United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

MAY 14 1985

Mr. Peterson Zah
Chairman
Navajo Tribal Council
The Navajo Nation
Window Rock, Arizona 86515

Dear Mr. Zah:

Thank you for your recent letter to Secretary Hodel concerning the hydrologic determination for water availability from Navajo Reservoir and the Upper Colorado River Basin for use in New Mexico.

The hydrologic determination was prepared by request of the New Mexico Interstate Stream Commission after the Commission recognized in 1982 that water development and usage, Indian and non-Indian alike, has not been progressing as quickly as once anticipated. Also, the previous 1963 determination would, in effect, require water service contracts issued from Navajo Reservoir to expire in the year 2005. This would leave approximately 20 years for new contractors to develop projects, Indian and non-Indian alike, and recover their investments. Also, it was the Commission's opinion that the Congress would not authorize projects such as the Gallup-Navajo Municipal Water Supply Project with such a short-term water supply. The determination was prepared from information supplied by State water development agencies of the Upper Basin States, the Upper Colorado River Commission, and various Federal agencies. The determination was a technical decision by the Assistant Secretary of the Interior for Water and Science, although some text changes were made after public comment was solicited on the draft version of the determination. Public comments were incorporated into a "Summary of Comments" document which was made a part of the determination package reviewed by the Assistant Secretary and ultimately reviewed by the Congress.

In response to the specific points in your letter, we offer the following comments. First, no mention was made of the ongoing San Juan Stream Adjudication court case since the determination is the documentation of identified uses, projected depletions and a statement of physically available water. If such a court determination would alter ongoing uses and identified future projects, then the determination would be amended.

Second, no mention was made of the irrigation diversion for the Navajo Indian Irrigation Project (NIIP). Again, the purpose of the hydrologic determination is to identify uses and projected depletions. The depletion for NIIP will never be accurately known until all 110,630 acres are under production. As you know, the Bureau of Reclamation and the Bureau of

Indian Affairs have been doing ongoing consumptive-use studies on NIIP. The estimate in the hydrologic determination is based on those studies and the depletion estimate is based on the entire 110,630 acres being in production.

Recent technical estimates, reported in a Department of the Interior report to OMB in May 1980, indicate consumptive use on the NIIP project is 254,000 acre-feet for agricultural depletion. In November 1981, it was concluded and agreed to by Interior's Assistant Secretary of Land and Water Resources and Assistant Secretary of Indian Affairs, based on a Solicitor's Opinion dated July 30, 1980, that the project's productive acreage should be 110,630 acres, rather than 105,000 acres which had been assumed in the past. Correspondingly, the annual depletion estimate has been revised from 254,000 acre-feet to 267,000 acre-feet. This depletion figure is an estimate based solely on the project's productive acreage and has not been technically verified.

Regarding your third and fourth points that the determination underestimates irrigation, domestic, industrial, and stock water uses in New Mexico, Utah, and Arizona, the estimates used in the determination are based on a State and Federal comprehensive study of water uses in the Upper Colorado River Basin completed in 1971. Those uses are adjusted annually, using records supplied by those State and Federal agencies. Many of the uses identified in the information you supplied to us had been identified in the comprehensive-use studies and, therefore, are reflected in the appendix to the determination under the title of Comprehensive Framework Study, and not specifically under the Navajo Nation. The Hogback Expansion Project, listed separately in the text and tables of the determination, is expected to incur increases in depletions in the future. We are enclosing a copy of a report entitled Projected Water Supply and Depletions, Upper Colorado River Basin, September 1984, which is an annual report prepared by the Bureau of Reclamation which will provide background on the Comprehensive Framework Study and identified uses.

Last, you pointed out that the determination assumes tribal uses are charged against State allocations of the Colorado River and Upper Colorado River Compacts. It has been our consistent interpretation of those compacts that this is appropriate. As stated earlier, the determination is a document to identify uses, estimate future project depletions, and estimate physical water availability. The allocations from the compacts provide the basis for the determination.

The hydrologic determination is a tool whereby future projects, Indian and non-Indian alike, can benefit from the water supply from Navajo Reservoir. The contracting of water from Navajo Reservoir has been extended by the determination to allow for development and, at the same time, it recognizes future commitments of this water supply. To halt the water contracting process from Navajo Reservoir would dramatically affect growth and development in this area, Indian and non-Indian alike, especially in energy and natural resources development.

