SJ-7 Navajo-Gallup
Copy: SJ-17 Navajo Settlement

Attachments can contain viruses that may harm your computer. Attachments may not display correctly.

Whipple, John J., OSE

From: Trujillo, Tanya, OSE **Sent:** Mon 8/6/2007 5:25 PM
To: Knight, Emily; Calimlim, Camille
Cc: Lyman, Jeanette; johanna.polsenberg@mail.house.gov; Connor, Michael (Energy); John Utton; Whipple, John J., OSE
Subject: RE: WP Hearings_7.24.07_Thank you
Attachments: New Mexico's Responses to Questions for Dunlap.doc(32KB) Ltr to Richardson re Hydrologic Determination.06.08.07.pdf(1MB)

Emily, attached are New Mexico's Responses to Questions for Jim Dunlap to supplement the testimony provided during the hearing regarding H.R. 1970 on July 24, 2007.

Please contact me if you have any questions, and thank you again for all of your help.

Thank you,

Tanya Trujillo
General Counsel
New Mexico Interstate Stream Commission
P.O. Box 25102, Santa Fe, NM 87504-5102
(505) 476-0558
(505) 827-5776 (fax)
Tanya.Trujillo@state.nm.us

From: Knight, Emily [mailto:Emily.Knight@mail.house.gov]
Sent: Thursday, August 02, 2007 3:20 PM
To: Trujillo, Tanya, OSE
Subject: WP Hearings_7.24.07_Thank you

Hello,

Thank you for participating in our Legislative hearing on H.R. 1970, the "*Northwestern New Mexico Rural Water Projects Act,*" held on Tuesday, July 24, 2007. Please find attached a thank you letter from Chairwoman Napolitano, and some additional questions. Please forward all answers to me, Emily Knight, at Emily.Knight@mail.house.gov in word or word perfect format.

Thanks again, and don't hesitate to contact me if you have any questions or requests. Thanks, Emily

Emily Knight, Clerk

Committee on Natural Resources

Water and Power Subcommittee

1522 Longworth HOB

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Emily.Knight@mail.house.gov

GN Post Hearing Questions for the Record
H.R. 1970
Jim Dunlap, Panel 2

(DUNLAP-NM) This legislation will enable a settlement between the New Mexico Navajo Nation and the Federal Government. What do you think of the Arizona's concerns regarding the implications of certain provisions to the existing "Law of the Colorado River?"

A. Arizona's objection relating to the "Law of the River" relates to New Mexico's use of a portion of its Upper Basin apportionment within the Lower Basin in New Mexico. Arizona's concern is unfounded because Section 303(g) of H.R. 1970 directly authorizes the use of a portion of the State of New Mexico's Upper Basin apportionment within the Lower Basin in New Mexico. The authorization in H.R. 1970 is consistent with the authorization in Section 303(d) of the 1968 Colorado River Basin Project Act of a project's use of a portion of the State of Arizona's Upper Basin apportionment within the Lower Basin in Arizona. In addition, the Upper Colorado River Commission, which administers the Upper Colorado River Basin Compact and has authority to determine uses of water from the Upper Basin, by unanimous resolution, approved New Mexico's proposed use of some of its Upper Basin water within the Lower Basin in New Mexico.

H.R. 1970 preserves the State of Arizona's right to negotiate its own settlement with the Navajo Nation, and most of the issues raised by Arizona go beyond the scope of the State of New Mexico's settlement with the Navajo Nation. Some of the provisions that Arizona has requested have raised objections from other Colorado River Basin states.

(DUNLAP-NM) Mr. Dunlap, the Bureau of Reclamation may categorize this project as a "rural water project" under P.L. 109-451. Would the state of New Mexico support that? Has the State ever considered this project to be a "rural water project?"

A. The Bureau of Reclamation's written comments regarding H.R. 1970 state it is confused about whether the Northwestern New Mexico Rural Water Supply Project is intended to be a rural water project. The project proposed by H.R. 1970 should not be categorized as a "rural water project" under the Reclamation Rural Water Supply Act of 2006, P.L. 109-451. As clearly stated in H.R. 1970, the project will be authorized as a Colorado River Storage Project Act participating project. But, H.R. 1970 is specifically tailored to the requirements of the Navajo settlement.

As Commissioner Johnson described in his testimony to the bill, Reclamation's rural water program under the Rural Water Supply Act is still under development, and eligibility and prioritization criteria have still not been promulgated. New Mexico understands that a field hearing is scheduled later this month before the Senate Energy and Natural Resources Committee regarding the Bureau of Reclamation's implementation of P.L. 109-451.

(DUNLAP) Mr. Dunlap, your testimony frequently refers to the hydrologic report. Who verified the hydrologic report? Was this report specific to this project, or for the entire state of New Mexico?

A. The Hydrologic Determination to which I refer is required by Section 11 of P.L. 87-483, and was finalized by the Bureau of Reclamation in April 2007 after consultation with all seven Colorado River Basin states, and signed by the Secretary of the Interior on May 23, 2007. A copy of the determination is attached to these responses for the record. The Upper Colorado River Commission had previously concurred in the findings of the determination in June of 2005. The 2007 Hydrologic Determination confirmed the finding of the 1988 Hydrologic Determination that the annual water yield available to the Upper Basin under the Colorado River Compact is at least 6.0 million acre-feet, including evaporation from Colorado River Storage Project reservoirs, based on the critical period of record. The 2007 Hydrologic Determination also found that sufficient water is reasonably likely to be available within the State of New Mexico's share of the Upper Basin yield that is apportioned to it by Article III(a) of the Upper Colorado River Basin Compact, and within the physical water supply available from Navajo Reservoir to service water contracts from the Navajo Reservoir supply for the Navajo Nation's uses under both the Navajo Indian Irrigation Project and the proposed Northwestern New Mexico Rural Water Supply Project.

(To WHOEVER) The Jicarilla Tribe is currently receiving funds for the Jicarilla Apache Reservation Rural Water System rural water project. How do the funds from this legislation relate to the current project funds?

A. The funds from H.R. 1970 do not relate to the Jicarilla Apache Reservation Rural Water System. The Jicarilla Apache Reservation Rural Water System project will provide a water distribution system to supply water to the northern portion of the Jicarilla reservation in the proximity of Dulce, New Mexico. The Northwestern New Mexico Rural Water Supply Project will deliver water to the Jicarilla Apache Nation near Counselor, New Mexico, for use in the southern portion of the reservation.

(To WHOEVER) Who is responsible for the operation and maintenance costs? Who will own the infrastructure once it is completed?

A. Section 304 of H.R. 1970 provides that the three project beneficiaries, the Navajo Nation, the Jicarilla Apache Nation and the City of Gallup, will pay their respective allocable costs for operation, maintenance and replacement of the project. A limited waiver for up to ten years would be authorized for the Navajo Nation pursuant to subsection 304(f), if the Secretary of the Interior determines that the cost of OM&R allocable to the Navajo Nation exceeds its ability to pay. Subsection 302(f) authorizes the Secretary, upon completion of construction and execution of an operations agreement, to convey those portions of the project located within the Gallup city limits to the city and the rest of the project facilities to the Navajo Nation. No portion of the project will be located on Jicarilla lands. Paragraph 304(b)(5) requires financial assurances satisfactory to the Secretary if title is transferred to the city prior to repayment.

THE SECRETARY OF THE INTERIOR

WASHINGTON

JUN 0 8 2007

Honorable Bill Richardson
Governor of New Mexico
Santa Fe, New Mexico 87501

Dear Governor Richardson:

I am writing this letter to inform you that I have approved and signed the 2007 Hydrologic Determination (Determination) for a proposed contract from Navajo Reservoir to support the Navajo-Gallup Water Supply Project (Project). The Project, if authorized through legislation, has been proposed to settle the water rights claims of the Navajo Nation in the San Juan River Basin of New Mexico.

Each of the Colorado River Basin States has a vital interest in the Colorado River, and I wanted to personally inform you of the completion of the Determination in light of the importance of having direct and open communication on this valuable resource. A Determination for all proposed long-term contracts for water from Navajo Reservoir is mandated by Public Law 87-483, which requires the Secretary of the Interior to undertake an investigation of whether there is sufficient water within New Mexico's Compact apportionment to support any such long-term contract for water from Navajo Reservoir. That law further requires the Determination and the proposed contract be forwarded to Congress for its approval. Because the United States has not negotiated a contract with the Navajo Nation, the City of Gallup, or any other potential water users of the Project as of this time, it is premature to forward the Determination to Congress. As soon as such a contract(s) is(are) negotiated, we will forward them and the Determination to Congress.

The finding in the Determination that there is likely to be sufficient water to support the proposed contract removes any Department of the Interior concerns about potential limitations on water supply. This is in keeping with my commitment to the New Mexico Congressional delegation that we will attempt to resolve all procedural requirements in order to facilitate a fair and open debate on the merits of the proposed settlement, even though the Administration has no position on the settlement at this time.

In developing the Determination, the Bureau of Reclamation has worked closely with all of the Colorado River Basin States in a manner keeping with the spirit of cooperation the Basin is currently enjoying and is in compliance with the Colorado River Compact and the Law of the River. I am personally thankful for the assistance of all the Basin States in finding a way to allow the Determination to move forward.

Please contact me if you have any questions or concerns in this matter.

Sincerely,

DIRK KEMPTHORNE

Enclosure

Identical Letters Sent To:

Honorable Dave Freudenthal
Governor of Wyoming
Cheyenne, Wyoming 82002

Honorable Jon Huntsman, Jr.
Governor of Utah
Salt Lake City, Utah 84114-2220

Honorable Bill Ritter
Governor of Colorado
Denver, Colorado 80203

Honorable Jim Gibbons
Governor of Nevada
Carson City, Nevada 89701

Honorable Janet Napolitano
Governor of Arizona
Phoenix, Arizona 85007

Honorable Arnold Schwarzenegger
Governor of California
Sacramento, California 95814

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 15.3 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:

