030	24,847,704	8,250,000	5,790,000	749,290	30,606,679	1,076,649	0	29,530,030	24,847,704		
1919	12,651,369	29,530,030	24,847,704	8,250,000	5,790,000	727,207	27,414,192	0	0	27,414,192	23,067,356	Shortage Years	Shortage
1920	22,287,632	27,414,192	23,067,356	8,250,000	5,790,000	727,207	34,934,617	5,404,587	0	29,530,030	24,847,704		
1921	22,526,781	29,530,030	24,847,704	8,250,000	5,790,000	749,290	37,267,521	7,737,491	0	29,530,030	24,847,704	1963	1,153,349 af
1922	18,447,198	29,530,030	24,847,704	8,250,000	5,790,000	749,290	33,187,938	3,657,908	0	29,530,030	24,847,704	1964	3,309,290 af
1923	19,024,046	29,530,030	24,847,704	8,250,000	5,790,000	749,290	33,764,786	4,234,756	0	29,530,030	24,847,704	1967	453,929 af
1924	13,877,798	29,530,030	24,847,704	8,250,000	5,790,000	739,875	28,627,953	0	0	28,627,953	24,088,662	1968	432,944 af
1925	14,430,701	28,627,953	24,088,662	8,250,000	5,790,000	726,951	28,291,704	0	0	28,291,704	23,805,728	1977	3,136,608 af
1926	15,213,731	28,291,704	23,805,728	8,250,000	5,790,000	728,092	28,737,342	0	0	28,737,342	24,180,706		
1927	15,539,212	28,737,342	24,180,706	8,250,000	5,790,000	741,017	33,485,537	3,965,507	0	29,530,030	24,847,704	1963	1,153,349 af
1928	16,954,334	29,530,030	24,847,704	8,250,000	5,790,000	749,290	31,685,074	2,165,044	0	29,530,030	24,847,704	1964	3,309,290 af
1929	21,829,585	29,530,030	24,847,704	8,250,000	5,790,000	749,290	36,570,325	7,040,295	0	29,530,030	24,847,704	1967	453,929 af
1930	14,621,041	29,530,030	24,847,704	8,250,000	5,790,000	747,552	29,363,519	0	0	29,363,519	24,707,595	1968	432,944 af
1931	8,474,134	29,363,519	24,707,595	8,250,000	5,790,000	680,619	23,117,034	0	0	23,117,034	19,451,562	1977	3,136,608 af
1932	17,422,187	23,117,034	19,451,562	8,250,000	5,790,000	644,003	25,855,218	0	0	25,855,218	21,755,575		
1933	12,183,500	25,855,218	21,755,575	8,250,000	5,790,000	646,458	23,352,260	0	0	23,352,260	19,649,490		
1934	6,178,192	23,352,260	19,649,490	8,250,000	5,790,000	532,720	14,957,731	0	0	14,957,731	12,586,011		
1935	12,630,349	14,957,731	12,586,011	8,250,000	5,790,000	425,948	13,122,133	0	0	13,122,133	11,041,468		
1936	14,648,873	13,122,133	11,041,468	8,250,000	5,790,000	408,877	13,322,129	0	0	13,322,129	11,209,752		
1937	14,306,056	13,322,129	11,209,752	8,250,000	5,790,000	409,467	13,178,718	0	0	13,178,718	11,089,080		
1938	18,148,319	13,178,718	11,089,080	8,250,000	5,790,000	446,192	16,840,844	0	0	16,840,844	14,170,535		
1939	11,164,059	16,840,844	14,170,535	8,250,000	5,790,000	449,704	13,515,199	0	0	13,515,199	11,372,209		
1940	9,931,657	13,515,199	11,372,209	8,250,000	5,790,000	368,272	9,038,585	0	0	9,038,585	7,605,413		
1941	20,116,678	9,038,585	7,605,413	8,250,000	5,790,000	380,995	14,734,268	0	0	14,734,268	12,397,980		
1942	17,225,136	14,734,268	12,397,980	8,250,000	5,790,000	468,792	17,450,612	0	0	17,450,612	14,683,616		
1943	13,731,401	17,450,612	14,683,616	8,250,000	5,790,000	488,820	16,653,193	0	0	16,653,193	14,012,637		
1944	15,369,422	16,653,193	14,012,637	8,250,000	5,790,000	489,266	17,493,349	0	0	17,493,349	14,719,577		
1945	14,140,528	17,493,349	14,719,577	8,250,000	5,790,000	493,929	17,099,948	0	0	17,099,948	14,388,554		
1946	11,095,453	17,099,948	14,388,554	8,250,000	5,790,000	454,348	13,701,053	0	0	13,701,053	11,528,593		
1947	16,439,486	13,701,053	11,528,593	8,250,000	5,790,000	439,332	15,661,207	0	0	15,661,207	13,177,942		
1948	15,139,294	15,661,207	13,177,942	8,250,000	5,790,000	466,396	16,294,105	0	0	16,294,105	13,710,487		
1949	16,933,584	16,294,105	13,710,487	8,250,000	5,790,000	498,004	18,689,684	0	0	18,689,684	15,726,220		
1950	13,140,416	18,689,684	15,726,220	8,250,000	5,790,000	508,313	17,281,788	0	0	17,281,788	14,541,561		
1951	12,505,894	17,281,788	14,541,561	8,250,000	5,790,000	472,674	15,275,008	0	0	15,275,008	12,852,979		
1952	20,805,422	15,275,008	12,852,979	8,250,000	5,790,000	516,945	21,523,485	0	0	21,523,485	18,110,689		
1953	11,165,419	21,523,485	18,110,689	8,250,000	5,790,000	546,455	18,102,449	0	0	18,102,449	15,232,098		
1954	8,496,102	18,102,449	15,232,098	8,250,000	5,790,000	448,209	12,110,342	0	0	12,110,342	10,190,108		
1955	9,413,908	12,110,342	10,190,108	8,250,000	5,790,000	333,901	7,150,349	0	0	7,150,349	6,016,579		
1956	11,426,874	7,150,349	6,016,579	8,250,000	5,790,000	252,228	4,284,996	0	0	4,284,996	3,605,560		
1957	21,500,963	4,284,996	3,605,560	8,250,000	5,790,000	297,091	11,448,867	0	0	11,448,867	9,633,517		
1958	15,862,511	11,448,867	9,633,517	8,250,000	5,790,000	386,845	12,884,533	0	0	12,884,533	10,841,542		
1959	9,598,169	12,884,533	10,841,542	8,250,000	5,790,000	351,798	8,090,903	0	0	8,090,903	6,807,998		
1960	11,524,160	8,090,903	6,807,998	8,250,000	5,790,000	272,663	5,302,401	0	0	5,302,401	4,461,644		
1961	10,010,259	5,302,401	4,461,644	8,250,000	5,790,000	199,419	1,073,241	0	0	1,073,241	903,066		
1962	17,377,609	1,073,241	903,066	8,250,000	5,790,000	188,150	4,222,699	0	0	4,222,699	3,553,142		
1963	8,840,900	4,222,699	3,553,142	8,250,000	5,790,000	176,949	-1,153,349	0	1,153,349	0	0		
1964	10,863,586	0	0	8,250,000	5,790,000	132,876	-3,309,290	0	3,309,290	0	0		
1965	19,875,027	0	0	8,250,000	5,790,000	191,775	5,643,252	0	0	5,643,252	4,748,449		
1966	10,679,844	5,643,252	4,748,449	8,250,000	5,790,000	213,377	2,069,719	0	0	2,069,719	1,741,541		
1967	11,670,830	2,069,719	1,741,541	8,250,000	5,790,000	154,478	-453,929	0	453,929	0	0		
1968	13,739,932	0	0	8,250,000	5,790,000	132,876	-432,944	0	432,944	0	0		
1969	15,272,159	0	0	8,250,000	5,790,000	144,231	1,087,928	0	0	1,087,928	915,425		
1970	15,344,136	1,087,928	915,425	8,250,000	5,790,000	167,449	2,224,615	0	0	2,224,615	1,871,877		
1971	15,493,659	2,224,615	1,871,877	8,250,000	5,790,000	192,476	3,485,798	0	0	3,485,798	2,933,084		
1972	13,186,637	3,485,798	2,933,084	8,250,000	5,790,000	194,700	2,437,734	0	0	2,437,734	2,051,203		
1973	18,650,193	2,437,734	2,051,203	8,250,000	5,790,000	229,483	6,818,443	0	0	6,818,443	5,737,301		
1974	13,285,426	6,818,443	5,737,301	8,250,000	5,790,000	264,568	5,799,301	0	0	5,799,301	4,879,755		
1975	17,072,661	5,799,301	4,879,755	8,250,000	5,790,000	282,634	8,549,329	0	0	8,549,329	7,193,734		
1976	11,313,561	8,549,329	7,193,734	8,250,000	5,790,000	279,958	5,542,932	0	0	5,542,932	4,664,036		
1977	5,551,188	5,542,932	4,664,036	8,250,000	5,790,000	190,728	-3,136,608	0	3,136,608	0	0		