We would be glad to meet with you to discuss the water marketing and contracting process utilized by the Bureau of Reclamation. Please contact Regional Director Clifford Barrett on these issues. His address is Bureau of Reclamation, P.O. Box 11568, Salt Lake City, Utah 84147.

Sincerely yours,

(Sgd) Robert N. Broadbent

Assistant Secretary for
Water and Science

Enclosure

cc: Mr. S. E. Reynolds
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BUREAU OF RECLAMATION
UPPER COLORADO REGION
SALT LAKE CITY, UTAH

PROJECTED WATER SUPPLY AND DEPLETIONS
UPPER COLORADO RIVER BASIN

SEPTEMBER 1984

TABLE AND EXPLANATORY NOTES

Bureau of Reclamation
Upper Colorado Region
Projected Water Supply and Depletions
Upper Colorado River Basin

1,000 Acre-Feet

	Present and Projected Depletions						
	1983	1990	2000	2010	2020	2030	2040
Arizona							
Comprehensive Framework Study	10	10	10	10	10	10	10
Misc. Additional Depletions							
Irrigation	2	2	2	2	2	2	2
Municipal and Domestic	1	4	4	4	4	4	4
Navajo Powerplant	21	34	34	34	34	34	34
Gallup-Navajo Indian Water Supply Project	0	(5)	(7)	(7)	(7)	(7)	(7)
Total Depletions	34	50	50	50	50	50	50
Compact Apportionment	50	50	50	50	50	50	50
Remaining Water Available	16	0	0	0	0	0	0
Wyoming							
Comprehensive Framework Study	282	282	282	282	282	282	282
Misc. Additional Depletions							
Irrigation and Livestock	6	17	27	35	41	45	47
Municipal	3	5	8	11	14	17	20
Reclamation Projects							
Seedskadee	6	20	20	20	20	20	20
Lyman	10	10	10	10	10	10	10
Savery-Pot Hook	0	0	0	0	0	0	11
La Barge	0	0	0	0	0	0	4
Trans-Mountain Diversions	8	8	28	50	50	50	50
Industrial Uses	53	88	139	180	215	250	288
Thermal Electric	(29)	(54)	(76)	-	-	-	-
Mineral	(24)	(34)	(50)	-	-	-	-
Coal Gasification	(0)	(0)	(10)	-	-	-	-
Oil Shale	(0)	(0)	(3)	-	-	-	-
Total Depletions	368	430	514	588	632	674	732
Evaporation, Storage Units	73	73	73	73	73	73	73
Total	441	503	587	661	705	747	805
State Share of 5.8 Million Acre-Foot Yield	805	805	805	805	805	805	805
Remaining Water Available	364	302	218	144	100	58	0

1,000 Acre-Feet

	Present and Projected Depletions						
	1983	1990	2000	2010	2020	2030	2040
			Colorado				
Comprehensive Framework Study	1,707	1,707	1,707	1,707	1,707	1,707	1,707
Misc. Additional Depletions							
Irrigation	24	24	24	24	24	24	24
Municipal and Industrial	5	6	7	10	11	12	13
Fish and Wildlife	1	1	1	1	1	1	1
Minerals	1	1	1	1	1	1	1
Exports							
Denver Expansion	48	70	100	130	160	180	200
Homestake Expansion	28	48	48	48	48	48	48
Independence Pass Expansion	7	7	7	7	7	7	7
Pueblo Expansion	3	3	3	3	3	3	3
Colorado Springs Expansion	0	0	5	5	5	5	5
Englewood	10	10	10	10	10	10	10
Fry-Ark	69	69	69	69	69	69	69
Windy Gap	0	54	54	54	54	54	54
Reclamation Projects							
Animas-La Plata	0	0	121	121	121	121	121
Bostwick Park	4	4	4	4	4	4	4
Dallas Creek	0	11	13	17	17	17	17
Dolores	0	61	81	81	81	81	81
Fruitland Mesa	0	0	0	0	0	0	21
San Miguel	0	0	0	0	0	0	25
Savery-Pot Hook	0	0	0	0	0	0	12
Upper Gunnison River Basin	0	5	10	15	20	25	35
West Divide	0	0	0	0	0	0	38
Municipal, Industrial and Domestic							
Taylor Draw Reservoir	0	2	6	7	7	7	7
Stagecoach Project	0	2	4	4	4	4	4
Ruedi Contracts	0	16	49	49	49	49	49
Blue Mesa Contracts	0	10	10	10	10	10	10
Oil Shale	0	2	8	42	46	55	64
Thermal Electric Powerplants							
Craig-Hayden	13	18	18	18	18	18	18
Colorado Ute S.W.	0	0	5	5	10	10	10
Unidentified	0	0	0	0	0	0	49
Total Depletions	1,920	2,131	2,365	2,442	2,587	2,522	2,707
Evaporation, Storage Units	269	269	269	269	269	269	269
Total	2,189	2,400	2,634	2,711	2,756	2,791	2,976
State Share of 5.8 Million Acre-foot Yield	2,976	2,976	2,976	2,976	2,976	2,976	2,976
Remaining Water Available	787	576	342	265	220	185	0