Storage Assumption	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

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
1906	15,550,021	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
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
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
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
1910	14,650,615	29,530,030	24,847,704	8,250,000	5,550,000	749,290	29,831,356	101,326	0	29,530,030	24,847,704
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
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
1916	20,142,582	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
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
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	27,851,713	0	0	27,851,713	23,267,216
1920	22,287,632	27,851,713	23,267,216	8,250,000	5,550,000	728,688	35,409,659	5,879,628	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
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
1923	19,024,048	29,530,030	24,847,704	8,250,000	5,550,000	749,290	34,004,788	4,474,756	0	29,530,030	24,847,704
1924	13,877,798	29,530,030	24,847,704	8,250,000	5,550,000	742,354	28,865,474	0	0	28,865,474	24,268,521
1925	14,430,701	28,865,474	24,268,521	8,250,000	5,550,000	734,337	28,761,839	0	0	28,761,839	24,201,318
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	6,550,000	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	38,810,325	7,280,295	0	29,530,030	24,847,704
1930	14,621,041	29,530,030	24,847,704	8,250,000	5,550,000	749,290	29,601,781	71,751	0	29,530,030	24,847,704
1931	8,474,134	29,530,030	24,847,704	8,250,000	5,550,000	688,538	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	654,756	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	12,830,349	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
1936	14,848,873	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
1937	14,306,056	14,822,558	12,472,271	8,250,000	5,550,000	442,943	14,885,871	0	0	14,885,871	12,525,376
1938	16,146,319	14,885,871	12,525,376	8,250,000	5,550,000	483,935	18,760,055	0	0	18,760,055	15,777,018
1939	11,184,059	18,760,055	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	11,338,862	9,541,797
1941	20,116,676	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
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
1943	13,731,401	20,127,925	16,936,410	8,250,000	5,550,000	546,808	19,512,717	0	0	19,512,717	16,418,751
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
1945	14,140,528	20,531,321	17,275,843	8,250,000	5,550,000	559,188	20,312,681	0	0	20,312,681	17,091,871
1946	11,095,453	20,312,681	17,091,871	8,250,000	5,550,000	523,196	17,084,936	0	0	17,084,936	14,375,923
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
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
1949	16,833,564	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
1950	13,140,418	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
1951	12,505,684	21,315,639	17,935,799	8,250,000	5,550,000	558,488	19,463,047	0	0	19,463,047	16,378,957
1952	20,805,422	19,463,047	16,378,957	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	19,007,588
1954	8,496,102	22,589,374	19,007,588	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	11,428,674	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	493,820	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	11,524,180	13,403,132	11,277,911	8,250,000	5,550,000	364,885	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	9,638,386	5,585,793
1962	17,377,809	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	4,666,264	0	0	4,666,264	3,926,391
1964	10,883,586	4,666,264	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	251,784	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	1,420,338
1968	13,739,932	1,687,986	1,420,338	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	15,493,859	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	3,957,988
1973	16,650,193	4,703,812	3,957,988	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	9,572,028
1976	11,313,561	11,375,790	9,572,028	8,250,000	5,550,000	340,828	8,548,524	0	0	8,548,524	7,193,057
1977	5,551,188	8,548,524	7,193,057	8,250,000	5,550,000	222,899	76,813	0	0	76,813	64,633
1978	15,335,909	76,813	64,633	8,250,000	5,550,000	148,955	1,463,786	0	0	1,463,786	1,231,569
1979	17,525,429	1,463,786	1,231,569	8,250,000	5,550,000	203,322	5,285,872	0	0	5,285,872	4,447,736
1980	17,627,076	5,285,872	4,447,736	8,250,000	5,550,000	283,332	9,129,617	0	0	9,129,617	7,682,011
1981	9,015,200	9,129,617	7,682,011	8,250,000	5,550,000	270,884	4,074,132	0	0	4,074,132	3,428,132
1982	17,489,400	4,074,132	3,428,132	8,250,000	5,550,000	253,778	7,509,754	0	0	7,509,754	6,318,996
1983	24,381,969	7,509,754	6,318,996	8,250,000	5,550,000	395,742	17,676,001	0	0	17,676,001	14,873,268
1984	25,359,376	17,676,001	14,873,268	8,250,000	5,550,000	616,064	28,619,314	0	0	28,619,314	24,081,392
1985	21,248,106	28,619,314	24,081,392	8,250,000	5,550,000	739,785	35,325,636	5,795,607	0	29,530,030	24,847,704
1986	23,013,445	29,530,030	24,847,704	8,250,000	5,550,000	749,290	37,894,166	8,484,156	0	29,530,030	24,847,704
1987	15,840,476	29,530,030	24,847,704	8,250,000	5,550,000	749,290	30,821,219	1,091,188	0	29,530,030	24,847,704
1988	11,456,357	29,530,030	24,847,704	8,250,000	5,550,000	717,342	26,489,044	0	0	26,489,044	22,272,073
1989	9,921,847	26,489,044	22,272,073	8,250,000	5,550,000	638,257	21,952,634	0	0	21,952,634	18,471,791
1990	9,639,803	21,952,634	18,471,791	8,250,000	5,550,000	542,041	17,250,397	0	0	17,250,397	14,515,148
1991	12,170,021	17,250,397	14,515,148	8,250,000	5,550,000	471,035	15,149,382	0	0	15,149,382	12,747,273
1992	10,895,580	15,149,382	12,747,273	8,250,000	5,550,000	414,467	11,830,495	0	0	11,830,495	9,954,634
1993	18,160,118	11,830,495	9,954,634	8,250,000	5,550,000	420,941	15,769,672	0	0	15,769,672	13,269,209
1994	11,125,503	15,769,672	13,269,209	8,250,000	5,550,000	429,656	12,665,519	0	0	12,665,519	10,657,255
1995	20,047,166	12,665,519	10,657,255	8,250,000	5,550,000	457,883	18,455,001	0	0	18,455,001	15,528,748
1996	14,502,293	18,455,001	15,528,748	8,250,000	5,550,000	520,011	18,637,284	0	0	18,637,284	15,682,128
1997	21,622,435	18,637,284	15,682,128	8,250,000	5,550,000	597,322	25,882,399	0	0	25,882,399	21,761,618
1998	16,798,376	25,882,399	21,761,618	8,250,000	5,550,000	696,754	28,184,023	0	0	28,184,023	23,698,293
1999	15,934,210	28,184,023	23,698,293	8,250,000	5,550,000	735,033	29,583,200	33,170	0	29,530,030	24,847,704
2000	10,646,528	29,530,030	24,847,704	8,250,000	5,550,000	708,978	25,667,579	0	0	25,567,579	21,597,689
Total									0		
Averages:											
1953-1977	13,088,628			8,250,000	5,550,000	320,057		0	0	8,451,410	7,111,342
1931-1977	13,594,590			8,250,000	5,550,000	421,255		0	0	13,501,780	11,360,918
1906-2000	15,284,742			8,250,000	5,550,000	527,920		997,450	0	18,904,684	15,907,129

Variables	
Storage	30,187,576 af
Sedimentation Rate (Active)	24,292 af/yr
Bank Storage	4%
Adjusted Storage (2060)	29,530,030 af
UB Demand Level	5,550,000 af/yr
LB Delivery	8,250,000 af/yr

Results

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

Shortage Years	Shortage
1963	0 af
1964	0 af
1957	0 af
1966	0 af
1977	0 af

NM allocation(w/o evap)	618,750 af/yr

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

Total Upper Basin depletion, inc. CRSP evap:

1953-1977	5,870,057 af/yr
1931-1977	5,971,255 af/yr
1906-2000	6,077,920 af/yr

Flow Adjustments:

1971	203,225 af
1972	226,985 af
1973	252,377 af
1974	196,384 af
1975	246,665 af
1976	173,250 af
1977	112,291 af
1978	152,187 af
1979	153,559 af
1980	161,593 af

Percentage shortage =

	0.00%
	0.00%
	0.00%

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
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
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
1908	12,218,817	29,530,030	24,847,704	8,250,000	5,790,000	722,739	26,986,108	0	0	29,886,108	22,707,150
1909	22,356,301	29,886,108	22,707,150	8,250,000	5,790,000	722,739	34,578,870	5,049,840	0	29,530,030	24,847,704
1910	14,650,615	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
1911	15,499,729	29,392,789	24,732,223	8,250,000	5,790,000	747,858	30,104,860	574,629	0	29,530,030	24,847,704
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	24,837,088
1914	21,354,814	29,279,726	24,837,088	8,250,000	5,790,000	746,678	35,847,862	6,317,832	0	29,530,030	24,847,704
1915	13,823,277	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
1916	20,142,882	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
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
1918	15,865,939	29,530,030	24,847,704	8,250,000	5,790,000	749,290	30,806,879	1,076,649	0	29,530,030	24,847,704
1919	12,851,369	29,530,030	24,847,704	8,250,000	5,790,000	727,207	27,414,192	0	0	27,414,192	23,087,356
1920	22,287,692	27,414,192	23,087,356	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
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
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
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
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
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	19,539,212	28,737,342	24,180,706	8,250,000	5,790,000	741,017	33,495,537	3,965,507	0	29,530,030	24,847,704
1928	16,854,334	29,530,030	24,847,704	8,250,000	5,790,000	749,290	31,695,074	2,165,044	0	29,530,030	24,847,704
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
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
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
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	648,458	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	632,720	14,957,731	0	0	14,957,731	12,586,011
1935	12,830,349	14,957,731	12,586,011	8,250,000	5,790,000	425,948	13,122,133	0	0	13,122,133	11,041,466
1936	14,648,873	13,122,133	11,041,466	8,250,000	5,790,000	408,877	13,322,129	0	0	13,322,129	11,209,752
1937	14,308,056	13,322,129	11,209,752	8,250,000	5,790,000	408,467	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	11,184,059	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	388,272	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	380,993	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	18,689,584	0	0	18,689,584	15,728,220
1950	13,140,616	18,689,584	15,728,220	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	18,110,889
1953	11,165,419	21,523,485	18,110,889	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	11,426,674	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	388,845	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	4,222,899	0	0	4,222,899	3,553,142
1963	8,840,900	4,222,899	3,553,142	8,250,000	5,790,000	176,949	-1,153,349	0	1,153,349	0	0
1964	10,663,586	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	10,579,844	5,643,252	4,748,449	8,250,000	5,790,000	213,377	2,059,719	0	0	2,059,719	1,741,541
1967	11,670,830	2,059,719	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	2,224,815	0	0	2,224,815	1,871,877
1971	15,493,859	2,224,815	1,871,877	8,250,000	5,790,000	192,478	3,485,798	0	0	3,485,798	2,933,084
1972	13,188,837	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	16,850,193	2,437,734	2,051,203	8,250,000	5,790,000	229,463	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	17,072,881	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
1978	15,335,909	0	0	8,250,000	5,790,000	144,889	1,151,019	0	0	1,151,019	968,512
1979	17,825,429	1,151,019	968,512	8,250,000	5,790,000	194,383	4,742,065	0	0	4,742,065	3,990,156
1980	17,927,076	4,742,065	3,990,156	8,250,000	5,790,000	268,516	6,359,523	0	0	6,359,523	7,034,025
1981	9,015,200	6,359,523	7,034,025	8,250,000	5,790,000	252,296	3,082,427	0	0	3,082,427	2,593,672
1982	17,489,400	3,082,427	2,593,672	8,250,000	5,790,000	230,812	6,301,015	0	0	6,301,015	5,301,916
1983	24,361,989	6,301,015	5,301,916	8,250,000	5,790,000	368,292	16,254,712	0	0	16,254,712	13,677,340
1984	25,359,376	16,254,712	13,677,340	8,250,000	5,790,000	584,223	26,989,865	0	0	26,989,865	22,710,311
1985	21,246,109	26,989,865	22,710,311	8,250,000	5,790,000	722,778	33,473,196	3,943,165	0	29,530,030	24,847,704
1986	23,013,446	29,530,030	24,847,704	8,250,000	5,790,000	749,290	37,754,186	8,224,156	0	29,530,030	24,847,704
1987	15,640,478	29,530,030	24,847,704	8,250,000	5,790,000	749,290	30,381,219	851,188	0	29,530,030	24,847,704
1988	11,456,357	29,530,030	24,847,704	8,250,000	5,790,000	714,883	26,231,523	0	0	26,231,523	22,072,213
1989	9,921,847	26,231,523	22,072,213	8,250,000	5,790,000	630,671	21,482,499	0	0	21,482,499	18,076,202
1990	9,639,803	21,482,499	18,076,202	8,250,000	5,790,000	529,850	16,552,453	0	0	16,552,453	13,927,871
1991	12,170,021	16,552,453	13,927,871	8,250,000	5,790,000	454,137	14,228,336	0	0	14,228,336	11,972,270
1992	10,895,580	14,228,336	11,972,270	8,250,000	5,790,000	392,950	10,690,956	0	0	10,690,956	8,995,781
1993	18,160,116	10,690,956	8,995,781	8,250,000	5,790,000	394,921	14,416,153	0	0	14,416,153	12,130,306
1994	11,125,603	14,416,153	12,130,306	8,250,000	5,790,000	389,215	11,102,440	0	0	11,102,440	9,342,020
1995	20,047,166	11,102,440	9,342,020	8,250,000	5,790,000	422,913	16,586,693	0	0	16,586,693	14,040,825
1996	14,502,293	16,586,693	14,040,825	8,250,000	5,790,000	481,001	16,567,984	0	0	16,567,984	14,025,084
1997	21,822,438	16,567,984	14,025,084	8,250,000	5,790,000	554,151	23,698,282	0	0	23,698,282	19,938,947
1998	16,796,378	23,698,282	19,938,947	8,250,000	5,790,000	649,526	25,805,114	0	0	25,805,114	21,713,418
1999	15,934,210	25,805,114	21,713,418	8,250,000	5,790,000	684,185	27,015,159	0	0	27,015,159	22,731,595
2000	10,646,526	27,015,159	22,731,595	8,250,000	5,790,000	654,545	22,967,140	0	0	22,967,140	19,325,436
Total								8,486,120			
Averages:											
1953-1977	13,088,628			8,250,000	5,790,000	248,013		0	339,445	5,133,193	4,319,266
1931-1977	13,594,590			8,250,000	5,790,000	359,902		0	180,556	10,563,561	8,888,587
1906-2000	15,284,742			8,250,000	5,790,000	491,413		911,740	89,328	17,141,586	14,423,590

