SJ-17
Navajo Settlement

MEMORANDUM
June 28, 2006

To: File
From: John Whipple, Interstate Stream Commission Staff

Subject: Revised Upper Colorado River Basin Depletion Schedule for New Mexico

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The New Mexico State Engineer via letter dated May 3, 2005, to the Bureau of Reclamation's Upper Colorado Regional Director requested the Secretary of the Interior to complete the hydrologic determination required by section 11(a) of Public Law 87-483 of whether sufficient water is reasonably likely to be available within the State of New Mexico's Upper Colorado River Basin Compact allocation for serving Navajo-Gallup Water Supply Project uses in New Mexico. In contemplation that the 1988 Hydrologic Determination could be extended to the year 2060 for this purpose, the letter transmitted to Reclamation an updated schedule of depletions in the Upper Colorado River Basin in New Mexico dated April 2005 that reflects the San Juan River Basin in New Mexico Navajo Nation Water Rights Settlement Agreement (Settlement Agreement) executed by the State of New Mexico and the Navajo Nation on April 19, 2005.

In furtherance of satisfying New Mexico's request, the Bureau of Reclamation has prepared a Draft Hydrologic Determination dated May 2006 that would determine that it is reasonably likely that sufficient water will be available through at least 2060 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, and also that it is likely that sufficient water will be available from the reservoir to service the contract after the 2060 planning horizon depending upon future

storage, hydrologic conditions and other factors. The Upper Colorado River Commission on June 5, 2006, approved a resolution that supports the conclusions of the May 2006 Draft Hydrologic Determination.

During the preparation of the May 2006 Draft Hydrologic Determination, Reclamation revised a portion of its Colorado River Simulation System natural flows at Lee Ferry to reflect the consistent application of the Soil Conservation Service (SCS) modified Blaney-Criddle method with SCS effective precipitation for computing historic irrigation depletions in the Upper Basin for the period of hydrologic record used by the determination. The Interstate Stream Commission for use in the determination provided to Reclamation a preliminary revised schedule of anticipated depletions through 2060 from the Upper Basin in New Mexico dated May 2006 that includes irrigation depletions calculated using the same method so that demands and supply would be evaluated using consistent methodologies.

Attached is a copy of the preliminary revised May 2006 New Mexico Upper Basin depletion schedule used for the Draft Hydrologic Determination that is modified to include extended explanatory footnotes. It is anticipated that the preliminary May 2006 depletion schedule will be considered final once the Secretary of the Interior approves the 2006 Hydrologic Determination. The preliminary May 2006 New Mexico Upper Basin depletion schedule differs from the April 2005 New Mexico Upper Basin depletion schedule in the following respects:

(a) Non-Indian Irrigation – The depletions for non-Indian irrigation uses in the May 2006 schedule were recalculated using the modified Blaney-Criddle method with SCS effective precipitation, current average cropping patterns and

irrigation methods for each area determined by Interstate Stream Commission field surveys of irrigation in the San Juan River Basin conducted annually during 2003-2005, and revised incidental depletion factors reflecting changes in crop consumptive use estimates and irrigation methods. No changes were made to the base irrigated acreages assumed for each area. An average annual physical water supply shortage of 45 percent was assumed for irrigation uses from the La Plata River.

(b) Navajo Nation Mainstream Irrigation – The depletions for Navajo Nation irrigation projects supplied from the San Juan River mainstream in the May 2006 schedule were changed to reflect full use of the water right depletion amounts for the projects provided by the Settlement Agreement. Use of the full depletion amount for the Navajo Indian Irrigation Project is consistent with the hydrologic investigation contained in the 1988 Hydrologic Determination, and is a conservative assumption because the total project depletion right is not expected to be fully utilized under normal farm management practices.

(c) Jicarilla Apache Nation Irrigation – The depletions for irrigation above Navajo Dam include irrigation depletions on Jicarilla Apache Nation lands that might be anticipated after consideration of normal land fallowing, physical water supply shortages and salvage of ephemeral tributary losses outside the Navajo River drainage. The irrigation depletions above Navajo Dam also were recalculated using the modified Blaney-Criddle method with SCS effective precipitation.

(d) Chaco River Drainage Irrigation – Irrigation depletions within the Chaco River drainage were recalculated using the modified Blaney-Criddle method with SCS effective precipitation, and also were revised to reflect salvage of ephemeral tributary losses and some non-tributary area uses in addition to normal fallowing and physical water supply shortages.

(e) Stockpond Evaporation and Livestock Uses – Stockpond and livestock depletions were rounded down to reflect a general reduction in grazing carrying capacity and some salvage of ephemeral tributary losses.

(f) New Mexico Upper Basin Compact Allocation – The New Mexico Upper Colorado River Basin Compact Article III(a) allocation was revised to reflect New Mexico's compact share of the yield to the Upper Basin determined to be available by the May 2006 Draft Hydrologic Determination. The May 2006 Draft Hydrologic Determination concludes that at least 5.76 million acre-feet of water per year is available for development by the Upper Basin, excluding shared evaporation from Lake Powell, Flaming Gorge Reservoir and the Aspinall Unit. New Mexico's share of the yield is about 642,400 acre-feet, excluding shared Colorado River Storage Project evaporation.