1,000 Acre-Feet

	Present and Projected Depletions						
	1983	1990	2000	2010	2020	2030	2040
New Mexico							
Adjusted Comprehensive Framework Study	89	89	89	89	89	89	78[1/]
Misc. Additional Depletions	12	12	12	12	12	12	12
Reclamation Projects							
Navajo Reservoir Evap.	26	26	26	26	26	26	26
Animas-La Plata	0	0	14	34	34	34	34
San Juan-Chama	110	110	110	110	110	110	110
Navajo Indian Irrigation	127	208	267	267	267	267	267
Hammond	8	10	10	10	10	10	10
Hogback Extension	5	10	10	10	10	10	10
Jicarilla Apache	0	3	3	3	3	3	3
Utah International, Inc. (Private Right)	27	39	39	39	39	39	39
Navajo Reservoir Contracts (Temporary)	16	71	75	63	69	69	0
Public Service Company of New Mexico	(16)	(16)	(16)	(0)	(0)	(0)	(0)
Utah International, Inc.	(0)	(35)	(35)	(35)	(35)	(35)	(0)
Gallup-Navajo Indian	(0)	(10)	(14)	(18)	(24)	(24)	(0)
Not Identified	(0)	(10)	(10)	(10)	(10)	(10)	(0)
Total Depletions	420	578	655	663	669	669	589
Evaporation, Storage Units	58	58	58	58	58	58	58
Total	478	636	713	721	727	727	647
State Share of 5.8 Million Acre-Foot Yield	647	647	647	647	647	647	647
Remaining Water Available	169	11	-66	-74	-80	-80	0

1/ Assumes the buy-out of 11,000 acre-feet of private rights.

1,000 Acre-Feet

	Present and Projected Depletions						
	1983	1990	2000	2010	2020	2030	2040
Utah							
Comprehensive Framework Study	664	664	664	664	664	664	664
Misc. Additional Depletions							
Irrigation and Stock	1	1	1	1	1	1	1
Municipal	2	3	5	7	9	11	13
Minerals	1	1	1	1	1	1	1
Reclamation Projects							
Bonneville Unit, CUP	32	136	166	166	166	166	166
Upalco Unit, CUP	0	3	12	12	12	12	12
Jensen Unit, CUP	4	15	15	15	15	15	15
Uintah Unit, CUP	0	0	28	28	28	28	28
Emery County	11	8	8	8	8	8	8
Gallup-Navajo Indian	0	1	1	1	1	1	1
Ute Indian Lands	4	20	84	84	84	84	84
DWR Projects	11	16	20	24	28	32	36
Thermal Powerplant							
Emery County	24	30	36	36	36	36	36
Conversion of Irrig. to Power	-7	-7	-10	-10	-10	-10	-10
Other UP&L Co. Plants	0	0	6	12	24	30	36
Deseret Generation Co-op	0	6	12	12	12	12	12
Municipal and Industrial							
White River Dam	0	6	6	6	6	6	6
Oil Shale	0	1	20	30	40	45	51
Tar Sands	0	6	18	30	42	42	42
Total Depletions	747	910	1,093	1,127	1,167	1,184	1,202
Evaporation, Storage Units	120	120	120	120	120	120	120
Total	867	1,030	1,213	1,247	1,287	1,304	1,322
State Share of 5.8 Million Acre-Foot Yield	1,322	1,322	1,322	1,322	1,322	1,322	1,322
Remaining Water Available	455	292	109	75	35	18	0
Upper Colorado River Basin Totals							
Total Depletions	3,489	4,099	4,677	4,870	5,005	5,099	5,280
Evaporation, Storage Units	520	520	520	520	520	520	520
Total	4,009	4,619	5,197	5,390	5,525	5,619	5,800
5.8 Million Acre-Foot Yield	5,800	5,800	5,800	5,800	5,800	5,800	5,800
Remaining Water Available	1,791	1,181	603	410	275	181	0

EXPLANATORY NOTES FOR DEPLETIONS LISTED IN TABLES

Projected Water Supply and Depletions

Introduction

These tables represent the Bureau of Reclamation's best estimates of existing (1983 level) and projected depletions of water due to man's activities in the Upper Colorado River Basin. They were prepared in consultation with the water resource agencies of the Upper Basin states and they have been reviewed by the states. But the values shown herein do not necessarily have the concurrence of the states.