Variables	
Storage	30,167,576 af
Sedimentation Rate (Active)	24,292 af/yr
Bank Storage	4%
Adjusted Storage (2060)	29,530,030 af
UB Demand Level	5,790,000 af/yr
LB Delivery	8,250,000 af/yr

Results

Average CRSP Evap	491,413 af/yr
Total Yield w/ CRSP evap	6,281,413 af/yr

Shortage Years	Shortage
1963	1,153,349 af
1964	3,309,290 af
1967	453,929 af
1968	432,944 af
1977	3,136,608 af

NM allocation(w/o evap) 645,750 af/yr

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

Total Upper Basin depletion, inc. CRSP evap:

1953-1977	8,039,013 af/yr
1931-1977	8,149,902 af/yr
1906-2000	8,281,413 af/yr

Flow Adjustments:

1971	203,228 af
1972	226,885 af
1973	252,377 af
1974	196,384 af
1976	246,665 af
1976	173,250 af
1977	112,291 af
1978	152,187 af
1979	153,559 af
1980	151,893 af

Percentage shortage =

	5.86%
	3.12%
	1.54%

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
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
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
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
1909	22,358,301	27,223,629	22,907,009	7,500,000	6,300,000	725,218	35,064,712	5,524,682	0	29,530,030	24,847,704
1910	14,650,615	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
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
1912	18,823,410	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	5,792,873	0	29,530,030	24,847,704
1915	13,523,277	29,530,030	24,847,704	7,500,000	6,300,000	739,725	28,813,582	0	0	28,813,582	24,076,569
1916	20,142,692	28,813,582	24,076,569	7,500,000	6,300,000	739,725	34,218,749	4,688,719	0	29,530,030	24,847,704
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
1918	15,885,939	29,530,030	24,847,704	7,500,000	6,300,000	749,290	30,848,679	1,318,849	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	23,287,216
1920	22,287,832	27,651,713	23,287,216	7,500,000	6,300,000	729,686	35,409,859	5,579,629	0	29,530,030	24,847,704
1921	22,528,781	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
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
1923	19,024,048	29,530,030	24,847,704	7,500,000	6,300,000	749,290	34,004,788	4,474,756	0	29,530,030	24,847,704
1924	13,877,798	29,530,030	24,847,704	7,500,000	6,300,000	742,354	28,885,474	0	0	28,885,474	24,288,521
1925	14,430,701	28,885,474	24,288,521	7,500,000	6,300,000	734,337	28,761,839	0	0	28,761,839	24,201,318
1926	15,213,731	28,761,839	24,201,318	7,500,000	6,300,000	740,284	29,435,285	0	0	29,435,286	24,787,982
1927	19,539,212	29,435,286	24,787,982	7,500,000	6,300,000	748,301	34,426,197	4,896,166	0	29,530,030	24,847,704
1928	18,954,334	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
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	688,538	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	654,768	28,485,055	0	0	28,485,055	22,285,545
1933	12,183,500	28,485,055	22,285,545	7,500,000	6,300,000	561,949	24,206,607	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	18,031,950	0	0	18,031,950	13,489,909
1935	12,630,349	18,031,950	13,489,909	7,500,000	6,300,000	450,618	14,411,681	0	0	14,411,681	12,128,543
1936	14,648,873	14,411,681	12,128,543	7,500,000	6,300,000	437,996	14,822,558	0	0	14,822,558	12,472,271
1937	14,308,056	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
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
1939	11,184,059	18,750,055	15,777,018	7,500,000	6,300,000	491,625	15,822,489	0	0	15,822,489	13,145,384
1940	9,931,657	15,822,489	13,145,384	7,500,000	6,300,000	414,284	11,339,882	0	0	11,339,882	9,541,797
1941	20,116,678	11,339,882	9,541,797	7,500,000	6,300,000	431,015	17,225,525	0	0	17,225,525	14,494,220
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
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
1944	15,369,422	19,512,717	16,418,751	7,500,000	6,300,000	560,819	20,531,321	0	0	20,531,321	17,275,843
1945	14,140,528	20,531,321	17,275,843	7,500,000	6,300,000	559,158	20,312,681	0	0	20,312,681	17,091,871
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
1947	16,439,488	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
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
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
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
1951	12,505,894	21,315,639	17,935,799	7,500,000	6,300,000	558,488	19,463,047	0	0	19,463,047	16,378,957
1952	20,905,422	19,463,047	16,378,957	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	538,572	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	432,085	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	6,638,385	0	0	6,638,386	5,585,793
1962	17,377,509	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	10,879,844	7,381,417	6,211,008	7,500,000	6,300,000	251,784	4,009,497	0	0	4,009,497	3,373,745
1967	11,570,830	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	165,764	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	15,493,859	4,097,125	3,447,479	7,500,000	6,300,000	233,838	5,557,146	0	0	5,557,146	4,675,996
1972	13,186,837	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	278,778	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	17,072,561	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	9,572,028	7,500,000	6,300,000	340,828	8,548,524	0	0	8,548,524	7,193,057
1977	5,551,188	8,548,524	7,193,057	7,500,000	6,300,000	222,899	76,813	0	0	76,813	64,633
1978	15,335,909	76,813	64,633	7,500,000	6,300,000	148,955	1,463,766	0	0	1,463,766	1,231,669
1979	17,825,429	1,463,766	1,231,669	7,500,000	6,300,000	203,322	5,285,872	0	0	5,285,872	4,447,736
1980	17,827,076	5,285,872	4,447,736	7,500,000	6,300,000	283,332	9,129,617	0	0	9,129,617	7,682,011
1981	9,015,200	9,129,617	7,682,011	7,500,000	6,300,000	270,884	4,074,132	0	0	4,074,132	3,428,132
1982	17,469,400	4,074,132	3,428,132	7,500,000	6,300,000	253,778	7,509,754	0	0	7,509,754	6,318,996
1983	24,361,989	7,509,754	6,318,996	7,500,000	6,300,000	385,742	17,676,001	0	0	17,676,001	14,873,268
1984	25,359,376	17,676,001	14,873,268	7,500,000	6,300,000	616,064	28,619,314	0	0	28,619,314	24,081,382
1985	21,246,109	28,619,314	24,081,382	7,500,000	6,300,000	739,785	35,325,638	5,795,607	0	29,530,030	24,847,704
1986	23,013,448	29,530,030	24,847,704	7,500,000	6,300,000	749,290	37,994,188	8,464,156	0	29,530,030	24,847,704
1987	15,840,478	29,530,030	24,847,704	7,500,000	6,300,000	749,290	30,821,219	1,091,188	0	29,530,030	24,847,704
1988	11,456,357	29,530,030	24,847,704	7,500,000	6,300,000	717,342	28,469,044	0	0	28,469,044	22,272,073
1989	9,921,847	28,469,044	22,272,073	7,500,000	6,300,000	638,257	21,952,634	0	0	21,952,634	18,471,791
1990	9,639,803	21,952,634	18,471,791	7,500,000	6,300,000	542,041	17,250,397	0	0	17,250,397	14,515,148
1991	12,170,021	17,250,397	14,515,148	7,500,000	6,300,000	471,036	15,149,382	0	0	15,149,382	12,747,273
1992	10,895,580	15,149,382	12,747,273	7,500,000	6,300,000	414,467	11,830,495	0	0	11,830,495	9,954,634
1993	18,160,118	11,830,495	9,954,634	7,500,000	6,300,000	420,941	15,769,672	0	0	15,769,672	13,269,209
1994	11,125,503	15,769,672	13,269,209	7,500,000	6,300,000	429,656	12,665,519	0	0	12,665,519	10,657,255
1995	20,047,156	12,665,519	10,657,255	7,500,000	6,300,000	457,683	18,455,001	0	0	18,455,001	15,528,748
1996	14,502,293	18,455,001	15,528,748	7,500,000	6,300,000	520,011	15,637,284	0	0	15,637,284	15,882,126
1997	21,622,438	15,637,284	15,882,126	7,500,000	6,300,000	597,322	25,862,399	0	0	25,862,399	21,761,518
1998	16,798,378	25,862,399	21,761,518	7,500,000	6,300,000	696,754	28,164,023	0	0	28,164,023	23,688,293
1999	15,934,210	28,164,023	23,688,293	7,500,000	6,300,000	735,033	29,563,200	33,170	0	29,530,030	24,847,704
2000	10,545,525	29,530,030	24,847,704	7,500,000	6,300,000	708,978	25,667,579	0	0	25,667,579	21,597,689
Total									0		
Averages:											
1953-1977	13,088,628			7,500,000	6,300,000	320,057		0	0	8,451,410	7,111,342
1931-1977	13,594,590			7,500,000	6,300,000	421,255		0	0	13,501,760	11,360,918
1906-2000	15,284,742			7,500,000	6,300,000	527,920		997,480	0	18,904,584	15,967,129