Upper Basin Yield Mass Balance Analysis

Run 3 - Maintain CRSP Minimum Power Pools, 7.50 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 to Store (subtotal)	Spill to LC (minus)	Shortage (plus)	UC Basin Year-end Storage (equals)	CRSP Year- end Storage	Variables	
1906	18,550,021	29,530,030	24,847,704	7,500,000	6,300,000	749,290	33,530,761	4,000,731	0	29,530,030	24,847,704	Storage	30,167,576 af
1907	21,201,694	29,530,030	24,847,704	7,500,000	6,300,000	749,290	36,182,434	6,652,404	0	29,530,030	24,847,704	Sedimentation Rate (Active)	24,292 af/yr
1908	12,218,817	29,530,030	24,847,704	7,500,000	6,300,000	725,218	27,223,629	0	0	27,223,629	22,907,009	Bank Storage	4%
1909	22,356,301	27,223,629	22,907,009	7,500,000	6,300,000	725,218	35,054,712	5,524,682	0	29,530,030	24,847,704	Adjusted Storage (2060)	29,530,030 af
1910	14,650,616	29,530,030	24,847,704	7,500,000	6,300,000	749,290	29,631,356	101,326	0	29,530,030	24,847,704	UB Demand Level	6,300,000 af/yr
1911	15,499,729	29,530,030	24,847,704	7,500,000	6,300,000	749,290	30,480,469	950,439	0	29,530,030	24,847,704	LB Delivery	7,500,000 af/yr
1912	18,623,410	29,530,030	24,847,704	7,500,000	6,300,000	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	7,500,000	6,300,000	749,157	29,517,247	0	0	29,517,247	24,836,947		
1914	21,354,814	29,517,247	24,836,947	7,500,000	6,300,000	749,157	36,322,904	6,792,873	0	29,530,030	24,847,704		
1915	13,623,277	29,530,030	24,847,704	7,500,000	6,300,000	739,725	28,613,582	0	0	28,613,582	24,076,569	Results	
1916	20,142,892	28,613,582	24,076,569	7,500,000	6,300,000	739,725	34,216,749	4,686,719	0	29,530,030	24,847,704	Average CRSP Evap	527,920 af/yr
1917	22,942,804	29,530,030	24,847,704	7,500,000	6,300,000	749,290	37,923,544	8,393,514	0	29,530,030	24,847,704	Total Yield w/ CRSP evap	6,827,920 af/yr
1918	15,865,939	29,530,030	24,847,704	7,500,000	6,300,000	749,290	30,846,679	1,316,649	0	29,530,030	24,847,704		
1919	12,651,369	29,530,030	24,847,704	7,500,000	6,300,000	729,686	27,651,713	0	0	27,651,713	23,267,216	Shortage Years	Shortage
1920	22,287,632	27,651,713	23,267,216	7,500,000	6,300,000	729,686	35,409,659	5,879,629	0	29,530,030	24,847,704		
1921	22,526,781	29,530,030	24,847,704	7,500,000	6,300,000	749,290	37,507,521	7,977,491	0	29,530,030	24,847,704	1963	0 af
1922	18,447,198	29,530,030	24,847,704	7,500,000	6,300,000	749,290	33,427,938	3,897,908	0	29,530,030	24,847,704	1964	0 af
1923	19,024,046	29,530,030	24,847,704	7,500,000	6,300,000	749,290	34,004,786	4,474,756	0	29,530,030	24,847,704	1967	0 af
1924	13,877,798	29,530,030	24,847,704	7,500,000	6,300,000	749,290	28,865,474	0	0	28,865,474	24,288,521	1968	0 af
1925	14,430,701	28,865,474	24,288,521	7,500,000	6,300,000	734,337	28,761,839	0	0	28,761,839	24,201,318	1977	0 af
1926	15,213,731	28,761,839	24,201,318	7,500,000	6,300,000	740,284	29,435,286	0	0	29,435,286	24,767,982		
1927	19,539,212	29,435,286	24,767,982	7,500,000	6,300,000	748,301	34,426,197	4,896,166	0	29,530,030	24,847,704	NM allocation(w/o evap)	703,125 af/yr
1928	16,954,334	29,530,030	24,847,704	7,500,000	6,300,000	749,290	31,935,074	2,405,044	0	29,530,030	24,847,704		
1929	21,829,585	29,530,030	24,847,704	7,500,000	6,300,000	749,290	36,810,325	7,280,295	0	29,530,030	24,847,704	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.	
1930	14,621,041	29,530,030	24,847,704	7,500,000	6,300,000	749,290	29,601,781	71,751	0	29,530,030	24,847,704		
1931	8,474,134	29,530,030	24,847,704	7,500,000	6,300,000	686,538	23,517,626	0	0	23,517,626	19,788,636		
1932	17,422,187	23,517,626	19,788,636	7,500,000	6,300,000	654,758	26,485,055	0	0	26,485,055	22,285,545		
1933	12,183,500	26,485,055	22,285,545	7,500,000	6,300,000	661,949	20,208,607	0	0	24,206,607	20,368,371		
1934	6,178,192	24,206,607	20,368,371	7,500,000	6,300,000	552,849	16,031,950	0	0	16,031,950	13,489,900		
1935	12,630,349	16,031,950	13,489,900	7,500,000	6,300,000	450,618	14,411,681	0	0	14,411,681	12,126,543	Total Upper Basin depletion, inc. CRSP evap:	
1936	14,648,873	14,411,681	12,126,543	7,500,000	6,300,000	437,996	14,822,558	0	0	14,822,558	12,472,271	1953-1977	6,620,057 af/yr
1937	14,306,056	14,822,558	12,472,271	7,500,000	6,300,000	442,943	14,885,671	0	0	14,885,671	12,525,376	1931-1977	6,721,255 af/yr
1938	18,148,319	14,885,671	12,525,376	7,500,000	6,300,000	483,935	18,750,055	0	0	18,750,055	15,777,018	1906-2000	6,827,920 af/yr
1939	11,164,059	18,750,055	15,777,018	7,500,000	6,300,000	491,625	15,622,489	0	0	15,622,489	13,145,364		
1940	9,931,657	15,622,489	13,145,364	7,500,000	6,300,000	414,284	11,339,862	0	0	11,339,862	9,541,797		
1941	20,116,678	11,339,862	9,541,797	7,500,000	6,300,000	431,015	17,225,525	0	0	17,225,525	14,494,220	Flow Adjustments:	
1942	17,225,136	17,225,525	14,494,220	7,500,000	6,300,000	522,737	20,127,925	0	0	20,127,925	16,936,410	1971	203,226 af
1943	13,731,401	20,127,925	16,936,410	7,500,000	6,300,000	546,608	19,512,717	0	0	19,512,717	16,418,751	1972	226,985 af
1944	15,369,422	19,512,717	16,418,751	7,500,000	6,300,000	550,819	20,531,321	0	0	20,531,321	17,275,843	1973	252,377 af
1945	14,140,528	20,531,321	17,275,843	7,500,000	6,300,000	559,168	20,312,681	0	0	20,312,681	17,091,871	1974	196,384 af
1946	11,095,453	20,312,681	17,091,871	7,500,000	6,300,000	523,198	17,084,936	0	0	17,084,936	14,375,923	1975	246,665 af
1947	16,439,486	17,084,936	14,375,923	7,500,000	6,300,000	511,717	19,212,705	0	0	19,212,705	16,166,309	1976	173,250 af
1948	15,139,294	19,212,705	16,166,309	7,500,000	6,300,000	542,244	20,009,755	0	0	20,009,755	16,836,978	1977	112,291 af
1949	16,933,584	20,009,755	16,836,978	7,500,000	6,300,000	577,243	22,566,096	0	0	22,566,096	18,987,982	1978	152,187 af
1950	13,140,416	22,566,096	18,987,982	7,500,000	6,300,000	590,873	21,315,639	0	0	21,315,639	17,935,799	1979	153,559 af
1951	12,505,894	21,315,639	17,935,799	7,500,000	6,300,000	558,486	19,463,047	0	0	19,463,047	16,376,957	1980	161,893 af
1952	20,805,422	19,463,047	16,376,957	7,500,000	6,300,000	605,942	25,862,527	0	0	25,862,527	21,761,725		
1953	11,165,419	25,862,527	21,761,725	7,500,000	6,300,000	638,572	22,589,374	0	0	22,589,374	19,007,568		
1954	8,496,102	22,589,374	19,007,568	7,500,000	6,300,000	543,381	16,742,094	0	0	16,742,094	14,087,442		
1955	9,413,908	16,742,094	14,087,442	7,500,000	6,300,000	432,065	11,923,937	0	0	11,923,937	10,033,259		
1956	11,426,874	11,923,937	10,033,259	7,500,000	6,300,000	353,322	9,197,489	0	0	9,197,489	7,739,121		
1957	21,500,963	9,197,489	7,739,121	7,500,000	6,300,000	401,055	16,497,397	0	0	16,497,397	13,881,544		
1958	15,862,511	16,497,397	13,881,544	7,500,000	6,300,000	493,620	18,066,288	0	0	18,066,288	15,201,670		
1959	9,598,169	18,066,288	15,201,670	7,500,000	6,300,000	461,325	13,403,132	0	0	13,403,132	11,277,911		
1960	11,524,160	13,403,132	11,277,911	7,500,000	6,300,000	384,885	10,742,407	0	0	10,742,407	9,039,075		
1961	10,010,259	10,742,407	9,039,075	7,500,000	6,300,000	314,281	6,638,386	0	0	6,638,386	5,585,793		
1962	17,377,609	6,638,386	5,585,793	7,500,000	6,300,000	305,597	9,910,398	0	0	9,910,398	8,338,990		
1963	8,840,900	9,910,398	8,338,990	7,500,000	6,300,000	285,014	4,666,284	0	0	4,666,284	3,926,391		
1964	10,863,586	4,666,284	3,926,391	7,500,000	6,300,000	197,571	1,532,299	0	0	1,532,299	1,289,335		
1965	19,875,027	1,532,299	1,289,335	7,500,000	6,300,000	225,909	7,381,417	0	0	7,381,417	6,211,008		
1966	10,679,844	7,381,417	6,211,008	7,500,000	6,300,000	251,764	4,009,497	0	0	4,009,497	3,373,745		
1967	11,670,830	4,009,497	3,373,745	7,500,000	6,300,000	192,341	1,687,986	0	0	1,687,986	1,420,336		
1968	13,739,932	1,687,986	1,420,336	7,500,000	6,300,000	165,754	1,462,164	0	0	1,462,164	1,230,321		
1969	15,272,159	1,462,164	1,230,321	7,500,000	6,300,000	176,916	2,757,407	0	0	2,757,407	2,320,188		
1970	15,344,136	2,757,407	2,320,188	7,500,000	6,300,000	204,417	4,097,125	0	0	4,097,125	3,447,479		
1971	15,493,659	4,097,125	3,447,479	7,500,000	6,300,000	233,638	5,557,146	0	0	5,557,146	4,675,996		
1972	13,186,637	5,557,146	4,675,996	7,500,000	6,300,000	239,970	4,703,812	0	0	4,703,812	3,957,968		
1973	18,650,193	4,703,812	3,957,968	7,500,000	6,300,000	278,776	9,275,229	0	0	9,275,229	7,804,534		
1974	13,285,426	9,275,229	7,804,534	7,500,000	6,300,000	317,801	8,442,854	0	0	8,442,854	7,104,142		
1975	17,072,661	8,442,854	7,104,142	7,500,000	6,300,000	339,725	11,375,790	0	0	11,375,790	9,572,028		
1976	11,313,561	11,375,790	9,57										

Upper Basin Yield Mass Balance Analysis

Run 4 - Maintain CRSP Minimum Power Pools, 7.50 maf Lower Basin Delivery, 6% Overall 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 to Store (subtotal)	Spill to LC (minus)	Shortage (plus)	UC Basin Year-end Storage (equals)	CRSP Year- end Storage	Variables	
1906	18,550,021	29,530,030	24,847,704	7,500,000	6,570,000	749,290	33,260,761	3,730,731	0	29,530,030	24,847,704	Storage	30,167,576 af
1907	21,201,694	29,530,030	24,847,704	7,500,000	6,570,000	749,290	35,912,434	6,382,404	0	29,530,030	24,847,704	Sedimentation Rate (Active)	24,292 af/yr
1908	12,218,817	29,530,030	24,847,704	7,500,000	6,570,000	722,429	26,956,418	0	0	26,956,418	22,682,168	Bank Storage	4%
1909	22,356,301	26,956,418	22,682,168	7,500,000	6,570,000	722,429	34,520,290	4,990,260	0	29,530,030	24,847,704	Adjusted Storage (2060)	29,530,030 af
1910	14,650,616	29,530,030	24,847,704	7,500,000	6,570,000	747,548	29,363,098	0	0	29,363,098	24,707,241	UB Demand Level	6,570,000 af/yr
1911	15,499,729	29,363,098	24,707,241	7,500,000	6,570,000	747,548	30,045,280	515,249	0	29,530,030	24,847,704	LB Delivery	7,500,000 af/yr
1912	18,623,410	29,530,030	24,847,704	7,500,000	6,570,000	749,290	33,334,150	3,804,120	0	29,530,030	24,847,704		
1913	14,536,373	29,530,030	24,847,704	7,500,000	6,570,000	746,368	29,250,036	0	0	29,250,036	24,612,106		
1914	21,354,814	29,250,036	24,612,106	7,500,000	6,570,000	746,368	35,788,482	6,258,451	0	29,530,030	24,847,704		
1915	13,623,277	29,530,030	24,847,704	7,500,000	6,570,000	736,936	28,346,371	0	0	28,346,371	23,851,728	Results	
1916	20,142,892	28,346,371	23,851,728	7,500,000	6,570,000	736,936	33,682,327	4,152,296	0	29,530,030	24,847,704	Average CRSP Evap	487,445 af/yr
1917	22,942,804	29,530,030	24,847,704	7,500,000	6,570,000	749,290	37,653,544	8,123,514	0	29,530,030	24,847,704	Total Yield w/ CRSP evap	7,057,445 af/yr
1918	15,865,939	29,530,030	24,847,704	7,500,000	6,570,000	749,290	30,576,679	1,046,649	0	29,530,030	24,847,704		
1919	12,651,369	29,530,030	24,847,704	7,500,000	6,570,000	726,897	27,384,502	0	0	27,384,502	23,042,374	Shortage Years	Shortage
1920	22,287,632	27,384,502	23,042,374	7,500,000	6,570,000	726,897	34,875,237	5,345,207	0	29,530,030	24,847,704		
1921	22,526,781	29,530,030	24,847,704	7,500,000	6,570,000	749,290	37,237,521	7,707,491	0	29,530,030	24,847,704	1963	1,891,395 af
1922	18,447,198	29,530,030	24,847,704	7,500,000	6,570,000	749,290	33,157,938	3,627,908	0	29,530,030	24,847,704	1964	3,339,290 af
1923	19,024,046	29,530,030	24,847,704	7,500,000	6,570,000	749,290	33,734,786	4,204,756	0	29,530,030	24,847,704	1967	542,082 af
1924	13,877,798	29,530,030	24,847,704	7,500,000	6,570,000	739,565	28,598,263	0	0	28,598,263	24,063,679	1968	462,944 af
1925	14,430,701	28,598,263	24,063,679	7,500,000	6,570,000	726,027	28,232,937	0	0	28,232,937	23,756,279	1977	3,385,340 af
1926	15,213,731	28,232,937	23,756,279	7,500,000	6,570,000	726,568	28,650,099	0	0	28,650,099	24,107,296		
1927	19,539,212	28,650,099	24,107,296	7,500,000	6,570,000	740,106	33,379,205	3,849,175	0	29,530,030	24,847,704		
1928	16,954,334	29,530,030	24,847,704	7,500,000	6,570,000	749,290	31,666,074	2,135,044	0	29,530,030	24,847,704		
1929	21,829,585	29,530,030	24,847,704	7,500,000	6,570,000	749,290	36,540,325	7,010,295	0	29,530,030	24,847,704		
1930	14,621,041	29,530,030	24,847,704	7,500,000	6,570,000	747,242	29,333,829	0	0	29,333,829	24,682,613		
1931	8,474,134	29,333,829	24,682,613	7,500,000	6,570,000	679,696	23,058,267	0	0	23,058,267	19,402,113		
1932	17,422,187	23,058,267	19,402,113	7,500,000	6,570,000	642,479	25,767,975	0	0	25,767,975	21,682,166		
1933	12,183,500	25,767,975	21,682,166	7,500,000	6,570,000	644,346	23,237,129	0	0	23,237,129	19,552,614		
1934	6,178,192	23,237,129	19,552,614	7,500,000	6,570,000	530,032	14,815,289	0	0	14,815,289	12,466,154		
1935	12,630,349	14,815,289	12,466,154	7,500,000	6,570,000	422,695	12,952,943	0	0	12,952,943	10,899,105		
1936	14,648,873	12,952,943	10,899,105	7,500,000	6,570,000	405,072	13,126,744	0	0	13,126,744	11,045,348		
1937	14,306,056	13,126,744	11,045,348	7,500,000	6,570,000	405,121	12,957,679	0	0	12,957,679	10,903,090		
1938	18,148,319	12,957,679	10,903,090	7,500,000	6,570,000	441,316	16,594,682	0	0	16,594,682	13,963,404		
1939	11,164,059	16,594,682	13,963,404	7,500,000	6,570,000	444,309	13,244,432	0	0	13,244,432	11,144,375		
1940	9,931,657	13,244,432	11,144,375	7,500,000	6,570,000	362,368	8,743,721	0	0	8,743,721	7,357,303		
1941	20,116,678	8,743,721	7,357,303	7,500,000	6,570,000	374,594	14,415,805	0	0	14,415,805	12,130,013		
1942	17,225,136	14,415,805	12,130,013	7,500,000	6,570,000	461,903	17,109,038	0	0	17,109,038	14,396,203		
1943	13,731,401	17,109,038	14,396,203	7,500,000	6,570,000	481,454	16,288,986	0	0	16,288,986	13,706,179		
1944	15,369,422	16,288,986	13,706,179	7,500,000	6,570,000	481,432	17,106,976	0	0	17,106,976	14,394,468		
1945	14,140,528	17,106,976	14,394,468	7,500,000	6,570,000	485,637	16,691,867	0	0	16,691,867	14,045,179		
1946	11,095,453	16,691,867	14,045,179	7,500,000	6,570,000	445,608	13,271,712	0	0	13,271,712	11,167,329		
1947	16,349,486	13,271,712	11,167,329	7,500,000	6,570,000	430,153	15,211,045	0	0	15,211,045	12,799,159		
1948	15,139,294	15,211,045	12,799,159	7,500,000	6,570,000	456,786	15,823,553	0	0	15,823,553	13,314,546		
1949	16,933,584	15,823,553	13,314,546	7,500,000	6,570,000	487,974	18,199,163	0	0	18,199,163	15,313,476		
1950	13,140,416	18,199,163	15,313,476	7,500,000	6,570,000	497,870	16,771,709	0	0	16,771,709	14,112,362		
1951	12,505,894	16,771,709	14,112,362	7,500,000	6,570,000	461,826	14,745,777	0	0	14,745,777	12,407,664		
1952	20,805,422	14,745,777	12,407,664	7,500,000	6,570,000	505,702	20,975,497	0	0	20,975,497	17,649,591		
1953	11,165,419	20,975,497	17,649,591	7,500,000	6,570,000	534,824	17,536,092	0	0	17,536,092	14,755,543		
1954	8,496,102	17,536,092	14,755,543	7,500,000	6,570,000	436,199	11,525,995	0	0	11,525,995	9,698,416		
1955	9,413,908	11,525,995	9,698,416	7,500,000	6,570,000	321,520	6,548,383	0	0	6,548,383	5,510,062		
1956	11,426,874	6,548,383	5,510,062	7,500,000	6,570,000	239,482	3,665,775	0	0	3,665,775	3,084,525		
1957	21,500,963	3,665,775	3,084,525	7,500,000	6,570,000	283,989	10,812,749	0	0	10,812,749	9,098,263		
1958	15,862,511	10,812,749	9,098,263	7,500,000	6,570,000	373,394	12,231,866	0	0	12,231,866	10,292,363		
1959	9,598,169	12,231,866	10,292,363	7,500,000	6,570,000	338,005	7,422,030	0	0	7,422,030	6,245,181		
1960	11,524,160	7,422,030	6,245,181	7,500,000	6,570,000	258,535	4,617,655	0	0	4,617,655	3,885,472		
1961	10,010,259	4,617,655	3,885,472	7,500,000	6,570,000	184,963	372,950	0	0	372,950	313,815		
1962	17,377,609	372,950	313,815	7,500,000	6,570,000	173,373	3,507,186	0	0	3,507,186	2,951,081		
1963	8,840,900	3,507,186	2,951,081	7,500,000	6,570,000	169,481	-1,891,395	0	1,891,395	0	0		
1964	10,863,586	0	0	7,500,000	6,570,000	132,876	-3,339,290	0	3,339,290	0	0		
1965	19,875,027	0	0	7,500,000	6,570,000	191,465	5,613,562	0	0	5,613,562	4,723,467		
1966	10,679,844	5,613,562	4,723,467	7,500,000	6,570,000	212,454	2,010,952	0	0	2,010,952	1,692,093		
1967	11,670,830	2,010,952	1,692,093	7,500,000	6,570,000	153,864	-542,082	0	542,082	0	0		
1968	13,739,932	0	0	7,500,000	6,570,000	132,876	-462,944	0	462,944	0	0		
1969	15,272,159	0	0	7,500,000	6,570,000	143,921	1,058,238	0	0	1,058,238	890,442		
1970	15,344,136	1,058,238	890,442	7,500,000	6,570,000	166,526	2,165,848	0	0	2,165,848	1,822,428		
1971	15,493,659	2,165,848	1,822,428	7,500,000	6,570,000	190,952	3,398,555	0	0	3,398,555	2,859,675		
1972	13,186,637	3,398,555	2,859,675	7,500,000	6,570,000	192,588	2,322,603	0	0	2,322,603	1,954,327		
1973	18,650,193	2,322,603	1,954,327	7,500,000	6,570,000	226,795	6,676,001	0	0	6,676,001	5,617,444		
1974	13,285,426	6,676,001	5,617,444	7,500,000	6,570,000	261,316	5,630,111	0	0	5,630,111	4,737,392		
1975	17,072,661	5,630,111	4,737,392	7,500,000	6,570,000	278,829	8,353,944	0	0	8,353,944	7,029,330		
1976	11,313,561	8,353,944	7,029,330	7,500,000	6,570,000	275,612	5,321,894	0	0	5,321,894	4,478,046		
1977	5,551,188	5,321,894	4,478,046	7,500,000	6,570,000	188,421	-3,385,340	0	3,385,340	0	0		
1978	15,335,909	0	0	7,500,000	6,								