Estimates of present use were developed by updating depletions reported in the Upper Colorado Region Comprehensive Framework Study published in June 1971. This study was a large State-Federal interagency effort to formulate framework plans for short- and long-term water resource needs. Included in the study was a report on water uses by states and type of use for a normalized 1965 level of development. A summary table is as follows:

1965 Level of Development

	On-Site Depletions (acre-feet)					
Type of Use	Arizona	Colorado	New Mexico	Utah	Wyoming	Total
Municipal and Industrial	1,500	15,900	2,400	5,000	2,600	27,400
Electric Power (thermal)		3,200	15,300	1,300	3,400	23,200
Minerals		16,900	1,600	9,400	5,800	33,700
Fish and Wildlife	600	2,700	400	7,900	100	11,700
Recreation		700	100	300	200	1,300
Stockpond Evaporation and Livestock Use	1,100	20,700	2,400	6,200	4,500	34,900
Subtotal	3,200	60,100	22,200	30,100	16,600	132,200
Irrigation						
Consumptive Use	4,400	991,300	76,000	404,400	221,200	1,697,300
Incidental Use	500	198,700	15,000	81,000	20,400	315,600
Reservoir Evaporation	2,000	27,100	31,700	30,200	23,900	114,900
Total Irrigation	6,900	1,217,100	122,700	515,600	265,500	2,127,800
Export						
Diversions		417,100		109,500		526,600
Reservoir Evaporation		12,300		11,400		23,700
Less Water Import				(2,600)		(2,600)
Subtotal of all above	10,100	1,706,600	144,900	664,000	282,100	2,807,700
Main-stem Reservoir Evaporation						643,000 1/
Region Total						3,450,700

1/ Flaming Gorge Reservoir (67,000 acre-feet) and Lake Powell (576,000 acre-feet)

Projections of water use beyond 1983 were developed from projections supplied by state water resource agencies and from construction schedules of projects authorized for construction or already under construction.

The entry in each State table labeled "Evaporation, Storage Units" represents that State's share of total evaporation from Flaming Gorge Reservoir, Lake Powell, and the Aspinall Unit Reservoirs, which will be charged to that State when total Upper Basin water development is reached. This is provided for in Article V of the Upper Colorado River Basin Compact.

The Upper Colorado River Basin Compact provides that the States of Colorado, New Mexico, Utah, and Wyoming will share in the consumptive use of water available in the Upper Basin in the following proportions:

Arizona	50,000 acre-feet
Colorado	51.75 percent of remainder
New Mexico	11.25 percent of remainder
Utah	23.00 percent of remainder
Wyoming	14.00 percent of remainder

To be conservative in making its estimate of water supply and depletions in the Upper Basin, the Department of the Interior has assumed that the river flow will be 75 million acre-feet every 10 years at Lee Ferry, plus 750,000 acre-feet annually for Mexican Treaty deliveries. This would require an average annual water delivery at Lee Ferry of 8.25 million acre-feet. Using this assumption, the Department of the Interior estimates that the long-term dependable yield of water available in the Upper Basin for consumptive use by man is 5.8 million acre-feet per year. This assumption is not to be considered an interpretation of the obligation of the Upper Division States for water delivery at Lee Ferry under the Colorado River Compact, nor is it in accord with the view of the Upper Division States. 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 10 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 Article III (a) and (b) of the Colorado River Compact and the entire Mexican Treaty delivery. The Upper Division States submit that the long-term dependable yield of water available in the Upper Basin would be at least 6.3 million acre-feet.

The value of 'State Share' and 'Remaining Water Available' which appear in the depletion tables are based on the Department of the Interior's assumed dependable yield of 5.8 million acre-feet of water available for consumptive use in the Upper Basin. The negative values of remaining water which appear in the New Mexico projections represent uses of water above that available under the Department's conservative, assumed water supply and are assumed by the Department to be permitted under the Upper Colorado River Basin Compact.