Variables	
Storage	30,167,578 af
Sedimentation Rate (Active)	24,292 af/yr
Bank Storage	4%
Adjusted Storage (2060)	29,530,030 af
UB Demand Level	6,300,000 af/yr
LB Delivery	7,500,000 af/yr

Results

Average CRSP Evap	527,920 af/yr
Total Yield w/ CRSP evap	6,827,920 af/yr

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

NM allocation(w/o evap)	703,125 af/yr

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

Total Upper Basin depletion, inc. CRSP evap:

1953-1977	6,620,057 af/yr
1931-1977	8,721,255 af/yr
1906-2000	6,827,920 af/yr

Flow Adjustments:

1971	203,226 af
1972	226,985 af
1973	252,377 af
1974	196,384 af
1975	248,665 af
1976	173,250 af
1977	112,291 af
1978	152,187 af
1979	153,559 af
1980	161,893 af

Percentage shortage =

	0.00%
	0.00%
	0.00%

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
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
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
1908	12,218,817	29,530,030	24,847,704	7,500,000	6,570,000	722,429	25,956,418	0	0	29,956,418	22,682,168
1909	22,358,301	29,956,418	22,682,168	7,500,000	6,570,000	722,429	34,620,290	4,990,260	0	29,530,030	24,847,704
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
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
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	23,851,726
1916	20,142,892	28,346,371	23,851,726	7,500,000	6,570,000	736,936	33,682,327	4,152,296	0	29,530,030	24,847,704
1917	22,842,804	29,530,030	24,847,704	7,500,000	6,570,000	749,290	37,853,544	8,123,514	0	29,530,030	24,847,704
1918	15,865,939	29,530,030	24,847,704	7,500,000	6,570,000	749,290	30,578,679	1,048,649	0	29,530,030	24,847,704
1919	12,851,369	29,530,030	24,847,704	7,500,000	6,570,000	728,897	27,384,502	0	0	27,384,502	23,042,374
1920	22,267,832	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	22,526,751	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
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
1923	19,024,046	29,530,030	24,847,704	7,500,000	6,570,000	749,290	33,734,788	4,204,756	0	29,530,030	24,847,704
1924	13,577,798	29,530,030	24,847,704	7,500,000	6,570,000	739,565	28,568,263	0	0	28,568,263	24,063,679
1925	14,430,701	28,568,263	24,063,679	7,500,000	6,570,000	728,027	28,232,937	0	0	28,232,937	23,756,279
1926	15,213,731	28,232,937	23,756,279	7,500,000	6,570,000	728,568	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	15,954,334	29,530,030	24,847,704	7,500,000	6,570,000	749,290	31,685,074	2,155,044	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	24,662,613
1931	8,474,134	29,333,829	24,662,613	7,500,000	6,570,000	679,896	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	21,682,156
1933	12,183,500	25,767,975	21,682,156	7,500,000	6,570,000	644,346	23,237,129	0	0	23,237,129	19,552,614
1934	8,178,192	23,237,129	19,552,614	7,500,000	6,570,000	630,032	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	422,895	12,952,943	0	0	12,952,943	10,899,105
1936	14,848,873	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	11,184,059	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	382,388	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	481,903	17,108,038	0	0	17,108,038	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	14,394,458
1945	14,140,528	17,106,976	14,394,458	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	16,439,486	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	481,826	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	5,510,082
1956	11,426,874	6,548,383	5,510,082	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	9,098,283
1958	15,862,511	10,812,749	9,098,283	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	256,535	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	17,377,809	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	10,883,588	0	0	7,500,000	6,570,000	132,676	-3,339,290	0	3,339,290	0	0
1965	19,575,027	0	0	7,500,000	6,570,000	191,465	5,813,562	0	0	5,813,562	4,723,467
1966	10,679,844	5,813,562	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	153,884	-542,082	0	542,082	0	0
1968	13,738,932	0	0	7,500,000	6,570,000	132,876	-482,944	0	482,944	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	166,528	2,155,848	0	0	2,155,848	1,822,428
1971	16,493,659	2,155,848	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	13,285,425	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	275,812	5,321,894	0	0	5,321,894	4,478,048
1977	5,551,188	5,321,894	4,478,048	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	6,570,000	144,579	1,121,329	0	0	1,121,329	943,530
1979	17,825,429	1,121,329	943,530	7,500,000	6,570,000	193,459	4,683,298	0	0	4,683,298	3,940,708
1980	17,927,076	4,683,298	3,940,708	7,500,000	6,570,000	268,094	8,272,280	0	0	8,272,280	6,960,615
1981	9,015,200	8,272,280	6,960,615	7,500,000	6,570,000	250,184	2,967,296	0	0	2,967,296	2,496,797
1982	17,489,400	2,967,296	2,496,797	7,500,000	6,570,000	228,123	6,158,572	0	0	6,158,572	5,182,060
1983	24,381,989	6,158,572	5,182,060	7,500,000	6,570,000	385,039	16,085,522	0	0	16,085,522	13,534,977
1984	25,359,376	16,085,522	13,534,977	7,500,000	6,570,000	580,418	26,794,480	0	0	26,794,480	22,545,907
1985	21,246,109	26,794,480	22,545,907	7,500,000	6,570,000	720,739	33,249,850	3,719,820	0	29,530,030	24,847,704
1986	23,013,446	29,530,030	24,847,704	7,500,000	6,570,000	749,290	37,724,186	8,194,156	0	29,530,030	24,847,704
1987	15,640,478	29,530,030	24,847,704	7,500,000	6,570,000	749,290	30,351,219	821,188	0	29,530,030	24,847,704
1988	11,456,357	29,530,030	24,847,704	7,500,000	6,570,000	714,554	25,201,833	0	0	26,201,833	22,047,231
1989	9,921,847	26,201,833	22,047,231	7,500,000	6,570,000	629,948	21,423,732	0	0	21,423,732	18,026,753
1990	9,639,603	21,423,732	18,026,753	7,500,000	6,570,000	528,326	16,465,210	0	0	16,465,210	13,854,481
1991	12,170,021	16,465,210	13,854,481	7,500,000	6,570,000	452,025	14,113,205	0	0	14,113,205	11,875,394
1992	10,895,560	14,113,205	11,875,394	7,500,000	6,570,000	390,272	10,548,513	0	0	10,548,513	8,875,925
1993	18,160,118	10,548,513	8,875,925	7,500,000	6,570,000	391,658	14,246,983	0	0	14,246,983	11,987,943
1994	11,125,503	14,246,983	11,987,943	7,500,000	6,570,000	395,410	10,907,055	0	0	10,907,055	9,177,616
1995	20,047,166	10,907,055	9,177,616	7,500,000	6,570,000	418,567	16,465,654	0	0	16,465,654	13,854,835
1996	14,502,293	16,465,654	13,854,835	7,500,000	6,570,000	478,125	16,421,822	0	0	16,421,822	13,817,953
1997	21,622,436	16,421,822	13,817,953	7,500,000	6,570,000	548,766	23,425,495	0	0	23,425,495	19,711,113
1998	15,798,378	23,425,495	19,711,113	7,500,000	6,570,000	643,622	25,510,251	0	0	25,510,251	21,465,307
1999	15,934,210	25,510,251	21,465,307	7,500,000	6,570,000	677,784	28,696,697	0	0	28,696,697	22,483,628
2000	10,646,526	28,696,697	22,483,628	7,500,000	6,570,000	647,558	22,625,567	0	0	22,625,567	19,038,023
Total								9,621,051			
Averages:											
1953-1977	13,088,628			7,500,000	6,570,000	242,490		0	384,842	4,831,696	4,065,575
1931-1977	13,594,590			7,500,000	6,570,000	353,418		0	204,703	10,253,242	8,627,472
1906-2000	15,284,742			7,500,000	6,570,000	487,445		901,250	101,274	16,949,719	14,262,148

Variables	
Storage	30,167,576 af
Sedimentation Rate (Active)	24,292 af/yr
Bank Storage	4%
Adjusted Storage (2060)	29,530,030 af
UB Demand Level	6,570,000 af/yr
LB Delivery	7,500,000 af/yr

Results

Average CRSP Evap	487,445 af/yr
Total Yield w/ CRSP evap	7,057,445 af/yr

Shortage Years	Shortage
1963	1,891,395 af
1964	3,339,290 af
1967	542,082 af
1968	482,944 af
1977	3,385,340 af

NM allocation(w/o evap) 733,500 af/yr

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

Total Upper Basin depletion, inc. CRSP evap:

1953-1977	6,612,490 af/yr
1931-1977	6,923,418 af/yr
1906-2000	7,057,445 af/yr

Flow Adjustments:

1971	203,226 af
1972	228,985 af
1973	252,377 af
1974	196,384 af
1975	246,665 af
1976	173,250 af
1977	112,291 af
1978	152,187 af
1979	153,559 af
1980	161,893 af