Upper Basin Yield Mass Balance Analysis

Run 5 - Use 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 to Store (subtotal)	Spill to LC (minus)	Shortage (plus)	UC Basin Year-end Storage (equals)	CRSP Year- end Storage	Variables	
1906	18,550,021	33,833,590	29,151,263	8,250,000	5,720,000	725,390	37,688,221	3,854,631	0	33,833,590	29,151,263	Storage	35,233,298 af
1907	21,201,694	33,833,590	29,151,263	8,250,000	5,720,000	725,390	40,339,894	6,506,304	0	33,833,590	29,151,263	Sedimentation Rate (Active)	37,000 af/yr
1908	12,218,817	33,833,590	29,151,263	8,250,000	5,720,000	699,302	31,383,105	0	0	31,383,105	27,039,907	Bank Storage	4%
1909	22,356,301	31,383,105	27,039,907	8,250,000	5,720,000	699,302	39,070,104	5,236,514	0	33,833,590	29,151,263	Adjusted Storage (2060)	33,833,590 af
1910	14,650,616	33,833,590	29,151,263	8,250,000	5,720,000	724,918	33,789,288	0	0	33,789,288	29,113,092	UB Demand Level	5,720,000 af/yr
1911	15,499,729	33,789,288	29,113,092	8,250,000	5,720,000	724,918	34,594,099	760,509	0	33,833,590	29,151,263	LB Delivery	8,250,000 af/yr
1912	18,623,410	33,833,590	29,151,263	8,250,000	5,720,000	725,390	37,761,610	3,928,020	0	33,833,590	29,151,263		
1913	14,536,373	33,833,590	29,151,263	8,250,000	5,720,000	723,715	33,676,248	0	0	33,676,248	29,015,696		
1914	21,354,814	33,676,248	29,015,696	8,250,000	5,720,000	723,715	40,337,348	6,503,758	0	33,833,590	29,151,263		
1915	13,623,277	33,833,590	29,151,263	8,250,000	5,720,000	714,096	32,772,771	0	0	32,772,771	28,237,254	Results	
1916	20,142,892	32,772,771	28,237,254	8,250,000	5,720,000	714,096	38,231,566	4,397,976	0	33,833,590	29,151,263	Average CRSP Evap	463,436 af/yr
1917	22,942,804	33,833,590	29,151,263	8,250,000	5,720,000	725,390	42,081,004	8,247,414	0	33,833,590	29,151,263	Total Yield w/ CRSP evap	6,183,436 af/yr
1918	15,865,939	33,833,590	29,151,263	8,250,000	5,720,000	725,390	35,004,139	1,170,549	0	33,833,590	29,151,263		
1919	12,651,369	33,833,590	29,151,263	8,250,000	5,720,000	703,858	31,811,100	0	0	31,811,100	27,408,672	Shortage Years	Shortage
1920	22,287,632	31,811,100	27,408,672	8,250,000	5,720,000	703,858	39,424,874	5,591,284	0	33,833,590	29,151,263		
1921	22,526,781	33,833,590	29,151,263	8,250,000	5,720,000	725,390	41,664,981	7,831,391	0	33,833,590	29,151,263	1963	0 af
1922	18,447,198	33,833,590	29,151,263	8,250,000	5,720,000	725,390	37,585,398	3,751,808	0	33,833,590	29,151,263	1964	0 af
1923	19,024,046	33,833,590	29,151,263	8,250,000	5,720,000	725,390	38,162,246	4,328,656	0	33,833,590	29,151,263	1967	0 af
1924	13,877,798	33,833,590	29,151,263	8,250,000	5,720,000	716,777	33,024,611	0	0	33,024,611	28,454,241	1968	0 af
1925	14,430,701	33,024,611	28,454,241	8,250,000	5,720,000	705,558	32,779,753	0	0	32,779,753	28,243,270	1977	0 af
1926	15,213,731	32,779,753	28,243,270	8,250,000	5,720,000	708,646	33,314,836	0	0	33,314,836	28,704,301		
1927	19,539,212	33,314,836	28,704,301	8,250,000	5,720,000	719,867	38,164,181	4,330,591	0	33,833,590	29,151,263		
1928	16,954,334	33,833,590	29,151,263	8,250,000	5,720,000	725,390	36,092,534	2,258,944	0	33,833,590	29,151,263	1963-1977	637,875 af/yr
1929	21,829,585	33,833,590	29,151,263	8,250,000	5,720,000	725,390	40,987,785	7,134,195	0	33,833,590	29,151,263		
1930	14,621,041	33,833,590	29,151,263	8,250,000	5,720,000	724,606	33,760,025	0	0	33,760,025	29,087,879	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.	
1931	8,474,134	33,760,025	29,087,879	8,250,000	5,720,000	658,307	27,605,852	0	0	27,605,852	23,785,399		
1932	17,422,187	27,605,852	23,785,399	8,250,000	5,720,000	622,911	30,435,128	0	0	30,435,128	26,223,124		
1933	12,183,500	30,435,128	26,223,124	8,250,000	5,720,000	627,333	28,021,294	0	0	28,021,294	24,143,347		
1934	6,178,192	28,021,294	24,143,347	8,250,000	5,720,000	513,222	19,716,264	0	0	19,716,264	16,987,674		
1935	12,630,349	19,716,264	16,987,674	8,250,000	5,720,000	406,222	17,970,391	0	0	17,970,391	15,483,417	Total Upper Basin depletion, inc. CRSP evap:	
1936	14,648,873	17,970,391	15,483,417	8,250,000	5,720,000	390,704	18,258,560	0	0	18,258,560	15,731,706	1953-1977	5,934,611 af/yr
1937	14,306,056	18,258,560	15,731,706	8,250,000	5,720,000	393,164	18,201,452	0	0	18,201,452	15,682,501	1931-1977	6,058,021 af/yr
1938	18,148,319	18,201,452	15,682,501	8,250,000	5,720,000	432,434	21,947,337	0	0	21,947,337	18,909,983	1906-2000	6,183,436 af/yr
1939	11,164,059	21,947,337	18,909,983	8,250,000	5,720,000	437,780	18,703,617	0	0	18,703,617	16,115,170		
1940	9,931,657	18,703,617	16,115,170	8,250,000	5,720,000	356,461	14,308,812	0	0	14,308,812	12,328,575		
1941	20,116,678	14,308,812	12,328,575	8,250,000	5,720,000	371,160	20,084,330	0	0	20,084,330	17,304,802	Flow Adjustments:	
1942	17,225,136	20,084,330	17,304,802	8,250,000	5,720,000	462,377	22,877,090	0	0	22,877,090	19,711,064	1971	203,226 af
1943	13,731,401	22,877,090	19,711,064	8,250,000	5,720,000	484,411	22,154,080	0	0	22,154,080	19,088,114	1972	226,985 af
1944	15,369,422	22,154,080	19,088,114	8,250,000	5,720,000	486,433	23,067,069	0	0	23,067,069	19,874,751	1973	252,377 af
1945	14,140,528	23,067,069	19,874,751	8,250,000	5,720,000	492,723	22,744,874	0	0	22,744,874	19,597,146	1974	196,384 af
1946	11,095,453	22,744,874	19,597,146	8,250,000	5,720,000	453,859	19,416,468	0	0	19,416,468	16,729,368	1975	246,665 af
1947	16,349,486	19,416,468	16,729,368	8,250,000	5,720,000	440,031	21,445,923	0	0	21,445,923	18,477,961	1976	173,250 af
1948	15,139,294	21,445,923	18,477,961	8,250,000	5,720,000	469,090	22,146,127	0	0	22,146,127	19,081,262	1977	112,291 af
1949	16,933,584	22,146,127	19,081,262	8,250,000	5,720,000	502,742	24,606,969	0	0	24,606,969	21,201,541	1978	152,187 af
1950	13,140,416	24,606,969	21,201,541	8,250,000	5,720,000	514,629	23,262,756	0	0	23,262,756	20,043,357	1979	153,559 af
1951	12,505,894	23,262,756	20,043,357	8,250,000	5,720,000	479,627	21,319,023	0	0	21,319,023	18,368,623	1980	161,893 af
1952	20,805,422	21,319,023	18,368,623	8,250,000	5,720,000	526,102	27,628,343	0	0	27,628,343	23,804,778		
1953	11,165,419	27,628,343	23,804,778	8,250,000	5,720,000	557,478	24,266,285	0	0	24,266,285	20,908,004		
1954	8,496,102	24,266,285	20,908,004	8,250,000	5,720,000	458,530	18,333,856	0	0	18,333,856	15,796,582		
1955	9,413,908	18,333,856	15,796,582	8,250,000	5,720,000	343,218	13,434,547	0	0	13,434,547	11,575,301		
1956	11,426,874	13,434,547	11,575,301	8,250,000	5,720,000	261,206	10,630,214	0	0	10,630,214	9,159,069		
1957	21,500,963	10,630,214	9,159,069	8,250,000	5,720,000	308,243	17,852,934	0	0	17,852,934	15,382,216		
1958	15,862,511	17,852,934	15,382,216	8,250,000	5,720,000	401,013	19,344,432	0	0	19,344,432	16,667,301		
1959	9,598,169	19,344,432	16,667,301	8,250,000	5,720,000	366,449	14,606,152	0	0	14,606,152	12,584,765		
1960	11,524,160	14,606,152	12,584,765	8,250,000	5,720,000	286,914	11,873,398	0	0	11,873,398	10,230,205		
1961	10,010,259	11,873,398	10,230,205	8,250,000	5,720,000	213,395	7,700,263	0	0	7,700,263	6,634,601		
1962	17,377,609	7,700,263	6,634,601	8,250,000	5,720,000	203,083	10,904,789	0	0	10,904,789	9,395,644		
1963	8,840,900	10,904,789	9,395,644	8,250,000	5,720,000	180,671	5,595,018	0	0	5,595,018	4,820,707		
1964	10,863,586	5,595,018	4,820,707	8,250,000	5,720,000	90,114	2,398,489	0	0	2,398,489	2,066,556		
1965	19,875,027	2,398,489	2,066,556	8,250,000	5,720,000	117,696	8,185,821	0	0	8,185,821	7,052,962		
1966	10,679,844	8,185,821	7,052,962	8,250,000	5,720,000	142,760	4,752,904	0	0	4,752,904	4,095,136		
1967	11,670,830	4,752,904	4,095,136	8,250,000	5,720,000	80,877	2,372,858	0	0	2,372,858	2,044,471		
1968	13,739,932	2,372,858	2,044,471	8,250,000	5,720,000	52,531	2,090,259	0	0	2,090,259	1,800,982		
1969	15,272,159	2,090,259	1,800,982	8,250,000	5,720,000	62,717	3,329,701	0	0	3,329,701	2,868,894		
1970	15,344,136	3,329,701	2,868,894	8,250,000	5,720,000	89,587	4,614,250	0	0	4,614,250	3,975,671		
1971	15,493,659	4,614,250	3,975,671	8,250,000	5,720,000	118,224	6,019,685	0	0	6,019,685	5,186,604		
1972	13,186,637	6,019,685	5,186,604	8,250,000	5,720,000	123,531	5,112,790	0	0	5,112,790	4,405,217		
1973	18,650,193	5,112,790	4,405,217	8,250,000	5,720,000	161,977	9,631,006	0	0	9,631,006	8,298,144		
1974	13,285,426	9,631,006	8,298,144	8,250,000	5,720,000	200,653	8,745,780	0	0	8,745,780	7,535,427		
1975	17,072,661	8,745,780	7,535,427	8,250,000	5,720,000	221,897	11,626,544	0	0	11,626,544	10,017,513		
1976													