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 with the United Mexican States (Treaty Series 994, 59 Stat. 1219), the decree entered by the Supreme Court of the United States in Arizona vs. California, et. al. (376 U.S. 340), the Boulder Canyon Project Act (45 Stat. 1057), the Boulder Canyon Project Adjustment Act (54 Stat. 774; 43 U.S. Code 618a), the Colorado River Storage Project Act (70 Stat. 105; 43 U.S. Code 620), or the Colorado River Basin Project Act (82 Stat. 885; 43 U.S. Code 1501).

Arizona

Miscellaneous Additional Depletions

Consumptive uses due to irrigation and stockpond evaporation have increased by about 2,000 acre-feet since the Comprehensive Framework Study estimates were prepared. Municipal and domestic uses have increased by about 1,000 acre-feet. It is expected that an additional 3,000 acre-feet will be used for municipal purposes for the Navajo Indian Nation and for the city of Page, Arizona. Water for Page is reserved by "The Reclamation Development Act of 1974," Public Law 93-493, which among other actions provided for the incorporation of the city.

Navajo Powerplant

Consumptive uses according to records provided by the Navajo Generating Station averaged 20,600 acre-feet over the 1980 to 1983 period. The contract for sale of water out of Lake Powell allows for annual uses of up to 34,100 acre-feet. Salt River Project personnel feel that this ultimate use will be realized in future years.

Gallup-Navajo Indian Water Supply Project

See discussion under New Mexico. The project will supply 7,000 acre-feet to the Arizona communities of Teec Nos Pos, Saw Mill, Fort Defiance, Window Rock, and St. Michael's. Water could be made available on a temporary basis from the unused Navajo Powerplant allocation until either the powerplant uses the full contractual amount or the contract is renegotiated to a lesser amount.

Wyoming

Miscellaneous Additional Depletions

Values shown in the 1983 column represent additional depletions that have developed since the Comprehensive Framework Study (1965 level) estimates were prepared. These values and the projections to 2000 were provided by the Wyoming State Engineer's Office. The projections of irrigation beyond 2000 were made by the Bureau and assume a declining increase in new irrigated lands. The projections of municipal use beyond 2000 were made by the Bureau and assume the same rate of increase as that estimated for 1983 to 2000.

Seedskadee Project

Fontenelle Dam is the only feature of the project that has been constructed. Irrigation facilities have not been built and there are no plans to reactivate studies to identify an irrigation project.

By contract of June 14, 1962, the State of Wyoming purchased 60,000 acre-feet of capacity in Fontenelle Reservoir. The United States notified the State that the yield from the 60,000 acre-feet capacity would be available on January 1, 1969. The State optioned 25,000 acre-feet to Sun Oil Company and 35,000 acre-feet to Pacific Power and Light Company with 25,000 as firm supply and 10,000 acre-feet when available.

A second contract, dated December 27, 1974, was signed with the State of Wyoming which would yield up to 125,000 acre-feet additional for Wyoming's use. Also, 135,000 acre-feet would be reserved for use of the United States with 109,000 acre-feet marketable below the I-80 Highway bridge and above the Green River water measurement gage. The total marketable yield from the reservoir is estimated at 281,000 acre-feet. However, present restrictions on reservoir drawdown imposed by the limits of riprap on the upstream face of the dam limit the maximum potential yield to 241,200 acre-feet. Existing and projected uses of water under these contracts are discussed below under "Industrial Uses."

The Seedskadee Project provided for the development of the Seedskadee National Wildlife Refuge located on the Green River below the dam. In 1983, about 6,000 acre-feet were diverted from the river and used to maintain numerous ponds within the refuge. It is estimated that when the refuge is fully developed, 20,000 acre-feet per year of depletion will result.

Lyman Project

Lyman Project provides supplemental irrigation water for users in the Smith Fork and Blacks Fork areas. In 1983, the project was essentially complete and depletion of project water is estimated to average 10,300 acre-feet annually.

Savery-Pot Hook Project

This project was authorized as a participating project of the Colorado River Storage Project by Public Law 88-568. The Definite Plan Report dated May 1977 identified a plan which would result in 11,900 acre-feet and 10,500 acre-feet of depletions annually in Colorado and Wyoming respectively. The President's Water Project Review in 1977 resulted in deletion of funding for the project, and no construction funding has been provided. The project has not been deauthorized and is considered on a deferred status until funding is provided. For planning purposes an administrative decision was made by the Bureau of Reclamation to show depletions deferred until after 2030.