Percentage shortage =

	5.85%
	3.12%
	1.54%

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
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	29,151,283
1907	21,201,584	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
1908	12,218,817	33,833,590	29,151,263	8,250,000	5,720,000	899,302	31,383,105	0	0	31,383,105	27,039,907
1909	22,356,301	31,383,105	27,039,907	8,250,000	5,720,000	669,302	39,070,104	5,236,514	0	33,833,590	29,151,263
1910	14,650,516	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
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
1912	18,623,410	33,833,590	29,151,263	8,250,000	5,720,000	725,390	37,781,510	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	29,015,896
1914	21,354,814	33,676,248	29,015,896	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
1916	28,142,892	32,772,771	28,237,254	8,250,000	5,720,000	714,096	36,231,566	4,397,976	0	33,833,590	29,151,263
1917	22,942,804	33,833,590	29,151,263	8,250,000	5,720,000	725,390	42,061,004	8,247,414	0	33,833,590	29,151,263
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	27,405,672
1920	22,297,632	31,811,100	27,405,672	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	41,684,981	7,851,391	0	33,833,590	29,151,263
1922	15,447,198	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
1923	19,024,046	33,833,590	29,151,263	8,250,000	5,720,000	725,390	38,182,246	4,328,656	0	33,833,590	29,151,263
1924	13,877,788	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
1925	14,430,701	33,024,611	28,454,241	8,250,000	5,720,000	705,556	32,779,753	0	0	32,779,753	28,243,270
1926	15,213,731	32,779,753	28,243,270	8,250,000	5,720,000	708,848	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
1929	21,829,585	33,833,590	29,151,263	8,250,000	5,720,000	725,390	40,967,785	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	724,808	33,760,025	0	0	33,760,025	29,087,679
1931	8,474,134	33,760,025	29,087,679	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	8,178,192	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	12,830,349	19,716,264	16,987,674	8,250,000	5,720,000	408,222	17,970,391	0	0	17,970,391	15,483,417
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
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
1938	18,146,319	18,201,452	15,682,501	8,250,000	5,720,000	432,434	21,947,337	0	0	21,947,337	18,908,983
1939	11,184,059	21,947,337	18,908,983	8,250,000	5,720,000	437,780	18,703,617	0	0	18,703,617	16,115,170
1940	9,931,857	18,703,617	16,115,170	8,250,000	5,720,000	356,481	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
1942	17,225,138	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
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
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
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
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
1947	16,439,486	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
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
1949	16,833,564	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
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
1951	12,505,884	23,262,756	20,043,357	8,250,000	5,720,000	479,627	21,319,023	0	0	21,319,023	18,368,023
1952	20,805,422	21,319,023	18,368,023	8,250,000	5,720,000	525,102	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	281,206	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	11,524,180	14,606,152	12,584,765	8,250,000	5,720,000	288,914	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	10,853,586	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	7,052,982
1966	10,679,844	8,185,821	7,052,982	8,250,000	5,720,000	142,760	4,752,904	0	0	4,752,904	4,095,136
1967	11,570,830	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	32,531	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	82,717	3,329,701	0	0	3,329,701	2,868,884
1970	15,344,138	3,329,701	2,868,884	8,250,000	5,720,000	89,587	4,614,250	0	0	4,614,250	3,975,671
1971	16,492,659	4,614,250	3,975,671	8,250,000	5,720,000	116,224	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	13,285,428	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	11,826,544	0	0	11,826,544	10,017,513
1976	11,313,561	11,826,544	10,017,513	8,250,000	5,720,000	221,923	8,748,183	0	0	8,748,183	7,537,497
1977	5,551,188	8,748,183	7,537,497	8,250,000	5,720,000	100,584	228,786	0	0	228,786	197,124
1978	15,335,909	228,786	197,124	8,250,000	5,720,000	24,172	1,570,522	0	0	1,570,522	1,353,173
1979	17,825,429	1,570,522	1,353,173	8,250,000	5,720,000	78,863	5,347,288	0	0	5,347,288	4,607,262
1980	17,927,076	5,347,288	4,607,262	8,250,000	5,720,000	159,300	9,145,065	0	0	9,145,065	7,879,453
1981	9,015,200	9,145,065	7,879,453	8,250,000	5,720,000	145,434	4,044,830	0	0	4,044,830	3,485,055
1982	17,489,400	4,044,830	3,485,055	8,250,000	5,720,000	127,250	7,436,980	0	0	7,436,980	6,407,755
1983	24,361,589	7,436,980	6,407,755	8,250,000	5,720,000	271,168	17,557,861	0	0	17,557,861	15,127,979
1984	25,359,376	17,557,861	15,127,979	8,250,000	5,720,000	484,834	28,452,403	0	0	28,452,403	24,514,794
1985	21,246,109	28,452,403	24,514,794	8,250,000	5,720,000	666,102	35,060,409	1,226,819	0	33,833,590	29,151,263
1986	23,013,446	33,833,590	29,151,263	8,250,000	5,720,000	725,390	42,151,647	8,318,057	0	33,833,590	29,151,263
1987	15,640,478	33,833,590	29,151,263	8,250,000	5,720,000	725,390	34,778,879	945,089	0	33,833,590	29,151,263
1988	11,456,357	33,833,590	29,151,263	8,250,000	5,720,000	691,271	30,828,676	0	0	30,828,676	26,389,888
1989	9,921,847	30,828,676	26,389,888	8,250,000	5,720,000	607,588	25,972,935	0	0	25,972,935	22,378,466
1990	9,639,803	25,972,935	22,378,466	8,250,000	5,720,000	606,532	21,136,206	0	0	21,136,206	18,211,106
1991	12,170,021	21,136,206	18,211,106	8,250,000	5,720,000	431,288	18,904,938	0	0	18,904,938	16,288,530
1992	10,895,580	18,904,938	16,288,530	8,250,000	5,720,000	370,856	15,459,662	0	0	15,459,662	13,320,155
1993	16,160,118	15,459,662	13,320,155	8,250,000	5,720,000	374,795	19,274,984	0	0	19,274,984	16,607,464
1994	11,125,503	19,274,984	16,607,464	8,250,000	5,720,000	381,074	16,049,413	0	0	16,049,413	13,828,289
1995	20,047,166	16,049,413	13,828,289	8,250,000	5,720,000	407,098	21,719,481	0	0	21,719,481	18,713,860
1996	14,502,293	21,719,481	18,713,860	8,250,000	5,720,000	488,143	21,783,631	0	0	21,783,631	18,768,932
1997	21,622,438	21,783,631	18,768,932	8,250,000	5,720,000	544,496	28,891,573	0	0	28,891,573	24,893,185
1998	16,798,378	28,891,573	24,893,185	8,250,000	5,720,000	643,427	31,076,524	0	0	31,076,524	26,775,755
1999	15,934,210	31,076,524	26,775,755	8,250,000	5,720,000	680,355	32,360,379	0	0	32,360,379	27,881,934
2000	10,648,526	32,360,379	27,881,934	8,250,000	5,720,000	651,703	28,385,202	0	0	28,385,202	24,456,893
Total									0		
Averages:											
1953-1977	13,088,628			8,250,000	5,720,000	214,511		0	0	9,295,958	8,009,464
1931-1977	13,584,590			8,250,000	5,720,000	338,021		0	0	15,283,419	13,168,303
1906-2000	15,284,742			8,250,000	5,720,000	483,436		906,658	0	21,501,781	18,526,068

Variables	
Storage	35,233,298 af
Sedimentation Rate (Active)	37,000 af/yr
Bank Storage	4%
Adjusted Storage (2060)	33,833,590 af
UB Demand Level	5,720,000 af/yr
LB Delivery	8,250,000 af/yr

Results

Average CRSP Evap	483,436 af/yr
Total Yield w/ CRSP evap	6,183,436 af/yr

Shortage Years	Shortage
1953	0 af
1954	0 af
1957	0 af
1968	0 af
1977	0 af

NM allocation (w/o evap) 537,875 af/yr

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

Total Upper Basin depletion, inc. CRSP evap:

1953-1977	5,934,611 af/yr
1931-1977	6,058,021 af/yr
1906-2000	6,183,436 af/yr

Flow Adjustments:

1971	203,226 af
1972	226,985 af
1973	252,377 af
1974	196,384 af
1975	248,665 af
1976	173,250 af
1977	112,291 af
1978	152,187 af
1979	153,559 af
1980	161,893 af

Percentage shortage =

	0.00%
	0.00%
	0.00%

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)	Split to LC (minus)	Shortage (plus)	UC Basin Year-end Storage (equals)	CRSP Year-end Storage
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
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
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
1909	22,358,301	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
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
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
1912	16,623,410	33,833,590	29,151,263	8,250,000	5,980,000	725,390	37,501,610	3,667,020	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
1916	20,142,892	32,515,509	28,015,595	8,250,000	5,980,000	711,358	37,717,044	3,883,464	0	33,833,590	29,151,263
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
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	12,651,389	33,833,590	29,151,263	8,250,000	5,980,000	701,120	31,553,839	0	0	31,553,839	27,167,013
1920	22,287,832	31,553,839	27,167,013	8,250,000	5,980,000	701,120	38,910,351	5,076,762	0	33,833,590	29,151,263
1921	22,528,781	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
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
1923	19,024,046	33,833,590	29,151,263	8,250,000	5,980,000	725,390	37,902,248	4,068,656	0	33,833,590	29,151,263
1924	13,677,758	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
1925	14,430,701	32,767,349	28,232,583	8,250,000	5,980,000	697,400	32,270,651	0	0	32,270,651	27,804,823
1926	15,213,731	32,270,651	27,804,823	8,250,000	5,980,000	695,184	32,559,198	0	0	32,559,198	28,063,238
1927	19,539,212	32,559,198	28,063,238	8,250,000	5,980,000	711,823	37,156,587	3,322,997	0	33,833,590	29,151,263
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
1930	14,621,041	33,833,590	29,151,263	8,250,000	5,980,000	721,888	33,502,783	0	0	33,502,783	28,868,220
1931	8,474,134	33,502,783	28,868,220	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	12,183,500	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	14,221,576
1936	14,648,873	16,505,872	14,221,576	8,250,000	5,980,000	357,112	16,567,634	0	0	16,567,634	14,274,792
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
1938	16,148,319	16,288,888	14,034,623	8,250,000	5,980,000	389,402	19,817,805	0	0	19,817,805	17,075,152
1939	11,184,059	19,817,805	17,075,152	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
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
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
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
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
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
1947	16,439,486	15,707,903	13,534,041	8,250,000	5,980,000	359,182	17,558,227	0	0	17,558,227	15,128,294
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
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
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
1951	12,505,884	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
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	455,128	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	7,102,388
1956	11,426,874	8,243,183	7,102,388	8,250,000	5,980,000	149,099	5,290,958	0	0	5,290,958	4,558,728
1957	21,900,963	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	11,524,180	8,841,650	7,618,029	8,250,000	5,980,000	162,732	5,973,078	0	0	5,973,078	5,148,447
1961	10,010,259	5,973,078	5,148,447	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	73,230	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	19,575,027	0	0	8,250,000	5,980,000	94,427	5,580,600	0	0	5,580,600	4,808,285
1966	10,579,844	5,580,600	4,808,285	8,250,000	5,980,000	85,138	1,945,307	0	0	1,945,307	1,676,091
1967	11,679,830	1,945,307	1,676,091	8,250,000	5,980,000	25,726	-839,589	0	839,589	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	15,493,859	2,102,033	1,811,127	8,250,000	5,980,000	62,569	3,303,132	0	0	3,303,132	2,846,003
1972	13,186,837	3,303,132	2,846,003	8,250,000	5,980,000	63,562	2,196,207	0	0	2,196,207	1,892,288
1973	18,650,193	2,196,207	1,892,288	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	17,072,881	5,441,689	4,688,598	8,250,000	5,980,000	149,550	8,134,800	0	0	8,134,800	7,008,002
1976	11,313,561	8,134,800	7,008,002	8,250,000	5,980,000	145,622	5,072,739	0	0	5,072,739	4,370,709
1977	5,551,188	5,072,739	4,370,709	8,250,000	5,980,000	59,020	-3,865,093	0	3,865,093	0	0
1978	15,335,909	0	0	8,250,000	5,980,000	16,613	1,089,295	0	0	1,089,295	938,544
1979	17,825,429	1,089,295	938,544	8,250,000	5,980,000	65,788	4,618,938	0	0	4,618,938	3,979,710
1980	17,927,076	4,618,938	3,979,710	8,250,000	5,980,000	141,217	8,174,797	0	0	8,174,797	7,043,464
1981	9,015,200	8,174,797	7,043,464	8,250,000	5,980,000	122,255	2,837,743	0	0	2,837,743	2,445,019
1982	17,489,400	2,837,743	2,445,019	8,250,000	5,980,000	99,081	5,998,061	0	0	5,998,061	5,167,972
1983	24,361,989	5,998,061	5,167,972	8,250,000	5,980,000	238,055	15,891,995	0	0	15,891,995	13,692,657
1984	25,359,376	15,891,995	13,692,657	8,250,000	5,980,000	457,000	26,564,372	0	0	26,564,372	22,888,053
1985	21,246,109	26,564,372	22,888,053	8,250,000	5,980,000	638,511	32,941,970	0	0	32,941,970	28,383,037
1986	23,013,445	32,941,970	28,383,037	8,250,000	5,980,000	715,898	41,009,518	7,175,928	0	33,833,590	29,151,263
1987	15,840,478	33,833,590	29,151,263	8,250,000	5,980,000	725,390	34,518,679	685,089	0	33,833,590	29,151,263
1988	11,458,357	33,833,590	29,151,263	8,250,000	5,980,000	688,532	30,371,415	0	0	30,371,415	26,168,228
1989	9,921,847	30,371,415	26,168,228	8,250,000	5,980,000	599,429	25,463,832	0	0	25,463,832	21,939,820
1990	9,539,803	25,463,832	21,939,820	8,250,000	5,980,000	493,068	20,380,567	0	0	20,380,567	17,560,042
1991	12,170,021	20,380,567	17,560,042	8,250,000	5,980,000	412,630	17,907,958	0	0	17,907,958	15,429,625
1992	10,895,580	17,907,958	15,429,625	8,250,000	5,980,000	347,114	14,226,424	0	0	14,226,424	12,257,589
1993	15,150,118	14,226,424	12,257,589	8,250,000	5,980,000	346,076	17,810,466	0	0	17,810,466	15,345,825
1994	11,125,503	17,810,466	15,345,825	8,250,000	5,980,000	347,482	14,358,487	0	0	14,358,487	12,371,375
1995	20,047,166	14,358,487	12,371,375	8,250,000	5,980,000	368,736	19,806,917	0	0	19,806,917	17,065,761
1996	14,502,293	19,806,917	17,065,761	8,250,000	5,980,000	425,112	19,654,098	0	0	19,654,098	16,934,112
1997	21,622,438	19,654,098	16,934,112	8,250,000	5,980,000	495,894	28,549,643	0	0	28,549,643	22,875,362
1998	16,798,378	28,549,643	22,875,362	8,250,000	5,980,000	591,349	28,526,671	0	0	28,526,671	24,578,784
1999	15,934,210	28,526,671	24,578,784	8,250,000	5,980,000	623,897	29,606,984	0	0	29,606,984	25,509,589
2000	10,646,526	29,606,984	25,509,589	8,250,000	5,980,000	580,958	25,432,552	0	0	25,432,552	21,912,869
Total								8,874,436			
Averages:											
1953-1977	13,088,628			8,250,000	5,980,000	129,607		0	354,977	5,393,600	4,647,165
1931-1977	13,594,590			8,250,000	5,980,000	266,233		0	188,818	11,912,066	10,263,621
1906-2000	15,284,742			8,250,000	5,980,000	420,659		815,930	93,415	19,477,159	16,781,668