Upper Basin Yield Mass Balance Analysis

Run 6 - Use CRSP Minimum Power Pools, 8.25 maf Lower Basin Delivery, 6% Overall 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 to Store (subtotal)	Spill to LC (minus)	Shortage (plus)	UC Basin Year-end Storage (equals)	CRSP Year- end Storage	Variables	
1906	18,550,021	33,833,590	29,151,263	8,250,000	5,980,000	725,390	37,428,221	3,594,631	0	33,833,590	29,151,263	Storage	35,233,298 af
1907	21,201,694	33,833,590	29,151,263	8,250,000	5,980,000	725,390	40,079,894	6,246,304	0	33,833,590	29,151,263	Sedimentation Rate (Active)	37,000 af/yr
1908	12,218,817	33,833,590	29,151,263	8,250,000	5,980,000	696,563	31,125,844	0	0	31,125,844	26,818,249	Bank Storage	4%
1909	22,356,301	31,125,844	26,818,249	8,250,000	5,980,000	696,563	38,555,581	4,721,991	0	33,833,590	29,151,263	Adjusted Storage (2060)	33,833,590 af
1910	14,650,616	33,833,590	29,151,263	8,250,000	5,980,000	722,179	33,532,027	0	0	33,532,027	28,891,434	UB Demand Level	5,980,000 af/yr
1911	15,499,729	33,532,027	28,891,434	8,250,000	5,980,000	722,179	34,079,577	245,987	0	33,833,590	29,151,263	LB Delivery	8,250,000 af/yr
1912	18,623,410	33,833,590	29,151,263	8,250,000	5,980,000	725,390	37,501,610	3,668,020	0	33,833,590	29,151,263		
1913	14,536,373	33,833,590	29,151,263	8,250,000	5,980,000	720,976	33,418,987	0	0	33,418,987	28,794,038		
1914	21,354,814	33,418,987	28,794,038	8,250,000	5,980,000	720,976	39,822,825	5,989,235	0	33,833,590	29,151,263		
1915	13,623,277	33,833,590	29,151,263	8,250,000	5,980,000	711,358	32,515,509	0	0	32,515,509	28,015,595	Results	
1916	20,142,892	32,515,509	28,015,595	8,250,000	5,980,000	711,358	37,717,044	3,883,454	0	33,833,590	29,151,263	Average CRSP Evap	420,659 af/yr
1917	22,942,804	33,833,590	29,151,263	8,250,000	5,980,000	725,390	41,821,004	7,987,414	0	33,833,590	29,151,263	Total Yield w/ CRSP evap	6,400,659 af/yr
1918	15,865,939	33,833,590	29,151,263	8,250,000	5,980,000	725,390	34,744,139	910,549	0	33,833,590	29,151,263		
1919	12,651,369	33,833,590	29,151,263	8,250,000	5,980,000	701,120	31,553,839	0	0	31,553,839	27,187,013	Shortage Years	Shortage
1920	22,287,632	31,553,839	27,187,013	8,250,000	5,980,000	701,120	38,910,351	5,076,762	0	33,833,590	29,151,263		
1921	22,526,781	33,833,590	29,151,263	8,250,000	5,980,000	725,390	41,404,981	7,571,391	0	33,833,590	29,151,263	1963	703,237 af
1922	18,447,198	33,833,590	29,151,263	8,250,000	5,980,000	725,390	37,325,398	3,491,808	0	33,833,590	29,151,263	1964	3,371,431 af
1923	19,024,046	33,833,590	29,151,263	8,250,000	5,980,000	725,390	37,902,246	4,068,656	0	33,833,590	29,151,263	1967	639,589 af
1924	13,877,798	33,833,590	29,151,263	8,250,000	5,980,000	714,039	32,767,349	0	0	32,767,349	28,232,583	1968	495,085 af
1925	14,430,701	32,767,349	28,232,583	8,250,000	5,980,000	687,400	32,270,651	0	0	32,270,651	27,804,623	1977	3,665,093 af
1926	15,213,731	32,270,651	27,804,623	8,250,000	5,980,000	695,184	32,559,198	0	0	32,559,198	28,053,238		
1927	19,539,212	32,559,198	28,053,238	8,250,000	5,980,000	711,823	37,156,587	3,322,997	0	33,833,590	29,151,263	NM allocation (w/o evap)	667,125 af/yr
1928	16,954,334	33,833,590	29,151,263	8,250,000	5,980,000	725,390	35,832,534	1,998,944	0	33,833,590	29,151,263		
1929	21,829,585	33,833,590	29,151,263	8,250,000	5,980,000	725,390	40,707,785	6,874,195	0	33,833,590	29,151,263	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.	
1930	14,621,041	33,833,590	29,151,263	8,250,000	5,980,000	721,868	33,502,763	0	0	33,502,763	28,866,220		
1931	8,474,134	33,502,763	28,866,220	8,250,000	5,980,000	650,148	27,096,749	0	0	27,096,749	23,346,753		
1932	17,422,187	27,096,749	23,346,753	8,250,000	5,980,000	609,447	29,679,489	0	0	29,679,489	25,572,060		
1933	12,183,509	29,679,489	25,572,060	8,250,000	5,980,000	608,675	27,024,314	0	0	27,024,314	23,284,342		
1934	6,178,192	27,024,314	23,284,342	8,250,000	5,980,000	489,480	18,483,026	0	0	18,483,026	15,925,107		
1935	12,630,349	18,483,026	15,925,107	8,250,000	5,980,000	377,502	16,505,872	0	0	16,505,872	14,221,578	Total Upper Basin depletion, inc. CRSP evap:	
1936	14,648,873	16,505,872	14,221,578	8,250,000	5,980,000	357,112	16,567,634	0	0	16,567,634	14,274,792	1953-1977	6,109,607 af/yr
1937	14,306,056	16,567,634	14,274,792	8,250,000	5,980,000	354,802	16,288,888	0	0	16,288,888	14,034,623	1931-1977	6,246,233 af/yr
1938	18,148,319	16,288,888	14,034,623	8,250,000	5,980,000	389,402	19,817,805	0	0	19,817,805	17,075,162	1906-2000	6,400,659 af/yr
1939	11,164,059	19,817,805	17,075,162	8,250,000	5,980,000	390,177	16,361,687	0	0	16,361,687	14,097,346		
1940	9,931,657	16,361,687	14,097,346	8,250,000	5,980,000	304,384	11,758,959	0	0	11,758,959	10,131,603		
1941	20,116,678	11,758,959	10,131,603	8,250,000	5,980,000	314,703	17,330,935	0	0	17,330,935	14,932,457	Flow Adjustments:	
1942	17,225,136	17,330,935	14,932,457	8,250,000	5,980,000	401,631	19,924,440	0	0	19,924,440	17,167,040	1971	203,226 af
1943	13,731,401	19,924,440	17,167,040	8,250,000	5,980,000	419,467	19,006,373	0	0	19,006,373	16,376,027	1972	226,985 af
1944	15,369,422	19,006,373	16,376,027	8,250,000	5,980,000	417,381	19,728,415	0	0	19,728,415	16,998,143	1973	252,377 af
1945	14,140,528	19,728,415	16,998,143	8,250,000	5,980,000	419,647	19,219,295	0	0	19,219,295	16,559,482	1974	196,384 af
1946	11,095,453	19,219,295	16,559,482	8,250,000	5,980,000	376,846	15,707,903	0	0	15,707,903	13,534,041	1975	246,665 af
1947	16,439,486	15,707,903	13,534,041	8,250,000	5,980,000	359,162	17,558,227	0	0	17,558,227	15,128,294	1976	173,250 af
1948	15,139,294	17,558,227	15,128,294	8,250,000	5,980,000	384,448	18,083,073	0	0	18,083,073	15,580,505	1977	112,291 af
1949	16,933,584	18,083,073	15,580,505	8,250,000	5,980,000	414,405	20,372,251	0	0	20,372,251	17,552,877	1978	152,187 af
1950	13,140,416	20,372,251	17,552,877	8,250,000	5,980,000	422,676	18,859,991	0	0	18,859,991	16,249,903	1979	153,559 af
1951	12,505,894	18,859,991	16,249,903	8,250,000	5,980,000	384,133	16,751,752	0	0	16,751,752	14,433,429	1980	161,893 af
1952	20,805,422	16,751,752	14,433,429	8,250,000	5,980,000	427,143	22,900,031	0	0	22,900,031	19,730,831		
1953	11,165,419	22,900,031	19,730,831	8,250,000	5,980,000	455,126	19,380,324	0	0	19,380,324	16,698,226		
1954	8,496,102	19,380,324	16,698,226	8,250,000	5,980,000	352,857	13,293,569	0	0	13,293,569	11,453,834		
1955	9,413,908	13,293,569	11,453,834	8,250,000	5,980,000	234,293	8,243,183	0	0	8,243,183	7,102,386		
1956	11,426,874	8,243,183	7,102,386	8,250,000	5,980,000	149,099	5,290,958	0	0	5,290,958	4,558,728		
1957	21,500,963	5,290,958	4,558,728	8,250,000	5,980,000	193,021	12,368,901	0	0	12,368,901	10,657,133		
1958	15,862,511	12,368,901	10,657,133	8,250,000	5,980,000	282,741	13,718,671	0	0	13,718,671	11,820,105		
1959	9,598,169	13,718,671	11,820,105	8,250,000	5,980,000	245,190	8,841,650	0	0	8,841,650	7,618,029		
1960	11,524,160	8,841,650	7,618,029	8,250,000	5,980,000	162,732	5,973,078	0	0	5,973,078	5,146,447		
1961	10,010,259	5,973,078	5,146,447	8,250,000	5,980,000	86,352	1,666,985	0	0	1,666,985	1,436,286		
1962	17,377,609	1,666,985	1,436,286	8,250,000	5,980,000	73,239	4,741,355	0	0	4,741,355	4,085,186		
1963	8,840,900	4,741,355	4,085,186	8,250,000	5,980,000	55,493	-703,237	0	703,237	0	0		
1964	10,863,586	0	0	8,250,000	5,980,000	5,017	-3,371,431	0	3,371,431	0	0		
1965	19,875,027	0	0	8,250,000	5,980,000	64,427	5,580,600	0	0	5,580,600	4,808,285		
1966	10,679,844	5,580,600	4,808,285	8,250,000	5,980,000	85,136	1,945,307	0	0	1,945,307	1,676,091		
1967	11,670,830	1,945,307	1,676,091	8,250,000	5,980,000	25,726	-639,589	0	639,589	0	0		
1968	13,739,932	0	0	8,250,000	5,980,000	5,017	-495,085	0	495,085	0	0		
1969	15,272,159	0	0	8,250,000	5,980,000	15,942	1,026,217	0	0	1,026,217	884,196		
1970	15,344,136	1,026,217	884,196	8,250,000	5,980,000	38,320	2,102,033	0	0	2,102,033	1,811,127		
1971	15,493,659	2,102,033	1,811,127	8,250,000	5,980,000	62,559	3,303,132	0	0	3,303,132	2,846,003		
1972	13,186,637	3,303,132	2,846,003	8,250,000	5,980,000	63,562	2,196,207	0	0	2,196,207	1,892,258		
1973	18,650,193	2,196,207	1,892,258	8,250,000	5,980,000	97,793	6,518,607	0	0	6,518,607	5,616,478		
1974	13,285,426	6,518,607	5,616,478	8,250,000	5,980,000	132,344	5,441,689	0	0	5,441,689	4,688,598		
1975	17,072,661	5,441,689	4,688,598	8,250,000	5,980,000	149,550	8,134,800	0	0	8,134,800	7,009,002		
1976	11,313,561	8,134,800	7,009,002	8,250,000	5,980,000	145,622	5,072,739	0	0	5,072,739	4,370,709		
1977	5,551,188	5,07											