The State of New Mexico estimates that the total amount of salvage of ephemeral tributary losses and non-tributary losses within the boundaries of the San Juan River Basin in New Mexico averages approximately 2,000 acre-feet per year or more. The total amount of incidental losses from return flows to ephemeral tributaries from Four Corners Power Plant discharges at Morgan Lake also averages about 2,000 acre-feet per year, and incidental losses from Navajo Indian Irrigation Project return flows to ephemeral

tributaries will increase as the project area receiving water expands and as the ground-water levels rise beneath the project. While Article VI of the Upper Colorado River Basin Compact requires the determination of consumptive uses in terms of man-made depletions of the virgin flow at Lee Ferry, the Upper Colorado River Commission has not made any determinations of salvage by use or losses on ephemeral tributaries in the San Juan River Basin and does not necessarily endorse the specific depletion estimates provided in the May 2006 preliminary revised New Mexico Upper Basin depletion schedule.

Preliminary May 2006

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

Year	2000	2010	2020	2030	2040	2050	2060
IRRIGATION USES (1)							
Navajo Nation Irrigation:							
Navajo Indian Irrigation Project (2)	150.0	215.0	250.0	270.0	270.0	270.0	270.0
Fruitland-Cambridge Irrigation Project (2)	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Hogback-Cudei Irrigation Project (2)	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 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 (3)	9.7	9.7	9.7	9.7	9.7	9.7	9.7
Animas-La Plata Project:							
San Juan Water Commission (4)	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: (5)							
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 (6)	16.2	16.2	16.2	16.2	16.2	16.2	16.2
BHP Billiton (7)	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 (8)	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Navajo-Gallup Water Supply Project - NAPI (9)	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 (10)	105.2	105.2	105.2	105.2	105.2	105.2	105.2
Navajo-Gallup Water Supply Project: (5)							
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 (11)	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 (12)	469.9	539.6	607.5	635.0	641.9	642.0	642.0
State Share of Upper Basin Yield (13)	642.4	642.4	642.4	642.4	642.4	642.4	642.4
Remaining Available (13,14)	172.5	102.8	34.9	7.4	0.5	0.4	0.4
Percent of State Share Remaining	26.9%	16.0%	5.4%	1.2%	0.1%	0.1%	0.1%

NOTES:

(1) Does not reflect post-1965 transfers from irrigation to municipal and industrial uses. About 800 acre-feet of current non-Indian depletions are supplied through short-term leases from the Jicarilla Apache Nation as of 2006.

(2) The depletions for the Navajo Indian Irrigation Project (NIIP) and the Hogback and Fruitland irrigation projects assume full use of the depletion rights for the projects provided by the Settlement Agreement. A portion of the depletions on the Hogback and Fruitland projects in dry years may be accounted against the NIIP depletion right pursuant to the alternate water source provisions of subparagraph 9.2 of the Settlement Agreement. Construction of NIIP is assumed to be completed by 2030, and rehabilitation of the Hogback Project is assumed to be completed by 2020.

(3) Based on 1990 uses and 30% return flow from full diversion of Farmington's municipal water supply rights under the Echo Ditch Decree and License 2995. Does not reflect transfers of irrigation rights to municipal uses, and excludes the Animas-La Plata Project (ALP) and the Navajo-Gallup Water Supply Project (NGWSP).

(4) San Juan Water Commission member entities in 2000 used 1,000 acre-feet from the Animas River under ALP permits.

(5) Proposed NGWSP depletions in New Mexico total 29,500 acre-feet per year, including all project uses in the Upper Basin and the Lower Basin by the Navajo Nation, the Jicarilla Apache Nation and the City of Gallup. The exports by the NGWSP to Gallup are anticipated to be supplied through a subcontract with Jicarilla. To the extent that Gallup's actual demand is less than 7,500 acre-feet, the Jicarilla Apache Nation could use its water for other uses. Exports by the NGWSP for Navajo Nation uses in Arizona are not included.

(6) The Public Service Company of New Mexico (PNM) has subcontracted with the Jicarilla Apache Nation to provide 16,200 acre-feet per year for use at the San Juan Generating Station through 2027, with a commitment to negotiate in 2022 for a subcontract extension. The Generating Station is a no-discharge facility.

(7) Includes uses under New Mexico State Engineer File 2838 at the Four Corners Power Plant, the San Juan Generating Station and related mines.

(8) Industrial uses near Shiprock (diversions of about 300 acre-feet per year assumed fully depleted).

(9) Navajo Agricultural Products Industry's use of NGWSP water for food processing.

(10) Based on the hydrologic record for the period 1929-2000 (US Bureau of Reclamation).

(11) Based on the NGWSP September 2005 Biological Assessment, future Navajo Reservoir evaporation will average 27,900 acre-feet per year with operation of the reservoir to meet the diversion demands of the full NIIP and the NGWSP and to meet habitat needs of endangered fish species in the San Juan River. About 200 acre-feet of this amount could be chargeable to Arizona based on the proportion of use of Navajo Reservoir supply for NGWSP uses in Arizona.

(12) 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, but exclude Navajo Reservoir which is used principally to store water for consumptive uses.

(13) 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.

(14) Reserved.