Variables	
Storage	35,233,298 af
Sedimentation Rate (Active)	37,000 af/yr
Bank Storage	4%
Adjusted Storage (2060)	33,833,590 af
UB Demand Level	5,980,000 af/yr
LB Delivery	8,250,000 af/yr

Results

Average CRSP Evap	420,659 af/yr
Total Yield w/ CRSP evap	6,400,659 af/yr

Shortage Years	Shortage
1963	703,237 af
1964	3,371,431 af
1967	839,589 af
1968	495,085 af
1977	3,865,093 af

NM allocation (w/o evap) 687,125 af/yr

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

Total Upper Basin depletion, inc. CRSP evap:

1953-1977	6,108,597 af/yr
1931-1977	8,248,233 af/yr
1906-2000	6,400,659 af/yr

Flow Adjustments:

1971	203,226 af
1972	226,985 af
1973	252,377 af
1974	196,364 af
1975	246,855 af
1976	173,250 af
1977	112,291 af
1978	152,187 af
1979	153,559 af
1980	161,893 af

Percentage shortage =

	5.94%
	3.18%
	1.56%

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
1906	18,550,021	33,833,590	29,151,263	7,500,000	6,470,000	725,390	37,888,221	3,854,631	0	33,833,590	29,151,263
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
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
1909	22,356,301	31,383,105	27,039,907	7,500,000	6,470,000	699,302	39,670,104	5,236,514	0	33,833,590	29,151,263
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
1911	15,496,729	33,789,288	29,113,092	7,500,000	6,470,000	724,918	34,594,099	750,509	0	33,833,590	29,151,263
1912	18,523,410	33,833,590	29,151,263	7,500,000	6,470,000	725,390	37,781,610	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	29,015,896
1914	21,354,814	33,676,248	29,015,896	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	714,095	32,772,771	0	0	32,772,771	28,237,254
1916	20,142,692	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
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
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	12,651,389	33,833,590	29,151,263	7,500,000	6,470,000	703,856	31,811,100	0	0	31,811,100	27,408,672
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	41,554,981	7,831,391	0	33,833,590	29,151,263
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
1923	19,024,048	33,833,590	29,151,263	7,500,000	6,470,000	725,390	38,152,248	4,328,656	0	33,833,590	29,151,263
1924	13,877,798	33,833,590	29,151,263	7,500,000	6,470,000	718,777	33,024,611	0	0	33,024,611	28,454,241
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
1926	15,213,731	32,779,753	28,243,270	7,500,000	6,470,000	706,648	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
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
1930	14,821,041	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	23,785,309
1932	17,422,187	27,605,852	23,785,309	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	8,178,192	28,021,294	24,143,347	7,500,000	6,470,000	613,222	19,718,284	0	0	19,718,284	16,987,674
1935	12,830,349	19,718,284	16,987,674	7,500,000	6,470,000	408,222	17,970,391	0	0	17,970,391	15,483,417
1936	14,648,673	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	11,184,059	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	9,931,857	18,703,617	16,115,170	7,500,000	6,470,000	356,461	14,308,812	0	0	14,308,812	12,326,575
1941	20,116,878	14,308,812	12,326,575	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	482,377	22,877,090	0	0	22,877,090	19,711,084
1943	13,731,401	22,877,090	19,711,084	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	16,729,388
1947	16,439,486	19,416,468	16,729,388	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	478,827	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	9,413,906	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	9,159,089
1957	21,500,963	10,630,214	9,159,089	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	8,598,169	19,344,432	16,667,301	7,500,000	6,470,000	368,449	14,806,152	0	0	14,806,152	12,584,765
1960	11,524,180	14,806,152	12,584,765	7,500,000	6,470,000	288,914	11,673,398	0	0	11,673,398	10,230,205
1961	10,010,259	11,673,398	10,230,205	7,500,000	6,470,000	213,395	7,700,263	0	0	7,700,263	6,834,601
1962	17,377,609	7,700,263	6,834,601	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	180,871	5,595,018	0	0	5,595,018	4,820,707
1964	10,863,585	5,595,018	4,820,707	7,500,000	6,470,000	90,114	2,308,489	0	0	2,308,489	2,066,556
1965	19,875,027	2,308,489	2,066,556	7,500,000	6,470,000	117,596	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	69,587	4,614,250	0	0	4,614,250	3,975,571
1971	15,483,659	4,614,250	3,975,571	7,500,000	6,470,000	118,224	6,019,585	0	0	6,019,585	5,186,804
1972	13,186,537	6,019,585	5,186,804	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	13,285,428	9,631,006	8,298,144	7,500,000	6,470,000	200,553	8,745,780	0	0	8,745,780	7,535,427
1975	17,072,651	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	100,584	228,786	0	0	228,786	197,124
1978	15,335,909	228,786	197,124	7,500,000	6,470,000	24,172	1,570,522	0	0	1,570,522	1,353,173
1979	17,825,429	1,570,522	1,353,173	7,500,000	6,470,000	78,863	5,347,288	0	0	5,347,288	4,607,262
1980	17,927,075	5,347,288	4,607,262	7,500,000	6,470,000	159,300	9,145,065	0	0	9,145,065	7,879,453
1981	9,015,200	9,145,065	7,879,453	7,500,000	6,470,000	145,434	4,044,830	0	0	4,044,830	3,485,065
1982	17,489,400	4,044,830	3,485,065	7,500,000	6,470,000	127,250	7,436,980	0	0	7,436,980	6,407,755
1983	24,361,889	7,436,980	6,407,755	7,500,000	6,470,000	271,108	17,557,861	0	0	17,557,861	15,127,979
1984	25,359,376	17,557,861	15,127,979	7,500,000	6,470,000	494,834	28,452,403	0	0	28,452,403	24,514,794
1985	21,248,109	28,452,403	24,514,794	7,500,000	6,470,000	668,102	35,060,409	1,226,619	0	33,833,590	29,151,263
1986	23,013,448	33,833,590	29,151,263	7,500,000	6,470,000	725,390	42,151,647	8,318,057	0	33,833,590	29,151,263
1987	15,640,478	33,833,590	29,151,263	7,500,000	6,470,000	725,390	34,778,679	945,089	0	33,833,590	29,151,263
1988	11,456,357	33,833,590	29,151,263	7,500,000	6,470,000	691,271	30,628,576	0	0	30,628,576	26,389,886
1989	9,921,847	30,628,576	26,389,886	7,500,000	6,470,000	607,588	25,972,935	0	0	25,972,935	22,378,488
1990	9,639,803	25,972,935	22,378,488	7,500,000	6,470,000	506,532	21,136,206	0	0	21,136,206	18,211,108
1991	12,170,021	21,136,206	18,211,108	7,500,000	6,470,000	431,288	18,904,938	0	0	18,904,938	16,288,630
1992	10,895,580	18,904,938	16,288,630	7,500,000	6,470,000	370,856	15,459,662	0	0	15,459,662	13,320,155
1993	15,180,118	15,459,662	13,320,155	7,500,000	6,470,000	374,786	19,274,984	0	0	19,274,984	16,607,484
1994	11,125,503	19,274,984	16,607,484	7,500,000	6,470,000	381,074	16,049,413	0	0	16,049,413	13,826,289
1995	20,047,166	16,049,413	13,826,289	7,500,000	6,470,000	407,098	21,719,481	0	0	21,719,481	18,713,660
1996	14,502,293	21,719,481	18,713,660	7,500,000	6,470,000	458,143	21,783,831	0	0	21,783,831	18,768,932
1997	21,622,438	21,783,831	18,768,932	7,500,000	6,470,000	544,496	28,891,573	0	0	28,891,573	24,893,185
1998	16,798,378	28,891,573	24,893,185	7,500,000	6,470,000	643,427	31,076,524	0	0	31,076,524	26,775,755
1999	15,034,210	31,076,524	26,775,755	7,500,000	6,470,000	680,355	32,360,379	0	0	32,360,379	27,881,934
2000	10,648,526	32,360,379	27,881,934	7,500,000	6,470,000	651,703	28,385,202	0	0	28,385,202	24,456,893
Total									0		
Averages:											
1953-1977	13,088,628			7,500,000	6,470,000	214,611		0	0	9,295,958	8,009,484
1931-1977	13,594,590			7,500,000	6,470,000	338,021		0	0	15,263,419	13,188,303
1906-2000	15,284,742			7,500,000	6,470,000	463,436		908,658	0	21,501,781	18,526,088