Upper Basin Yield Mass Balance Analysis

Run 7 - Use CRSP Minimum Power Pools, 7.50 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 to Store (subtotal)	Spill to LC (minus)	Shortage (plus)	UC Basin Year-end Storage (equals)	CRSP Year- end Storage	Variables	
1906	18,550,021	33,833,590	29,151,263	7,500,000	6,470,000	725,390	37,688,221	3,854,631	0	33,833,590	29,151,263	Storage	35,233,298 af
1907	21,201,694	33,833,590	29,151,263	7,500,000	6,470,000	725,390	40,339,894	6,506,304	0	33,833,590	29,151,263	Sedimentation Rate (Active)	37,000 at/yr
1908	12,218,817	33,833,590	29,151,263	7,500,000	6,470,000	699,302	31,383,105	0	0	31,383,105	27,039,907	Bank Storage	4%
1909	22,356,301	31,383,105	27,039,907	7,500,000	6,470,000	699,302	39,070,104	5,236,514	0	33,833,590	29,151,263	Adjusted Storage (2060)	33,833,590 af
1910	14,650,616	33,833,590	29,151,263	7,500,000	6,470,000	724,918	33,789,288	0	0	33,789,288	29,113,092	UB Demand Level	6,470,000 at/yr
1911	15,499,729	33,789,288	29,113,092	7,500,000	6,470,000	724,918	34,594,099	760,509	0	33,833,590	29,151,263	LB Delivery	7,500,000 at/yr
1912	18,623,410	33,833,590	29,151,263	7,500,000	6,470,000	725,390	37,761,610	3,928,020	0	33,833,590	29,151,263		
1913	14,536,373	33,833,590	29,151,263	7,500,000	6,470,000	723,715	33,676,248	0	0	33,676,248	29,015,696		
1914	21,354,814	33,676,248	29,015,696	7,500,000	6,470,000	723,715	40,337,348	6,503,758	0	33,833,590	29,151,263		
1915	13,623,277	33,833,590	29,151,263	7,500,000	6,470,000	714,096	32,772,771	0	0	32,772,771	28,237,254	Results	
1916	20,142,892	32,772,771	28,237,254	7,500,000	6,470,000	714,096	38,231,566	4,397,976	0	33,833,590	29,151,263	Average CRSP Evap	463,436 at/yr
1917	22,942,804	33,833,590	29,151,263	7,500,000	6,470,000	725,390	42,081,004	8,247,414	0	33,833,590	29,151,263	Total Yield w/ CRSP evap	6,933,436 at/yr
1918	15,865,939	33,833,590	29,151,263	7,500,000	6,470,000	725,390	35,004,139	1,170,549	0	33,833,590	29,151,263		
1919	12,651,369	33,833,590	29,151,263	7,500,000	6,470,000	703,858	31,811,100	0	0	31,811,100	27,408,672	Shortage Years	Shortage
1920	22,287,632	31,811,100	27,408,672	7,500,000	6,470,000	703,858	39,424,874	5,591,284	0	33,833,590	29,151,263		
1921	22,526,781	33,833,590	29,151,263	7,500,000	6,470,000	725,390	41,664,981	7,831,391	0	33,833,590	29,151,263	1963	0 af
1922	18,447,198	33,833,590	29,151,263	7,500,000	6,470,000	725,390	37,585,398	3,751,808	0	33,833,590	29,151,263	1964	0 af
1923	19,024,046	33,833,590	29,151,263	7,500,000	6,470,000	725,390	38,162,246	4,328,656	0	33,833,590	29,151,263	1967	0 af
1924	13,877,798	33,833,590	29,151,263	7,500,000	6,470,000	716,777	33,024,611	0	0	33,024,611	28,454,241	1968	0 af
1925	14,430,701	33,024,611	28,454,241	7,500,000	6,470,000	705,558	32,779,753	0	0	32,779,753	28,243,270	1977	0 af
1926	15,213,731	32,779,753	28,243,270	7,500,000	6,470,000	708,648	33,314,836	0	0	33,314,836	28,704,301		
1927	19,539,212	33,314,836	28,704,301	7,500,000	6,470,000	719,867	38,164,181	4,330,591	0	33,833,590	29,151,263		
1928	16,954,334	33,833,590	29,151,263	7,500,000	6,470,000	725,390	36,092,534	2,258,944	0	33,833,590	29,151,263	1963-1977	6,808,021 at/yr
1929	21,829,585	33,833,590	29,151,263	7,500,000	6,470,000	725,390	40,967,785	7,134,195	0	33,833,590	29,151,263	1906-2000	6,933,436 at/yr
1930	14,621,041	33,833,590	29,151,263	7,500,000	6,470,000	724,606	33,760,025	0	0	33,760,025	29,087,879		
1931	8,474,134	33,760,025	29,087,879	7,500,000	6,470,000	658,307	27,605,852	0	0	27,605,852	23,785,399		
1932	17,422,187	27,605,852	23,785,399	7,500,000	6,470,000	622,911	30,435,128	0	0	30,435,128	26,223,124		
1933	12,183,500	30,435,128	26,223,124	7,500,000	6,470,000	627,333	28,021,294	0	0	28,021,294	24,143,347		
1934	6,178,192	28,021,294	24,143,347	7,500,000	6,470,000	513,222	19,716,264	0	0	19,716,264	16,987,674		
1935	12,630,349	19,716,264	16,987,674	7,500,000	6,470,000	406,222	17,970,391	0	0	17,970,391	15,483,417		
1936	14,648,873	17,970,391	15,483,417	7,500,000	6,470,000	390,704	18,258,560	0	0	18,258,560	15,731,706		
1937	14,306,056	18,258,560	15,731,706	7,500,000	6,470,000	393,164	18,201,452	0	0	18,201,452	15,682,501		
1938	18,148,319	18,201,452	15,682,501	7,500,000	6,470,000	432,434	21,947,337	0	0	21,947,337	18,909,983		
1939	11,164,059	21,947,337	18,909,983	7,500,000	6,470,000	437,780	18,703,617	0	0	18,703,617	16,115,170		
1940	9,931,657	18,703,617	16,115,170	7,500,000	6,470,000	356,461	14,308,812	0	0	14,308,812	12,328,575		
1941	20,116,678	14,308,812	12,328,575	7,500,000	6,470,000	371,160	20,084,330	0	0	20,084,330	17,304,802		
1942	17,225,136	20,084,330	17,304,802	7,500,000	6,470,000	462,377	22,877,090	0	0	22,877,090	19,711,064		
1943	13,731,401	22,877,090	19,711,064	7,500,000	6,470,000	484,411	22,154,080	0	0	22,154,080	19,088,114		
1944	15,369,422	22,154,080	19,088,114	7,500,000	6,470,000	486,433	23,067,069	0	0	23,067,069	19,874,751		
1945	14,140,528	23,067,069	19,874,751	7,500,000	6,470,000	492,723	22,744,874	0	0	22,744,874	19,597,146		
1946	11,095,453	22,744,874	19,597,146	7,500,000	6,470,000	453,859	19,416,468	0	0	19,416,468	16,729,368		
1947	16,339,486	19,416,468	16,729,368	7,500,000	6,470,000	440,031	21,445,923	0	0	21,445,923	18,477,961		
1948	15,139,294	21,445,923	18,477,961	7,500,000	6,470,000	469,090	22,146,127	0	0	22,146,127	19,081,262		
1949	16,933,584	22,146,127	19,081,262	7,500,000	6,470,000	502,742	24,606,969	0	0	24,606,969	21,201,541		
1950	13,140,416	24,606,969	21,201,541	7,500,000	6,470,000	514,629	23,262,756	0	0	23,262,756	20,043,357		
1951	12,505,894	23,262,756	20,043,357	7,500,000	6,470,000	479,627	21,319,023	0	0	21,319,023	18,368,623		
1952	20,805,422	21,319,023	18,368,623	7,500,000	6,470,000	526,102	27,628,343	0	0	27,628,343	23,804,778		
1953	11,165,419	27,628,343	23,804,778	7,500,000	6,470,000	557,478	24,266,285	0	0	24,266,285	20,908,004		
1954	8,496,102	24,266,285	20,908,004	7,500,000	6,470,000	458,530	18,333,856	0	0	18,333,856	15,796,582		
1955	9,413,908	18,333,856	15,796,582	7,500,000	6,470,000	343,218	13,434,547	0	0	13,434,547	11,575,301		
1956	11,426,874	13,434,547	11,575,301	7,500,000	6,470,000	261,206	10,630,214	0	0	10,630,214	9,159,069		
1957	21,500,963	10,630,214	9,159,069	7,500,000	6,470,000	308,243	17,852,934	0	0	17,852,934	15,382,216		
1958	15,862,511	17,852,934	15,382,216	7,500,000	6,470,000	401,013	19,344,432	0	0	19,344,432	16,667,301		
1959	9,598,169	19,344,432	16,667,301	7,500,000	6,470,000	366,449	14,606,152	0	0	14,606,152	12,584,765		
1960	11,524,160	14,606,152	12,584,765	7,500,000	6,470,000	286,914	11,873,398	0	0	11,873,398	10,230,205		
1961	10,010,259	11,873,398	10,230,205	7,500,000	6,470,000	213,395	7,700,263	0	0	7,700,263	6,634,601		
1962	17,377,609	7,700,263	6,634,601	7,500,000	6,470,000	203,083	10,904,789	0	0	10,904,789	9,395,644		
1963	8,840,900	10,904,789	9,395,644	7,500,000	6,470,000	180,671	5,595,018	0	0	5,595,018	4,820,707		
1964	10,863,586	5,595,018	4,820,707	7,500,000	6,470,000	90,114	2,398,489	0	0	2,398,489	2,066,556		
1965	19,875,027	2,398,489	2,066,556	7,500,000	6,470,000	117,696	8,185,821	0	0	8,185,821	7,052,962		
1966	10,679,844	8,185,821	7,052,962	7,500,000	6,470,000	142,760	4,752,904	0	0	4,752,904	4,095,136		
1967	11,670,830	4,752,904	4,095,136	7,500,000	6,470,000	80,877	2,372,858	0	0	2,372,858	2,044,471		
1968	13,739,932	2,372,858	2,044,471	7,500,000	6,470,000	52,531	2,090,259	0	0	2,090,259	1,800,982		
1969	15,272,159	2,090,259	1,800,982	7,500,000	6,470,000	62,717	3,329,701	0	0	3,329,701	2,868,894		
1970	15,344,136	3,329,701	2,868,894	7,500,000	6,470,000	89,587	4,614,250	0	0	4,614,250	3,975,671		
1971	15,493,659	4,614,250	3,975,671	7,500,000	6,470,000	118,224	6,019,685	0	0	6,019,685	5,186,604		
1972	13,186,637	6,019,685	5,186,604	7,500,000	6,470,000	123,531	5,112,790	0	0	5,112,790	4,405,217		
1973	18,650,193	5,112,790	4,405,217	7,500,000	6,470,000	161,977	9,631,006	0	0	9,631,006	8,298,144		
1974	13,285,426	9,631,006	8,298,144	7,500,000	6,470,000	200,653	8,745,780	0	0	8,745,780	7,535,427		
1975	17,072,661	8,745,780	7,535,427	7,500,000	6,470,000	221,897	11,626,544	0	0	11,626,544	10,017,513		
1976	11,313,561	11,626,544	10,017,513	7,500,000	6,470,000	221,923	8,748,183	0	0	8,748,183	7,537,497		
1977	5,551,188	8,748,183	7,537,497	7,500,000	6,470,000	100							

Upper Basin Yield Mass Balance Analysis

Run 8 - Use CRSP Minimum Power Pools, 7.50 maf Lower Basin Delivery, 6% Overall 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 to Store (subtotal)	Spill to LC (minus)	Shortage (plus)	UC Basin Year-end Storage (equals)	CRSP Year- end Storage	Variables	
1906	18,550,021	33,833,590	29,151,263	7,500,000	6,760,000	725,390	37,398,221	3,564,631	0	33,833,590	29,151,263	Storage	35,233,298 af
1907	21,201,694	33,833,590	29,151,263	7,500,000	6,760,000	725,390	40,049,894	6,216,304	0	33,833,590	29,151,263	Sedimentation Rate (Active)	37,000 af/yr
1908	12,218,817	33,833,590	29,151,263	7,500,000	6,760,000	696,247	31,096,160	0	0	31,096,160	26,792,673	Bank Storage	4%
1909	22,356,301	31,096,160	26,792,673	7,500,000	6,760,000	696,247	38,496,213	4,662,623	0	33,833,590	29,151,263	Adjusted Storage (2060)	33,833,590 af
1910	14,650,616	33,833,590	29,151,263	7,500,000	6,760,000	721,863	33,502,343	0	0	33,502,343	28,865,858	UB Demand Level	6,760,000 af/yr
1911	15,499,729	33,502,343	28,865,858	7,500,000	6,760,000	721,863	34,020,209	186,619	0	33,833,590	29,151,263	LB Delivery	7,500,000 af/yr
1912	18,623,410	33,833,590	29,151,263	7,500,000	6,760,000	725,390	37,471,610	3,638,020	0	33,833,590	29,151,263		
1913	14,536,373	33,833,590	29,151,263	7,500,000	6,760,000	720,660	33,389,303	0	0	33,389,303	28,768,462		
1914	21,354,814	33,389,303	28,768,462	7,500,000	6,760,000	720,660	39,763,457	5,929,867	0	33,833,590	29,151,263		
1915	13,623,277	33,833,590	29,151,263	7,500,000	6,760,000	711,041	32,485,825	0	0	32,485,825	27,990,019	Results	
1916	20,142,892	32,485,825	27,990,019	7,500,000	6,760,000	711,041	37,657,676	3,824,086	0	33,833,590	29,151,263	Average CRSP Evap	416,577 af/yr
1917	22,942,804	33,833,590	29,151,263	7,500,000	6,760,000	725,390	41,791,004	7,957,414	0	33,833,590	29,151,263	Total Yield w/ CRSP evap	7,176,577 af/yr
1918	15,865,939	33,833,590	29,151,263	7,500,000	6,760,000	725,390	34,714,139	880,549	0	33,833,590	29,151,263		
1919	12,651,369	33,833,590	29,151,263	7,500,000	6,760,000	700,804	31,524,155	0	0	31,524,155	27,161,438	Shortage Years	Shortage
1920	22,287,632	31,524,155	27,161,438	7,500,000	6,760,000	700,804	38,850,983	5,017,394	0	33,833,590	29,151,263		
1921	22,526,781	33,833,590	29,151,263	7,500,000	6,760,000	725,390	41,374,981	7,541,391	0	33,833,590	29,151,263	1963	1,436,832 af
1922	18,447,198	33,833,590	29,151,263	7,500,000	6,760,000	725,390	37,295,398	3,461,808	0	33,833,590	29,151,263	1964	3,401,431 af
1923	19,024,046	33,833,590	29,151,263	7,500,000	6,760,000	725,390	37,872,246	4,038,656	0	33,833,590	29,151,263	1967	727,706 af
1924	13,877,798	33,833,590	29,151,263	7,500,000	6,760,000	713,723	32,737,665	0	0	32,737,665	28,207,007	1968	525,085 af
1925	14,430,701	32,737,665	28,207,007	7,500,000	6,760,000	696,458	32,211,908	0	0	32,211,908	27,754,010	1977	3,913,425 af
1926	15,213,731	32,211,908	27,754,010	7,500,000	6,760,000	693,630	32,472,009	0	0	32,472,009	27,978,115		
1927	19,539,212	32,472,009	27,978,115	7,500,000	6,760,000	710,894	37,040,326	3,206,736	0	33,833,590	29,151,263	NM allocation (w/o evap)	754,875 af/yr
1928	16,954,334	33,833,590	29,151,263	7,500,000	6,760,000	725,390	35,802,534	1,968,944	0	33,833,590	29,151,263		
1929	21,829,585	33,833,590	29,151,263	7,500,000	6,760,000	725,390	40,677,785	6,844,195	0	33,833,590	29,151,263	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.	
1930	14,621,041	33,833,590	29,151,263	7,500,000	6,760,000	721,552	33,473,079	0	0	33,473,079	28,840,644		
1931	8,474,134	33,473,079	28,840,644	7,500,000	6,760,000	649,207	27,038,006	0	0	27,038,006	23,296,139		
1932	17,422,187	27,038,006	23,296,139	7,500,000	6,760,000	607,893	29,592,300	0	0	29,592,300	25,496,937		
1933	12,183,500	29,592,300	25,496,937	7,500,000	6,760,000	606,523	28,909,278	0	0	28,909,278	23,185,226		
1934	6,178,192	26,909,278	23,185,226	7,500,000	6,760,000	486,740	18,340,729	0	0	18,340,729	15,802,503		
1935	12,630,349	18,340,729	15,802,503	7,500,000	6,760,000	374,189	16,336,890	0	0	16,336,890	14,075,981	Total Upper Basin depletion, inc. CRSP evap:	
1936	14,648,873	16,336,890	14,075,981	7,500,000	6,760,000	353,236	16,372,527	0	0	16,372,527	14,106,686	1953-1977	6,882,986 af/yr
1937	14,306,056	16,372,527	14,106,686	7,500,000	6,760,000	350,375	16,068,208	0	0	16,068,208	13,844,483	1931-1977	7,019,645 af/yr
1938	18,148,319	16,068,208	13,844,483	7,500,000	6,760,000	384,437	19,572,090	0	0	19,572,090	16,863,452	1906-2000	7,176,577 af/yr
1939	11,164,059	19,572,090	16,863,452	7,500,000	6,760,000	384,685	16,091,464	0	0	16,091,464	13,864,520		
1940	9,931,657	16,091,464	13,864,520	7,500,000	6,760,000	298,375	11,464,746	0	0	11,464,746	9,878,107		
1941	20,116,678	11,464,746	9,878,107	7,500,000	6,760,000	308,188	17,013,235	0	0	17,013,235	14,658,725	Flow Adjustments:	
1942	17,225,136	17,013,235	14,658,725	7,500,000	6,760,000	394,622	19,583,749	0	0	19,583,749	16,873,498	1971	203,226 af
1943	13,731,401	19,583,749	16,873,498	7,500,000	6,760,000	411,974	18,643,176	0	0	18,643,176	16,063,094	1972	226,985 af
1944	15,369,422	18,643,176	16,063,094	7,500,000	6,760,000	409,413	19,343,185	0	0	19,343,185	16,666,227	1973	252,377 af
1945	14,140,528	19,343,185	16,666,227	7,500,000	6,760,000	411,216	18,812,498	0	0	18,812,498	16,208,983	1974	196,384 af
1946	11,095,453	18,812,498	16,208,983	7,500,000	6,760,000	367,959	15,279,991	0	0	15,279,991	13,165,350	1975	246,665 af
1947	16,439,486	15,279,991	13,165,350	7,500,000	6,760,000	349,831	17,109,646	0	0	17,109,646	14,741,793	1976	173,250 af
1948	15,139,294	17,109,646	14,741,793	7,500,000	6,760,000	374,681	17,614,259	0	0	17,614,259	15,176,571	1977	112,291 af
1949	16,933,584	17,614,259	15,176,571	7,500,000	6,760,000	404,213	19,883,630	0	0	19,883,630	17,131,878	1978	152,187 af
1950	13,140,416	19,883,630	17,131,878	7,500,000	6,760,000	412,066	18,351,980	0	0	18,351,980	15,812,197	1979	153,559 af
1951	12,505,894	18,351,980	15,812,197	7,500,000	6,760,000	373,115	16,224,759	0	0	16,224,759	13,979,368	1980	161,893 af
1952	20,805,422	16,224,759	13,979,368	7,500,000	6,760,000	415,724	22,354,457	0	0	22,354,457	19,260,760		
1953	11,165,419	22,354,457	19,260,760	7,500,000	6,760,000	443,316	18,816,559	0	0	18,816,559	16,212,482		
1954	8,496,102	18,816,559	16,212,482	7,500,000	6,760,000	340,664	12,711,997	0	0	12,711,997	10,952,748		
1955	9,413,908	12,711,997	10,952,748	7,500,000	6,760,000	221,725	7,644,180	0	0	7,644,180	6,586,280		
1956	11,426,874	7,644,180	6,586,280	7,500,000	6,760,000	136,164	4,674,890	0	0	4,674,890	4,027,919		
1957	21,500,963	4,674,890	4,027,919	7,500,000	6,760,000	179,726	11,736,128	0	0	11,736,128	10,111,931		
1958	15,862,511	11,736,128	10,111,931	7,500,000	6,760,000	269,094	13,069,545	0	0	13,069,545	11,260,813		
1959	9,598,169	13,069,545	11,260,813	7,500,000	6,760,000	231,199	8,176,515	0	0	8,176,515	7,044,944		
1960	11,524,160	8,176,515	7,044,944	7,500,000	6,760,000	148,403	5,292,272	0	0	5,292,272	4,559,859		
1961	10,010,259	5,292,272	4,559,859	7,500,000	6,760,000	71,693	970,838	0	0	970,838	836,481		
1962	17,377,609	970,838	836,481	7,500,000	6,760,000	58,257	4,030,190	0	0	4,030,190	3,472,440		
1963	8,840,900	4,030,190	3,472,440	7,500,000	6,760,000	47,922	-1,436,832	0	1,436,832	0	0		
1964	10,863,586	0	0	7,500,000	6,760,000	5,017	-3,401,431	0	3,401,431	0	0		
1965	19,875,027	0	0	7,500,000	6,760,000	64,111	5,550,916	0	0	5,550,916	4,782,709		
1966	10,679,844	5,550,916	4,782,709	7,500,000	6,760,000	84,195	1,886,565	0	0	1,886,565	1,625,478		
1967	11,670,830	1,886,565	1,625,478	7,500,000	6,760,000	25,101	-727,706	0	727,706	0	0		
1968	13,739,932	0	0	7,500,000	6,760,000	5,017	-525,085	0	525,085	0	0		
1969	15,272,159	0	0	7,500,000	6,760,000	15,626	996,533	0	0	996,533	858,620		
1970	15,344,136	996,533	858,620	7,500,000	6,760,000	37,378	2,043,291	0	0	2,043,291	1,760,514		
1971	15,493,659	2,043,291	1,760,514	7,500,000	6,760,000	61,006	3,215,943	0	0	3,215,943	2,770,880		
1972	13,186,637	3,215,943	2,770,880	7,500,000	6,760,000	61,409	2,081,171	0	0	2,081,171	1,793,152		
1973	18,650,193	2,081,171	1,793,152	7,500,000	6,760,000	95,054	6,376,310	0	0	6,376,310	5,493,874		
1974	13,285,426	6,376,310	5,493,874	7,500,000	6,760,000	129,030	5,272,706	0	0	5,272,706	4,543,001		
1975	17,072,661	5,272,706	4,543,001	7,500,000	6,760,000	145,674	7,939,693	0	0	7,939,693	6,840,897		
1976	11,313,561	7,939,693	6,840,897	7,500,000	6,760,000	141,196	4,852,059	0	0	4			

APPENDIX B - Reservoir Storage

Upper Colorado River Basin Reservoir Storage

Upper Colorado River Basin Reservoirs	Complete	Live Capacity	CRSP Live	CRSP Active +Other	State	Major Basin	Hydromet	Source
1 Big Sandy	X	38,300		38,300	WY	GR	BGRW	Hydromet
2 Blue Mesa	X	829,500	829,500	748,500	CO	CR	BMDC	Hydromet
3 Boulder Lake	X	22,280		22,280	WY	GR		Jade Henderson Superintendent for Region IV
4 Bottle Hollow	X	11,779		11,779	UT	GR	BHRU	
5 Crawford	X	13,970		13,970	CO	CR	CFRC	Erik Knight from GJ office
6 Crystal	X	17,536	17,536	13,000	CO	CR	CRRC	Hydromet
7 Currant Creek	X	15,460		15,460	UT	GR	CURU	Hydromet
8 Dillon	X	252,678		252,678	CO	CR		NRCS Website http://www.wcc.nrcs.usda.gov/wsf/reservoir/rev_rpt.html NRCS Website
9 Eden	X	13,164		13,164	WY	GR		
10 Electric Lake - Utah Power ar	X	31,500		31,500	UT	GR		Connely Baldwin at Pacific Corp. Connely.Baldwin@pacificcorp.com or 801-220-4636
11 Elkhead	X	10,400		10,400	CO	GR		Bill Earley with the City of Craig Public Works Dept. 970-826-2014
12 Flaming Gorge	X	3,749,000	3,749,000	3,515,700	UT	GR	FGRU	Hydromet
13 Fontenelle	X	344,800		344,800	WY	GR	FTRW	Hydromet
14 Fremont Lake	X	30,899		30,899	WY	GR		Jade Henderson Superintendent for Region IV
15 Gould	X	10,380		10,380	CO	CR		George Wear with Colorado Division of Water Resources george.wear@dw.state.co.us
16 Fruitgrowers	X	4,460		4,460	CO	CR	FGRC	Hydromet
17 Granby	X	540,033		540,033	CO	CR		NRCS Website http://www.wcc.nrcs.usda.gov/wsf/reservoir/rev_rpt.html
18 Green Mountain	X	153,678		153,678	CO	CR	GMRC	NRCS Website http://www.wcc.nrcs.usda.gov/wsf/reservoir/rev_rpt.html
19 Groundhog	X	27,500		27,500	CO	CR		NRCS Website http://www.wcc.nrcs.usda.gov/wsf/reservoir/rev_rpt.html
20 Gutley	X	12,035		12,035	CO	CR		George Wear with Colorado Division of Water Resources george.wear@dw.state.co.us
21 Homestake	X	42,882		42,882	CO	CR		NRCS Website http://www.wcc.nrcs.usda.gov/wsf/reservoir/rev_rpt.html
22 Jackson Gulch	X	9,951		9,951	CO	CR	JGRC	Hydromet
23 Joe's Valley	X	61,590		61,590	UT	GR	JVRU	Hydromet
24 Johnson	X	15,300		15,300	CO	CR		
25 Kenny Reservoir (Taylor Dray	X	9,400		9,400	CO	CR		Erin.Light@state.co.us Division 6 Water Resources for State of Colorado
26 Lake Powell	X	24,322,000	24,322,000	20,309,919	AZ	CR	GLDA	Hydromet
27 Lake Viva Naughton	X	69,645		69,645	WY	GR		Connely Baldwin at Pacific Corp. Connely.Baldwin@pacificcorp.com or 801-220-4636
28 Lemon	X	39,792		39,792	CO	SJR	LMRC	Hydromet
29 Long Park	X	14,600		14,600	UT	GR		
30 McPhee	X	247,400		247,400	CO	CR	MCR	Hydromet
31 Meeks Cabin	X	29,870		29,870	WY	GR	MERW	Hydromet
32 Millsite	X	20,000		20,000	UT	GR		
33 Miramonte	X	11,620		11,620	CO	CR		George Wear with Colorado Division of Water Resources george.wear@dw.state.co.us
34 Moon Lake	X	49,500		49,500	UT	GR	MNLU	Hydromet
35 Morgan Lake Dam	X	42,800		42,800	NM	SJR		
36 Morrow Point	X	117,025	117,025	42,120	CO	CR	MPRC	Hydromet
37 Narraguinnep	X	22,700		22,700	CO	SJR		NRCS Website http://www.wcc.nrcs.usda.gov/wsf/reservoir/rev_rpt.html
38 Navajo	X	1,696,000	1,696,000	1,036,100	NM	SJR	NVRN	Hydromet
39 New Fork Lake	X	20,340		20,340	WY	GR		Jade Henderson Superintendent for Region IV
40 Paonia	X	16,703		16,703	CO	CR	PARC	Hydromet
41 Pelican Lake	X	15,850		15,850	UT	GR		
42 Pleasant Valley (Lake Catam	X	7,275		7,275	CO	CR		Erin.Light@state.co.us Division 6 Water Resources for State of Colorado
43 Recapture Creek	X	16,000		16,000	UT	GR		
44 Redfleet	X	25,700		25,700	UT	GR	RFRU	Hydromet
45 Ridgway	X	82,980		82,980	CO	CR	RWRC	Hydromet
46 Rifle Gap	X	12,708		12,708	CO	CR	RGR	Hydromet
47 Ruedi	X	102,330		102,330	CO	CR	RURC	Great Planes Region Website
48 Scofield	X	65,800		65,800	UT	GR	SFRU	Hydromet
49 Shadow Mountain	X	18,368		18,368	CO	CR	SMRC	Great Planes Region Website
50 Silver Jack	X	13,000		13,000	CO	CR	SJRC	Hydromet
51 Soldier Creek	X	1,105,910		1,105,910	UT	GR	SCRU	Hydromet
52 Stagecoach	X	33,275		33,275	CO	GR		Erin.Light@state.co.us Division 6 Water Resources for State of Colorado
53 Starvation	X	165,320		165,320	UT	GR	SVRU	Hydromet
54 Steteline	X	13,880		13,880	WY	GR	SLRW	Hydromet
55 Steamboat Lake	X	25,400		25,400	CO	GR		Erin.Light@state.co.us Division 6 Water Resources for State of Colorado
56 Steinaker	X	34,455		34,455	UT	GR	STRU	Hydromet
57 Taylor Park	X	106,210		106,210	CO	CR	TPRC	Hydromet
58 Upper Stillwater	X	31,382		31,382	UT	GR	USRU	Hydromet
59 Vallecito	X	125,400		125,400	CO	SJR	VCRC	Hydromet
60 Vega	X	33,311		33,311	CO	CR	VGRU	Erik Knight from GJ office
61 Williams Creek	X	10,084		10,084	CO	CR		George Wear with Colorado Division of Water Resources george.wear@dw.state.co.us
62 Williams Fork	X	96,824		96,824	CO	CR	WFRC	Great Planes Region Website
63 Willow Lake	X	18,816		18,816	WY	GR		Jade Henderson Superintendent for Region IV
64 Willow Creek	X	10,550		10,550	CO	CR	WCRC	Great Planes Region Website
65 Wofford Mountain	X	66,000		66,000	CO	CR		George Wear with Colorado Division of Water Resources george.wear@dw.state.co.us
66 Yampolo	X	8,000		8,000	CO	GR		Erin.Light@state.co.us Division 6 Water Resources for State of Colorado
Total Capacity		35,233,298	30,731,061	25,665,339	30,167,576			