Variables	
Storage	35,233,298 af
Sedimentation Rate (Active)	37,000 af/yr
Bank Storage	4%
Adjusted Storage (2060)	33,833,590 af
UB Demand Level	6,470,000 af/yr
LB Delivery	7,500,000 af/yr

Results	
Average CRSP Evap	483,438 af/yr
Total Yield w/ CRSP evap	6,933,436 af/yr

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

NM allocation (w/o evap) 722,250 af/yr

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

Total Upper Basin depletion, Inc. CRSP evap:

1953-1977	6,584,611 af/yr
1931-1977	6,808,021 af/yr
1906-2000	6,933,436 af/yr

Flow Adjustments:

1971	203,226 af
1972	226,985 af
1973	252,377 af
1974	198,384 af
1975	246,665 af
1976	173,250 af
1977	112,291 af
1978	152,187 af
1979	153,559 af
1980	161,893 af

Percentage shortage =

	0.00%
	0.00%
	0.00%

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
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
1907	21,201,894	33,833,590	29,151,263	7,500,000	6,760,000	725,390	40,049,894	5,216,304	0	33,833,590	29,151,263
1908	12,216,817	33,833,590	29,151,263	7,500,000	6,760,000	698,247	31,096,160	0	0	31,096,160	26,792,673
1909	22,356,301	31,096,160	26,792,673	7,500,000	6,760,000	698,247	38,496,213	4,662,623	0	33,833,590	29,151,263
1910	14,650,816	33,833,590	29,151,263	7,500,000	6,760,000	721,863	33,502,343	0	0	33,502,343	28,885,858
1911	15,499,729	33,502,343	28,885,858	7,500,000	6,760,000	721,863	34,020,209	186,619	0	33,833,590	29,151,263
1912	18,823,410	33,833,590	29,151,263	7,500,000	6,760,000	725,390	37,471,510	3,838,020	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
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
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
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	12,851,369	33,833,590	29,151,263	7,500,000	6,760,000	700,804	31,824,155	0	0	31,524,155	27,161,438
1920	22,287,632	31,824,155	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
1922	18,447,196	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
1923	19,024,046	33,833,590	29,151,263	7,500,000	6,760,000	725,390	37,872,248	4,038,656	0	33,833,590	29,151,263
1924	13,877,788	33,833,590	29,151,263	7,500,000	6,760,000	713,723	32,737,655	0	0	32,737,655	29,207,007
1925	14,430,701	32,737,655	29,207,007	7,500,000	6,760,000	696,458	32,211,908	0	0	32,211,908	27,754,010
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
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
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	28,840,844
1931	8,474,134	33,473,079	28,840,844	7,500,000	6,760,000	649,207	27,038,006	0	0	27,038,006	23,298,139
1932	17,422,187	27,038,006	23,298,139	7,500,000	6,760,000	607,693	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	26,909,278	0	0	26,909,278	23,185,226
1934	8,178,192	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	18,336,890	14,075,981
1936	14,648,873	18,336,890	14,075,981	7,500,000	6,760,000	353,238	16,372,527	0	0	16,372,527	14,106,686
1937	14,306,055	16,372,527	14,106,686	7,500,000	6,760,000	350,375	18,068,208	0	0	18,068,208	13,844,483
1938	18,148,319	18,068,208	13,844,483	7,500,000	6,760,000	384,437	19,572,090	0	0	19,572,090	16,883,452
1939	11,184,059	19,572,090	16,883,452	7,500,000	6,760,000	384,885	18,091,464	0	0	18,091,464	13,864,520
1940	9,831,857	18,091,464	13,864,520	7,500,000	6,760,000	286,375	11,484,746	0	0	11,484,746	9,878,107
1941	20,116,578	11,484,746	9,878,107	7,500,000	6,760,000	308,186	17,013,235	0	0	17,013,235	14,658,725
1942	17,225,136	17,013,235	14,658,725	7,500,000	6,760,000	394,822	19,583,749	0	0	19,583,749	16,873,498
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
1944	15,389,422	18,643,176	16,063,094	7,500,000	6,760,000	409,413	19,343,185	0	0	19,343,185	16,658,227
1945	14,140,528	19,343,185	16,658,227	7,500,000	6,760,000	411,216	18,812,496	0	0	18,812,496	16,208,983
1946	11,095,453	18,812,496	16,208,983	7,500,000	6,760,000	387,959	15,279,991	0	0	15,279,991	13,165,350
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
1948	15,139,284	17,109,646	14,741,793	7,500,000	6,760,000	374,681	17,614,259	0	0	17,614,259	15,178,571
1949	16,933,584	17,614,259	15,178,571	7,500,000	6,760,000	404,213	19,883,630	0	0	19,883,630	17,131,578
1950	13,140,416	19,883,630	17,131,578	7,500,000	6,760,000	412,066	18,351,980	0	0	18,351,980	15,812,197
1951	12,505,884	18,351,980	15,812,197	7,500,000	6,760,000	373,115	16,224,750	0	0	16,224,750	13,979,368
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	19,280,760
1953	11,165,419	22,354,457	19,280,760	7,500,000	6,760,000	443,318	18,816,559	0	0	18,816,559	16,212,482
1954	8,495,102	18,816,559	16,212,482	7,500,000	6,760,000	340,884	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	11,428,874	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	21,500,953	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	9,566,169	13,069,545	11,260,813	7,500,000	6,760,000	231,199	8,176,515	0	0	8,176,515	7,044,644
1960	11,524,166	8,176,515	7,044,644	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	17,377,809	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	19,575,027	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	15,493,856	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	18,850,193	2,081,171	1,793,152	7,500,000	6,760,000	95,054	6,376,310	0	0	6,376,310	5,493,674
1974	13,285,428	6,376,310	5,493,674	7,500,000	6,760,000	129,030	5,272,706	0	0	5,272,706	4,543,001
1975	17,072,681	5,272,706	4,543,001	7,500,000	6,760,000	145,874	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	141,198	4,852,059	0	0	4,852,059	4,180,569
1977	5,551,188	4,852,059	4,180,569	7,500,000	6,760,000	58,671	-3,913,425	0	3,913,425	0	0
1978	15,335,909	0	0	7,500,000	6,760,000	18,297	1,059,611	0	0	1,059,611	912,969
1979	17,825,429	1,059,611	912,969	7,500,000	6,760,000	84,844	4,560,195	0	0	4,560,195	3,929,097
1980	17,927,076	4,560,195	3,929,097	7,500,000	6,760,000	139,663	8,087,608	0	0	8,087,608	6,968,341
1981	9,015,200	8,087,608	6,968,341	7,500,000	6,760,000	128,102	2,722,707	0	0	2,722,707	2,345,903
1982	17,489,400	2,722,707	2,345,903	7,500,000	6,760,000	96,342	5,855,764	0	0	5,855,764	5,045,366
1983	24,361,989	5,855,764	5,045,366	7,500,000	6,760,000	234,741	15,723,013	0	0	15,723,013	13,547,060
1984	26,359,376	15,723,013	13,547,060	7,500,000	6,760,000	453,124	26,369,265	0	0	26,369,265	22,719,947
1985	21,246,109	26,369,265	22,719,947	7,500,000	6,760,000	634,084	32,721,289	0	0	32,721,289	28,192,597
1986	23,013,446	32,721,289	28,192,597	7,500,000	6,760,000	713,548	40,761,187	6,927,597	0	33,833,590	29,151,263
1987	15,640,478	33,833,590	29,151,263	7,500,000	6,760,000	725,390	34,488,678	655,089	0	33,833,590	29,151,263
1988	11,456,357	33,833,590	29,151,263	7,500,000	6,760,000	588,216	30,341,731	0	0	30,341,731	26,142,652
1989	9,921,847	30,341,731	26,142,652	7,500,000	6,760,000	598,488	25,405,090	0	0	25,405,090	21,889,207
1990	9,639,803	25,405,090	21,889,207	7,500,000	6,760,000	491,515	20,293,378	0	0	20,293,378	17,484,920
1991	12,170,021	20,293,378	17,484,920	7,500,000	6,760,000	410,477	17,792,922	0	0	17,792,922	15,330,509
1992	10,895,580	17,792,922	15,330,509	7,500,000	6,760,000	344,374	14,084,127	0	0	14,084,127	12,134,985
1993	16,150,118	14,084,127	12,134,985	7,500,000	6,760,000	342,762	17,641,483	0	0	17,641,483	15,200,028
1994	11,126,503	17,641,483	15,200,028	7,500,000	6,760,000	343,606	14,163,380	0	0	14,163,380	12,203,269
1995	20,047,186	14,163,380	12,203,269	7,500,000	6,760,000	364,309	19,586,237	0	0	19,586,237	16,875,642
1996	14,502,293	19,586,237	16,875,642	7,500,000	6,760,000	420,147	19,408,383	0	0	19,408,383	16,722,402
1997	21,622,438	19,408,383	16,722,402	7,500,000	6,760,000	491,401	26,279,420	0	0	26,279,420	22,642,536
1998	18,798,378	26,279,420	22,642,536	7,500,000	6,760,000	585,341	28,232,457	0	0	28,232,457	24,325,287
1999	15,934,210	28,232,457	24,325,287	7,500,000	6,760,000	617,383	29,289,284	0	0	29,289,284	25,235,857
2000	10,646,528	29,289,284	25,235,857	7,500,000	6,760,000	583,949	25,091,851	0	0	25,091,851	21,619,327
Total									10,004,478		
Averages:											
1953-1977	13,086,528			7,500,000	6,760,000	122,988		0	400,179	5,093,532	4,388,624
1931-1977	13,564,590			7,500,000	6,760,000	259,545		0	212,881	11,602,950	9,997,193
1906-2000	15,284,742			7,500,000	6,760,000	416,577		805,494	105,310	19,283,636	16,614,918

Variables	
Storage	35,233,298 af
Sedimentation Rate (Active)	37,000 af/yr
Bank Storage	4%
Adjusted Storage (2060)	33,833,590 af
UB Demand Level	6,760,000 af/yr
LB Delivery	7,500,000 af/yr

Results

Average CRSP Evap	416,577 af/yr
Total Yield w/ CRSP evap	7,176,577 af/yr

Shortage Years	Shortage
1963	1,436,832 af
1964	3,401,431 af
1967	727,706 af
1966	525,085 af
1977	3,913,425 af

NM allocation (w/o evap) 754,875 af/yr

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

Total Upper Basin depletion, inc. CRSP evap:

1953-1977	6,882,988 af/yr
1931-1977	7,019,645 af/yr
1906-2000	7,176,577 af/yr

Flow Adjustments:

1971	203,226 af
1972	228,985 af
1973	252,377 af
1974	196,384 af
1975	248,885 af
1976	173,250 af
1977	112,291 af
1978	152,167 af
1979	153,559 af
1980	161,893 af

Percentage shortage =

	5.92%
	3.15%
	1.58%

APPENDIX B

Reservoir Storage

Upper Colorado River Basin Reservoir Storage

	Upper Colorado River Basin Reservoirs	Complete	Live Capacity 35,233,298	CRSP Live . 30,731,061	CRSP Active 25,665,339	CRSP Active +Other 30,167,576	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	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		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	13,000	CO	CR	CRRC	Hydromet
7	Current 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/resv_rpt.html NRCS Website
9	Eden		13,184			13,184	WY	GR	EDRU	
10	Electric Lake - Utah Power a	X	31,500			31,500	UT	GR		Connely Baldwin at Pacific Corp. Connely.Baldwin@pacificorp.com or 801-220-4636
11	Elkhead	X	10,400			10,400	CO	GR		Bill Earley with the City of Craig Public Works Dept. 970-828-2014
12	Flaming Gorge	X	3,749,000	3,749,000	3,515,700	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@dwr.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/resv_rpt.html
18	Green Mountain	X	153,678			153,678	CO	CR	GMRC	NRCS Website http://www.wcc.nrcs.usda.gov/wsf/reservoir/resv_rpt.html
19	Groundhog	X	27,500			27,500	CO	CR		NRCS Website http://www.wcc.nrcs.usda.gov/wsf/reservoir/resv_rpt.html
20	Gurley	X	12,035			12,035	CO	CR		George Wear with Colorado Division of Water Resources george.wear@dwr.state.co.us
21	Homestake	X	42,882			42,882	CO	CR		NRCS Website http://www.wcc.nrcs.usda.gov/wsf/reservoir/resv_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		15,300			15,300	CO	CR???		
25	Kenny Reservoir (Taylor Dra	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	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@pacificorp.com or 801-220-4636
28	Lemon	X	39,792			39,792	CO	SJR	LMRC	Hydromet
29	Long Park		14,800			14,800	UT	GR		
30	McPhee	X	247,400			247,400	CO	CR	MCRC	Hydromet
31	Meeks Cabin	X	29,870			29,870	WY	GR	MERW	Hydromet
32	Millsite		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@dwr.state.co.us
34	Moon Lake	X	49,500			49,500	UT	GR	MNLU	Hydromet
35	Morgan Lake Dam		42,800			42,800	NM	SJR		
36	Morrow Point	X	117,025	117,025	42,120	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/resv_rpt.html
38	Navajo	X	1,696,000	1,696,000	1,036,100	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	18,703			18,703	CO	CR	PARC	Hydromet
41	Pelican Lake		15,850			15,850	UT	GR		
42	Pleasant Valley (Lake Cetar	X	7,275			7,275	CO	CR		Erin.Light@state.co.us Division 6 Water Resources for State of Colorado
43	Recapture Creek		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	RGRC	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	Stateline	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@dwr.state.co.us
62	Williams Fork	X	98,824			98,824	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	Wolford Mountain	X	66,000			66,000	CO	CR		George Wear with Colorado Division of Water Resources george.wear@dwr.state.co.us
66	Yamcolo	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

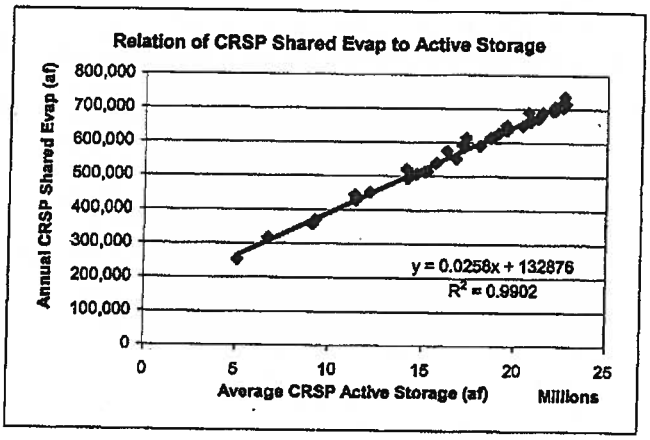
CRSP Evaporation Analysis

Relationships of CRSP Shared Reservoir Evaporation to Total CRSP Storage

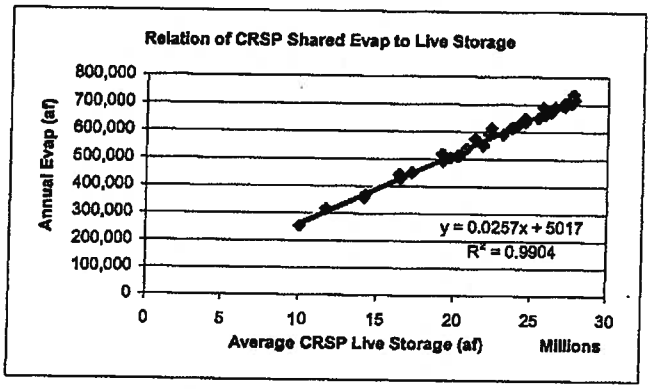
Year	Average CRSP Live Storage (af)	Average CRSP Active Storage (af)	CRSP Shared Evap (af)
1968	10,006,534	5,123,250	251,646
1969	11,701,142	6,764,000	315,083
1970	14,222,401	9,231,741	367,164
1971	16,417,858	11,354,088	442,260
1972	17,229,715	12,165,945	449,544
1973	19,703,066	14,639,296	504,409
1974	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	850,500	53,323	45,000
1964	4,228,877	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	14,830	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	4,841,100	242,308	229,259
1968	7,039,300	185,629	1,912,939	59,077	973,592	18,631	511,900	6,000	106,735	400	0	0	10,548,465	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	1,781,250	51,442	1,049,190	22,584	647,667	8,804	116,528	600	0	0	15,588,982	10,540,882	399,389	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	382,114	3,086,584	79,091	962,869	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	28,406	508,694	8,028	116,592	839	0	0	22,182,095	17,113,995	532,477	504,089
1974	17,298,382	498,706	3,262,393	83,468	970,485	21,645	476,431	7,586	116,000	837	0	0	22,123,690	17,075,590	612,248	590,800
1975	19,848,968	621,418	3,430,797	83,664	1,185,693	25,432	533,575	7,380	116,128	831	0	0	25,113,161	20,065,061	639,704	613,272
1976	18,138,140	533,889	3,129,279	83,640	1,205,201	25,256	478,278	7,980	115,088	845	0	0	23,066,984	18,018,884	651,609	626,354
1977	15,050,597	467,624	1,990,703	62,883	979,918	22,439	235,328	5,728	113,928	832	7,714	100	18,378,268	13,328,188	559,605	537,166
1978	15,343,792	443,338	2,673,304	66,716	1,195,470	24,307	594,351	7,671	115,688	840	16,068	300	19,938,673	14,888,573	543,372	519,065
1979	20,395,402	536,289	2,397,144	67,120	1,233,240	27,623	579,788	8,040	111,538	840	17,244	349	24,734,354	19,682,254	640,261	612,639
1980	21,602,374	606,684	3,013,072	72,311	1,382,000	28,916	658,000	8,314	113,305	836	16,435	348	28,885,186	21,633,068	717,417	688,502
1981	19,610,804	566,573	2,783,198	74,001	1,234,201	28,237	340,276	8,763	114,242	839	16,703	349	24,099,424	19,047,324	674,762	648,525
1982	22,052,328	578,638	3,307,239	78,299	1,475,159	28,337	607,227	7,570	113,713	838	16,369	348	27,572,033	22,519,933	695,028	666,691
1983	22,095,450	638,987	3,451,988	85,854	1,545,720	30,691	593,402	8,583	113,018	842	13,297	350	27,812,875	22,760,775	765,108	734,418
1984	21,991,934	621,218	3,379,535	84,057	1,536,197	31,194	666,201	8,258	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	1,392,631	31,208	567,471	8,373	115,476	842	16,900	350	27,533,816	22,481,516	734,179	702,973
1986	21,900,656	615,396	3,257,068	81,239	1,429,801	30,200	578,633	8,304	115,023	841	17,021	350	27,296,202	22,244,102	738,331	706,131
1987	22,041,006	613,810	3,218,414	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	603,675	2,958,441	77,191	1,149,810	24,336	458,550	7,206	114,808	838	15,742	348	25,920,552	20,868,452	713,791	689,455
1989	18,292,024	551,811	2,943,401	73,518	1,230,357	26,906	563,487	8,217	114,531	832	16,369	348	23,160,150	18,108,050	681,727	654,821
1990	15,248,718	484,809	3,049,072	75,352	1,381,613	28,704	647,094	8,362	110,936	832	16,686	348	20,452,119	15,400,019	676,406	649,702
1991	14,251,955	426,196	3,328,132	80,305	1,551,852	30,621	571,167	9,008	111,922	831	15,997	348	19,831,025	14,778,925	641,310	610,689
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	622,907	491,352
1993	18,402,436	483,699	3,317,500	80,481	1,567,023	30,954	594,902	8,546	112,000	832	14,811	348	24,008,871	18,958,571	604,838	573,584
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	21,392,360	560,150	3,285,793	79,319	1,481,480	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	25,855,578	20,803,478	686,308	671,123
1997	21,595,054	592,707	3,323,228	78,851	1,558,033	28,812	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	78,648	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	27,989	580,147	8,749	112,771	825	15,198	343	26,930,739	21,878,639	721,976	694,007
2000	19,823,236	576,896	2,991,270	74,194	1,288,792	28,850	604,611	8,409	107,722	829	14,289	345	24,729,920	19,677,820	657,525	630,675
2001	17,995,952	532,968	2,876,393	72,363	1,334,015	28,583	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	2,931,819	67,919	826,816	20,891	283,191	6,507	109,636	783	14,009	328	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	376,584	6,359	111,708	823	14,582	343	15,305,782	10,253,682	444,611	427,526
2004	9,663,816	278,349	2,742,643	66,248	991,373	20,353	481,453	7,778	109,686	828	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 20,328,000 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 7180; 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

Preliminary

May 2006

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

	2000	2010	2020	2030	2040	2050	2060
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 Blifton	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-1985 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 not included.

(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 under the Colorado River Storage Project (CRSP) Act that are used principally to regulate compact deliveries at Lee Ferry and generate CRSP hydroelectric power. These include Lake Powell, Flaming Gorge Reservoir and the Aspinall Unit.

(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 the Upper Colorado River Basin's depletion or New Mexico's depletion. Of the water available to the Upper Basin at Lee Ferry, the allocation for use by New Mexico is listed in this schedule, for planning purposes, as 642,400 acre-feet. This amount does not include New Mexico's share of CRSP reservoir evaporation other than Navajo Reservoir evaporation.

(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