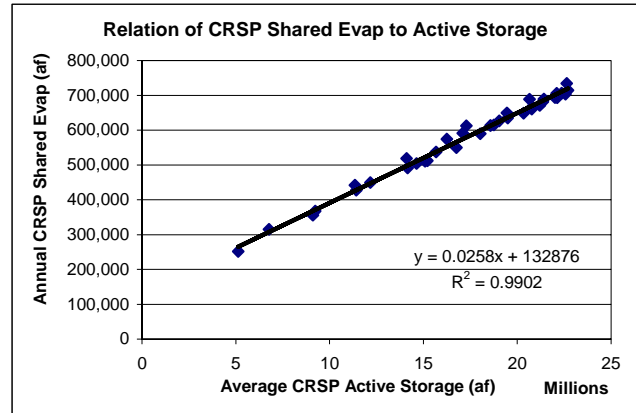
APPENDIX C - CRSP Evaporation Analysis

Relationships of CRSP Shared Reservoir Evaporation to Total CRSP Storage

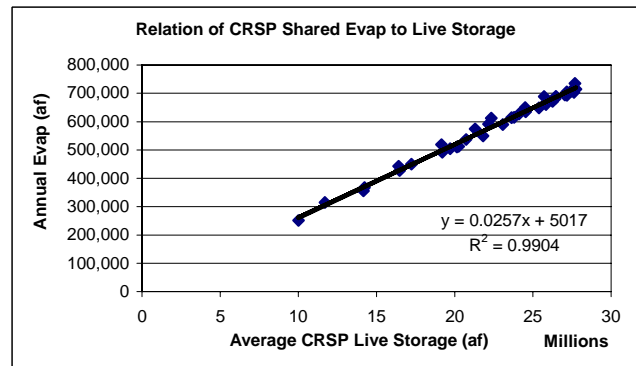
Year	Average CRSP Live Storage (af)	Average CRSP Active Storage (af)	CRSP Shared Evap (af)
1968	10,006,534	5,123,250	251,646
1969	11,701,142	6,764,000	315,083
1970	14,222,401	9,231,741	367,164
1971	16,417,858	11,354,088	442,260
1972	17,229,715	12,165,945	449,544
1973	19,703,066	14,639,296	504,409
1974	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	537,406
1978	19,158,480	14,106,380	519,065
1979	22,336,514	17,284,414	612,639
1980	25,709,770	20,657,670	688,502
1981	25,392,305	20,340,205	648,525
1982	25,835,729	20,783,629	666,691
1983	27,692,454	22,640,354	734,416
1984	27,759,568	22,707,468	714,727
1985	27,619,938	22,567,838	702,973
1986	27,414,909	22,362,809	706,131
1987	27,153,464	22,101,364	705,172
1988	26,465,639	21,413,539	689,455
1989	24,540,351	19,488,251	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	21,297,564	16,245,464	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	660,675
2001	23,802,258	18,750,158	614,593
2002	20,256,954	15,204,854	512,030
2003	16,472,537	11,420,437	427,526
2004	14,160,551	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.

Historic Storage and Evaporation at Colorado River Storage Project Reservoirs

	Lake Powell		Flaming Gorge Reservoir		Navajo Reservoir		Blue Mesa Reservoir		Morrow Point Reservoir		Crystal Reservoir		Total All CRSP Reservoirs			
Year	EOY Live Storage (af)	Annual Evap Amount (af)	EOY Live Storage (af)	Annual Evap Amount (af)	EOY Live Storage (af)	Annual Evap Amount (af)	EOY Live Storage (af)	Annual Evap Amount (af)	EOY Live Storage (af)	Annual Evap Amount (af)	EOY Live Storage (af)	Annual Evap Amount (af)	EOY Live Storage (af)	EOY Active Storage (af)	Total Annual Evap (af)	Annual Shared Evap (af)
1961	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	13,000	200	57,000	700	0	0	0	0	0	0	70,000	0	900	200
1963	970,000	25,000	883,500	20,000	331,834	8,323	0	0	0	0	0	0	2,185,334	650,500	53,323	45,000
1964	4,226,877	76,171	1,097,900	42,320	382,320	10,647	0	0	0	0	0	0	5,707,097	1,199,800	129,137	118,490
1965	6,755,838	144,900	2,395,300	47,402	404,111	14,630	0	100	0	0	0	0	9,555,248	5,026,100	207,031	192,401
1966	5,892,764	181,801	2,243,300	65,869	400,389	10,730	248,900	2,500	0	0	0	0	8,785,352	4,178,900	260,900	250,170
1967	6,237,331	158,145	2,288,300	66,614	588,132	13,048	321,500	4,500	0	0	0	0	9,435,263	4,641,100	242,308	229,259
1968	7,039,300	185,829	1,912,939	59,077	973,592	18,631	511,900	6,000	108,735	400	0	0	10,546,465	5,605,400	269,937	251,306
1969	9,527,661	252,105	1,565,599	54,074	1,043,002	22,326	652,343	8,064	35,875	500	0	0	12,824,480	7,922,600	337,068	314,743
1970	12,014,346	305,979	1,761,250	51,442	1,049,190	22,564	647,667	8,804	116,528	600	0	0	15,588,982	10,540,882	389,389	366,824
1971	12,973,499	365,252	2,704,322	68,523	991,296	20,505	431,077	7,297	115,200	848	0	0	17,215,394	12,167,294	462,425	441,920
1972	12,611,547	362,114	3,086,584	79,091	982,869	19,991	415,961	7,155	115,736	845	0	0	17,212,697	12,164,597	469,195	449,204
1973	17,397,040	417,269	2,938,138	77,932	1,112,631	28,408	598,694	8,028	115,592	839	0	0	22,162,095	17,113,995	532,477	504,069
1974	17,298,382	498,708	3,262,393	83,468	970,485	21,646	476,431	7,586	116,000	837	0	0	22,123,690	17,075,590	612,246	590,600
1975	19,846,968	521,418	3,430,797	83,664	1,185,693	26,432	533,575	7,360	116,128	831	0	0	25,113,161	20,065,061	639,704	613,272
1976	18,139,140	533,889	3,129,279	83,640	1,205,201	25,255	478,276	7,980	115,088	845	0	0	23,066,984	18,018,884	651,609	626,354
1977	15,050,697	467,624	1,990,703	62,883	979,918	22,439	235,328	5,729	113,928	832	7,714	100	18,378,288	13,326,188	559,605	537,166
1978	15,343,792	443,338	2,673,304	66,716	1,195,470	24,307	594,351	7,871	115,688	840	16,068	300	19,938,673	14,886,573	543,372	519,065
1979	20,395,402	536,289	2,397,144	67,120	1,233,240	27,623	579,788	8,040	111,536	840	17,244	349	24,734,354	19,682,254	640,261	612,639
1980	21,602,374	606,694	3,013,072	72,311	1,382,000	28,916	558,000	8,314	113,305	836	16,435	348	26,685,186	21,633,086	717,417	688,502
1981	19,610,804	566,573	2,783,198	74,001	1,234,201	26,237	340,276	6,763	114,242	839	16,703	349	24,099,424	19,047,324	674,762	648,525
1982	22,052,326	579,638	3,307,239	78,299	1,475,159	28,337	607,227	7,570	113,713	836	16,369	348	27,572,033	22,519,933	695,028	666,691
1983	22,095,450	638,987	3,451,988	85,654	1,545,720	30,691	593,402	8,583	113,018	842	13,297	350	27,812,875	22,760,775	765,108	734,416
1984	21,991,934	621,218	3,379,535	84,057	1,536,197	31,194	666,201	8,256	115,379	844	17,015	351	27,706,261	22,654,161	745,921	714,727
1985	22,324,682	613,050	3,116,556	80,358	1,392,531	31,206	567,471	8,373	115,476	842	16,900	350	27,533,616	22,481,516	734,179	702,973
1986	21,900,656	615,398	3,257,068	81,239	1,429,801	30,200	576,633	8,304	115,023	841	17,021	350	27,296,202	22,244,102	736,331	706,131
1987	22,041,008	613,810	3,216,414	81,897	1,075,143	24,350	547,283	8,279	113,913	839	16,965	349	27,010,726	21,958,626	729,523	705,172
1988	21,223,202	603,875	2,958,441	77,191	1,149,810	24,336	458,550	7,206	114,808	836	15,742	348	25,920,552	20,868,452	713,791	689,455
1989	18,292,024	551,911	2,943,401	73,516	1,230,357	26,906	563,467	8,217	114,531	832	16,369	346	23,160,150	18,108,050	661,727	634,821
1990	15,246,718	464,809	3,049,072	75,352	1,381,613	26,704	647,094	8,362	110,936	832	16,686	346	20,452,119	15,400,019	576,406	549,702
1991	14,251,955	420,198	3,328,132	80,305	1,551,852	30,621	571,167	9,008	111,922	831	15,997	346	19,831,025	14,778,925	541,310	510,689
1992	13,334,385	403,360	3,013,793	78,487	1,528,220	31,554	580,946	8,354	113,617	812	15,495	338	18,586,456	13,534,356	522,907	491,352
1993	18,402,436	483,699	3,317,500	80,461	1,567,023	30,954	594,902	8,546	112,000	832	14,811	346	24,008,671	18,956,571	604,838	573,884
1994	17,220,702	504,284	2,835,277	75,469	1,391,103	30,450	579,329	8,525	110,880	821	15,629	342	22,152,920	17,100,820	619,890	589,440
1995	20,392,360	560,150	3,285,793	79,319	1,461,480	30,153	586,169	8,569	109,120	825	13,607	343	26,848,529	21,796,429	679,359	649,206
1996	20,497,896	582,091	3,248,287	79,159	1,187,295	27,184	601,723	8,707	105,401	823	14,976	343	25,655,578	20,603,478	698,308	671,123
1997	21,595,054	592,707	3,323,228	78,851	1,558,033	28,612	578,393	8,392	108,842	823	14,154	342	27,177,704	22,125,604	709,727	681,115
1998	21,654,054	605,297	3,399,837	78,646	1,412,077	29,148	577,927	8,180	110,739	827	16,265	344	27,170,899	22,118,799	722,442	693,294
1999	21,443,640	605,738	3,269,090	78,352	1,500,893	27,969	589,147	8,749	112,771	825	15,198	343	26,930,739	21,878,639	721,976	694,007
2000	19,823,236	576,898	2,991,270	74,194	1,288,792	26,850	504,611	8,409	107,722	829	14,289	345	24,729,920	19,677,820	687,525	660,675
2001	17,995,952	532,968	2,876,393	72,363	1,334,015	26,563	544,265	8,102	109,410	819	14,561	341	22,874,596	17,822,496	641,156	614,593
2002	13,773,841	436,496	2,631,819	67,919	826,816	20,891	283,191	6,507	109,636	783	14,009	326	17,639,312	12,587,212	532,921	512,030
2003	11,486,774	352,779	2,606,058	67,223	710,076	17,085	376,564	6,359	111,708	823	14,582	343	15,305,762	10,253,662	444,611	427,526
2004	8,663,616	278,349	2,742,643	68,248	991,373	20,353	491,453	7,778	109,666	826	16,589	344	13,015,340	7,963,240	375,898	355,545

Notes:

- (1) Lake Powell statistics: Dead storage 1,893,000 af at elevation 3370; Live storage capacity 24,322,000 af between elevations 3370 and 3700; Active storage capacity 20,325,000 af between elevations 3490 and 3700. Storage began March 1963.
- (2) Flaming Gorge Reservoir statistics: Dead storage 39,700 af at elevation 5740; Live storage capacity 3,749,500 af between elevations 5740 and 6040; Active storage capacity 3,516,000 af between elevations 5871 and 6040. Storage began November 1962.
- (3) Navajo Reservoir statistics: Dead storage 12,600 af at elevation 5775; Live storage capacity 1,701,300 af between elevations 5775 and 6085; Active storage capacity 1,039,500 af between elevations 5990 and 6085. Storage began June 1962.
- (4) Aspinall Unit statistics:
 - Blue Mesa Reservoir - Dead storage 111,200 af at elevation 7358; Live storage capacity 829,600 af between elevations 7358 and 7519; Active storage capacity 748,800 af between elevations 7393 and 7519. Storage began October 1965. End-of-year 1965 total storage for Blue Mesa Reservoir was 85,240 af (0 live storage).
 - Morrow Point Reservoir - Dead storage 165 af at elevation 6808; Live storage capacity 117,000 af between elevations 6808 and 7160; Active storage capacity 42,000 af between elevations 7100 and 7160. Storage began January 1968.
 - Crystal Reservoir - Dead storage 8,000 af at elevation 6670; Live storage capacity 17,000 af between elevations 6670 and 6755; Active storage capacity 13,000 af between elevations 6700 and 6755. Storage began March 1977.
- (5) Total CRSP Live storage capacity is 30,736,400 af, and total CRSP Active storage capacity is 25,684,300 af. The total CRSP inactive storage capacity is 5,052,100 af.
- (6) Evaporation amounts were computed using the method and coefficients described in Historical Inflows, Colorado River Storage Project, Bureau of Reclamation (Tom Ryan), October 1993.
- (7) The following evaporation amounts are estimated from calculated evaporation for other years and relative total storage amounts: Lake Powell for 1963, Flaming Gorge Reservoir for 1962-63, Navajo Reservoir for 1962, Blue Mesa Reservoir for 1966-68, Morrow Point Reservoir for 1968-70, and Crystal Reservoir for 1977-78. These evaporation amounts for Flaming Gorge, Navajo and Blue Mesa reservoirs also were reduced for when storage began. Crystal Reservoir evaporation for 1979-2004 was estimated based on the evaporation amounts at Morrow Point Reservoir and the ratio of the surface area of Crystal Reservoir to the surface area of Morrow Point Reservoir at full capacity.
- (8) 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 proportion to their Upper Colorado River Basin Compact Article III(a) apportionments. Lake evaporation for Navajo Reservoir is accounted separately.

APPENDIX D - New Mexico Depletion Schedule

STATE OF NEW MEXICO SCHEDULE OF ANTICIPATED UPPER BASIN DEPLETIONS
(Units: 1000 acre-feet per year)

	<u>2000</u>	<u>2010</u>	<u>2020</u>	<u>2030</u>	<u>2040</u>	<u>2050</u>	<u>2060</u>
IRRIGATION USES (1)							
Navajo Nation Irrigation:							
Navajo Indian Irrigation Project	150.0	215.0	250.0	270.0	270.0	270.0	270.0
Fruitland-Cambridge Irrigation Project	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Hogback-Cudei Irrigation Project	15.5	15.5	21.3	21.3	21.3	21.3	21.3
Chaco River drainage irrigation	3.1	3.1	3.1	3.1	3.1	3.1	3.1
Crystal area irrigation	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Navajo Nation Irrigation Subtotal	176.9	241.9	282.7	302.7	302.7	302.7	302.7
Non-Navajo Irrigation:							
Above Navajo Dam (including Jicarilla)	1.9	1.9	1.9	1.9	1.9	1.9	1.9
Upper San Juan (excluding Hammond)	10.3	10.3	10.3	10.3	10.3	10.3	10.3
Hammond Irrigation Project	12.1	12.1	12.1	12.1	12.1	12.1	12.1
Animas River ditches	40.7	40.7	40.7	40.7	40.7	40.7	40.7
La Plata River ditches	5.9	5.9	5.9	5.9	5.9	5.9	5.9
Farmers Mutual Ditch	11.2	11.2	11.2	11.2	11.2	11.2	11.2
Jewett Valley Ditch	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Chaco River drainage irrigation	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Non-Navajo Irrigation Subtotal	86.5	86.5	86.5	86.5	86.5	86.5	86.5
Irrigation Total	263.4	328.4	369.2	389.2	389.2	389.2	389.2
STOCKPOND EVAPORATION AND STOCK USE							
	4.0	4.0	4.0	4.0	4.0	4.0	4.0
MUNICIPAL AND DOMESTIC USES (1)							
Current Municipal and Industrial Uses	9.7	9.7	9.7	9.7	9.7	9.7	9.7
Animas-La Plata Project:							
San Juan Water Commission	1.0	5.0	10.4	10.4	10.4	10.4	10.4
Navajo Nation	0.0	1.0	2.0	2.3	2.3	2.3	2.3
La Plata Conservancy District	0.0	0.0	0.8	0.8	0.8	0.8	0.8
Ridges Basin Reservoir Evaporation - NM share	0.0	0.0	0.1	0.1	0.1	0.1	0.1
Animas-La Plata Project Subtotal	1.0	6.0	13.3	13.6	13.6	13.6	13.6
Navajo-Gallup Water Supply Project: (2)							
Navajo Nation	0.0	0.0	7.9	10.2	12.5	12.5	12.5
Jicarilla Apache Nation	0.0	0.0	0.8	1.0	1.2	1.2	1.2
Navajo-Gallup Project Subtotal (within Basin)	0.0	0.0	8.7	11.2	13.7	13.7	13.7
Navajo Nation Municipal Use, Future (exc. NGWSP)	0.0	0.0	1.0	1.0	2.0	2.0	2.0
Jicarilla Apache Nation Municipal Use (exc. NGWSP)	0.0	0.0	0.0	0.4	0.6	0.6	0.6
Scattered Rural Domestic (including Jicarilla)	1.0	1.0	1.0	1.1	1.1	1.2	1.2
Municipal and Domestic Total	11.7	16.7	33.7	37.0	40.7	40.8	40.8
POWER AND INDUSTRIAL USES							
PNM - Navajo Reservoir contract (3)	16.2	16.2	16.2	16.2	16.2	16.2	16.2
BHP Billiton	37.0	37.0	38.0	39.0	39.0	39.0	39.0
Bloomfield Industrial	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Navajo Nation - Shiprock	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Navajo-Gallup Water Supply Project - NAPI (2)	0.0	0.0	0.7	0.7	0.7	0.7	0.7
Small Navajo Reservoir Contracts	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Power and Industrial Total	56.1	56.1	57.8	58.8	58.8	58.8	58.8
EXPORTS							
San Juan-Chama Project	105.2	105.2	105.2	105.2	105.2	105.2	105.2
Navajo-Gallup Water Supply Project: (2)							
Navajo Nation in New Mexico	0.0	0.0	4.0	5.8	7.6	7.6	7.6
City of Gallup	0.0	0.0	4.7	6.1	7.5	7.5	7.5
Navajo-Gallup Project Subtotal (Export)	0.0	0.0	8.7	11.9	15.1	15.1	15.1
Export Total	105.2	105.2	113.9	117.1	120.3	120.3	120.3
RESERVOIR EVAPORATION							
Navajo Reservoir Evaporation	28.3	28.0	27.7	27.7	27.7	27.7	27.7
Small Reservoir Evaporation	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Reservoir Evaporation Total	29.5	29.2	28.9	28.9	28.9	28.9	28.9
TOTAL DEPLETIONS (4)							
	469.9	539.6	607.5	635.0	641.9	642.0	642.0
State Share of Upper Basin Yield (5)	642.4	642.4	642.4	642.4	642.4	642.4	642.4
Remaining Available (5,6)	172.5	102.8	34.9	7.4	0.5	0.4	0.4
Percent of State Share Remaining	26.9%	16.0%	5.4%	1.2%	0.1%	0.1%	0.1%

NOTES:

(1) Does not reflect post-1965 transfers from irrigation to municipal and industrial uses.

(2) Proposed Navajo-Gallup Water Supply Project depletions in New Mexico total 29,500 acre-feet per year. Exports to Gallup are anticipated to be supplied through a subcontract with the Jicarilla Apache Nation. Exports for Navajo Nation uses in Arizona are

(3) Supplied through a subcontract with the Jicarilla Apache Nation.

(4) This is a schedule of anticipated depletions for planning purposes only. It is not a tabulation or determination of water rights or actual uses. Total depletions exclude New Mexico's share of reservoir evaporation from the major reservoirs constructed

(5) This depletion schedule does not attempt to interpret the Colorado River Compact, the Upper Colorado River Basin Compact, or any other element of the "Law of the River." This schedule should not be construed as an acceptance of any assumption that limits

(6) Reserved.

APPENDIX E - Upper Colorado River Commission Resolution

RESOLUTION OF THE UPPER COLORADO RIVER COMMISSION

Regarding the Availability of Water from Navajo Reservoir for Navajo Nation Uses
within the State of New Mexico

WHEREAS, the State of New Mexico has proposed the Navajo-Gallup Water Supply Project to provide a needed renewable water supply from the San Juan River for municipal and domestic uses for Indian and non-Indian communities located within New Mexico in both the Upper Basin and the Lower Basin; and

WHEREAS, the State of New Mexico and the Navajo Nation on April 19, 2005, executed the San Juan River Basin in New Mexico Navajo Nation Water Rights Settlement Agreement (the "Settlement Agreement"), which is conditioned upon, among other things, the implementation of the Navajo Nation components of the Navajo-Gallup Water Supply Project within New Mexico; and

WHEREAS, the source of water supply for the proposed Navajo-Gallup Water Supply Project would be Navajo Reservoir and the San Juan River in New Mexico; and

WHEREAS, water from Navajo Reservoir and the San Juan River would be delivered to the proposed Navajo-Gallup Water Supply Project to meet the water demands of Navajo Nation communities in New Mexico through a proposed Settlement Contract between the United States, acting through the Secretary of the Interior, and the Navajo Nation (Appendix 4 to the Settlement Agreement); and

WHEREAS, Public Law 87-483 at section 11(a) requires that no new long-term contracts "... shall be entered into for the delivery of water stored in Navajo Reservoir or any other waters of the San Juan River and its tributaries, as aforesaid, until the Secretary has determined by hydrologic investigations that sufficient water to fulfill said contract is reasonably likely to be available for use in the State of New Mexico during the term thereof under the allocations made in articles III and XIV of the Upper Colorado River Basin compact, and has submitted such determination to the Congress of the United States and the Congress has approved such contracts"; and

WHEREAS, pursuant to Public Law 87-483, and in furtherance of the Jicarilla Apache Tribe Water Rights Settlement Act of 1992 and the Navajo Reservoir water supply contract approved by said Act, the Secretary of the Interior on February 2, 1989, approved the report on "Hydrologic Determination, 1988, Water Availability from Navajo Reservoir and the Upper Colorado River Basin for Use in New Mexico" (the "1988 Hydrologic Determination"); and

WHEREAS, the 1988 Hydrologic Determination evaluated the availability of water from the Navajo Reservoir supply for uses in New Mexico through the 2040 planning horizon; and

WHEREAS, an update and extension to the 1988 Hydrologic Determination is needed to evaluate the availability of water from the Navajo Reservoir supply through a 2060 planning horizon under the allocation of water made to the State of New Mexico by the Upper Colorado River Basin Compact for the purpose of furthering Congressional legislative approval of the Settlement Agreement, the authorization of the proposed Navajo-Gallup Water Supply Project, and the legislative approval of the proposed Settlement Contract for the Navajo Nation's project uses in New Mexico; and

WHEREAS, the proposed Settlement Contract between the United States and the Navajo Nation would provide water supplies for Navajo Nation uses in New Mexico under both the Navajo-Gallup Water Supply Project and the Navajo Indian Irrigation Project which was authorized by Public Law 87-483, and would supersede the existing Navajo Reservoir water supply contract for the Navajo Indian Irrigation Project; and

WHEREAS, the US Bureau of Reclamation has presented to the Upper Colorado River Commission for its consideration a draft hydrologic determination, dated May 2006, that evaluates the availability of water from the Navajo Reservoir supply through 2060 and shows: (1) at least 5.76 million acre-feet of water is reasonably available annually for use by the Upper Basin, exclusive of reservoir evaporation at Lake Powell, Flaming Gorge Reservoir and the Aspinall Unit reservoirs of the Colorado River Storage Project; and (2) sufficient water is reasonably likely to be available from the Navajo Reservoir supply to fulfill the proposed Settlement Contract for the Navajo Nation's uses in New Mexico under the Navajo-Gallup Water Supply Project and the Navajo Indian Irrigation Project, in addition to existing Navajo Reservoir water supply contracts for other uses, under the allocations made to New Mexico in Articles III and XIV of the Upper Colorado River Basin Compact; and

WHEREAS, the Settlement Agreement would provide at subparagraph 9.3.1: "The Navajo Nation and the United States agree that the State of New Mexico may administer in priority water rights in the San Juan River Basin in New Mexico, including rights of the Navajo Nation, as may be necessary for New Mexico to comply with its obligations under interstate compacts and other applicable law"; and

WHEREAS, the Upper Colorado River Commission supports water resource development in the Upper Colorado River Basin to enable the Upper Division States to fully develop their compact apportionments of Colorado River water while meeting compact obligations relating to the flow of the Colorado River at Lee Ferry; and

WHEREAS, it is the position of the Upper Colorado River Commission and the Upper Division States that, with the delivery at Lee Ferry of 75 million acre-feet of water in each period of ten consecutive years, the water supply available in the Colorado River

System below Lee Ferry is sufficient to meet the apportionments to the Lower Basin provided for in Articles III (a) and III (b) of the Colorado River Compact; and

WHEREAS, it is the position of the Upper Colorado River Commission and the Upper Division States that the obligation of the Upper Basin under Article III(c) of the Colorado River Compact to deliver water toward the Mexican Treaty obligation does not require the delivery at Lee Ferry of 0.75 million acre-feet of water annually; and

WHEREAS, the Upper Colorado River Commission anticipates that the Upper Division States will take all actions necessary to ensure that all Upper Basin States have access to their respective apportionments as specified in the Upper Colorado River Basin Compact; and

WHEREAS, the Upper Colorado River Commission on June 19, 2003, resolved that: (1) "the States of Colorado, New Mexico, Utah and Wyoming, support and to the extent necessary consent to the diversion of water from the Upper Basin for use in the Lower Basin solely within New Mexico via the proposed Navajo-Gallup Water Supply Project; provided, that any water so diverted by said project to the Lower Basin portion of New Mexico, being a depletion of water at Lee Ferry, shall be a part of the consumptive use apportionment made to the State of New Mexico by Article III (a) of the Upper Colorado River Compact;" and (2) "the Upper Colorado River Commission supports such Congressional action as may be necessary to authorize the Navajo-Gallup Water Supply Project."

NOW, THEREFORE, BE IT RESOLVED by the Upper Colorado River Commission, that the Commission supports Congressional action to: (1) approve the Settlement Agreement; (2) authorize the proposed Navajo-Gallup Water Supply Project; and (3) approve the proposed Settlement Contract for the Navajo Nation's uses in New Mexico from the Navajo Reservoir supply under the Navajo-Gallup Water Supply Project and the Navajo Indian Irrigation Project.

BE IT FURTHER RESOLVED, that while the Upper Colorado River Commission does not endorse all of the study assumptions used by the Bureau of Reclamation in its May 2006 draft hydrologic determination, including an assumption of a 6 percent allowable overall shortage, and specifically disagrees with the modeling assumption of a minimum Upper Basin delivery of 8.25 million acre-feet annually at Lee Ferry, the Commission supports a determination by the Secretary of the Interior that at least 5.76 million acre-feet of water is available annually for use by the Upper Basin, exclusive of reservoir evaporation at Lake Powell, Flaming Gorge Reservoir and the Aspinall Unit reservoirs of the Colorado River Storage Project.

BE IT FURTHER RESOLVED, that the Upper Colorado River Commission supports a determination by the Secretary of the Interior that sufficient water is reasonably likely to be available to fulfill the proposed Settlement Contract for the Navajo Nation's uses in New Mexico from the Navajo Reservoir supply under the Navajo-Gallup Water Supply Project and the Navajo Indian Irrigation Project, in addition

to existing Navajo Reservoir water supply contracts for other uses, under the allocations made to New Mexico in Articles III and XIV of the Upper Colorado River Basin Compact.

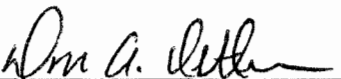
BE IT FURTHER RESOLVED, that nothing in this Resolution, or resulting from the adoption of this Resolution, shall limit the right or ability of any Upper Basin State to develop the full apportionment made to it under the Colorado River Compact and the Upper Colorado River Basin Compact.

BE IT FURTHER RESOLVED, that a copy of this resolution be transmitted to the Regional Director, Upper Colorado Region, Bureau of Reclamation, Salt Lake City, Utah.

CERTIFICATE

I, Don A. Ostler, Executive Director and Secretary of the Upper Colorado River Commission, do hereby certify that the Upper Colorado River Commission adopted the above Resolution at its regular meeting held in Jackson Hole, Wyoming, on June 5, 2006.

WITNESS my hand this 9th day of June 2006.


DON A. OSTLER
Executive Director and Secretary