LaBarge Project

The LaBarge Project was authorized as a participating project under Public Law 84-485, the Colorado River Storage Project Act. A Definite Plan Report was completed in June 1961. It was estimated that consumptive use would be 3,700 acre-feet (rounded to 4,000). Project construction has not begun and no immediate plans are contemplated. The project has not been deauthorized and is considered on deferred status until funding is provided. For planning purposes an administrative decision was made by the Bureau of Reclamation to show depletions deferred until after 2030.

Trans-Mountain Diversions

Three diversions presently export water out of the Colorado River Basin in Wyoming;

(1) Ranger Ditch diverts water from North Savery Creek for delivery to Willow Creek in the North Platte River Basin. Estimates made in 1974 indicate that annual deliveries average about 500 acre-feet.

(2) Continental Divide Ditch diverts water from Little Sandy Creek to the Platte River Basin. Estimates made in 1974 indicate that annual deliveries average about 1,040 acre-feet.

(3) Diversions from the North Fork of the Little Snake River to the city of Cheyenne were 5,027 acre-feet in 1983. However, over the period 1971-83, deliveries average 6,616 acre-feet.

The total diversion in 1983 was estimated to be about 8,000 acre-feet.

In 1980 the State Engineer of Wyoming stated that he anticipated that out-of-basin diversions will increase to 50,000 acre-feet by 2010. The 20,000 acre-feet depletion to the Little Snake River will occur not only as a result of the Cheyenne-Laramie Diversion, but also as a result of the development of Stage III of the proposed Little Snake River Management Project which would divert water over the Continental Divide to the North Platte River for the use of downstream communities such as Casper, Glenrock, and Douglas.

Industrial Uses

The State of Wyoming feels that there is considerable potential for increased use of water for industrial purposes, such as thermal-electric generation, trona mining and processing, coal gasification, coal coking, and oil shale development.

Most of the water that is and will be used for industrial purposes will be provided by contracting with the State or the Bureau for water out of Fontenelle Reservoir. See the discussion for Seedskadee Project above.

(1) Thermal Electric. Major thermal electric plans in operation in 1983 were as follows:

Naughton No. 1	160MW
Naughton No. 2	220MW
Naughton No. 3	330MW
Jim Bridger No. 1	500MW
Jim Bridger No. 2	500MW
Jim Bridger No. 3	500MW
Jim Bridger No. 4	500MW

The Naughton No. 1 unit was in operation in 1965 and its water use is included in the Comprehensive Framework Study value for thermal electric. Records supplied by Utah Power and Light Company show an average annual net use (diversion less return flow) of 5,670 acre-feet over a 7-year period (1977-1983) for all three units at Naughton. It is estimated that about 4,000 acre-feet of this amount is used by units No. 2 and No. 3 Records provided by Pacific Power and Light Company indicate a level of use of about 25,000 acre-feet for all four units at the Jim Bridger plant. Depletions in 1983 for thermal electric units built since 1965 are estimated to be 29,000 acre-feet a year.

The Wyoming State Engineer's Office estimates that water uses for new thermal electric power generation will increase by 15,000 and 37,000 acre-feet in 1990 and 2000, respectively. Also, an additional 10,000 acre-feet of depletion will develop at the Jim Bridger plant when transmission restrictions are lifted. Water for the Jim Bridger plant is provided out of Fontenelle Reservoir by contract with the State. Water for the Naughton plant is developed from a private water right.

(2) Mineral

Considerable development of the trona, oil, and natural gas industries has occurred in the Green River Basin since the Comprehensive Framework Study was made. In 1982 the Wyoming State Engineer's Office estimated that 23,700 acre-feet of additional depletions had occurred in the mineral industry since 1965.

They also project that depletions will increase by 10,000 and 26,000 acre-feet by the years 1990 and 2000 respectively. Part of this increase could result from a proposed fertilizer plant to be built by

Chevron. Chevron has signed a contract with the State of Wyoming to purchase water from the State's allocation in Fontenelle Reservoir or from the Big Sandy River Unit for use in a phosphate fertilizer plant. A slurry pipeline will carry phosphate ore from the mining area near Vernal, Utah, to the plant located near Rock Springs where the slurry water will be used as processed water.

(3) Coal Gasification

The Wyoming State Engineer's Office estimates that by the year 2000, the coal gasification industry will deplete about 10,000 acre-feet yearly.

(4) Oil Shale

Predictions on the future development of the oil shale industry always involve a high degree of uncertainty. The Wyoming State Engineer's Office estimates a depletion by this use of about 3,000 acre-feet in 2000.

Projections of Industrial Uses beyond 2000 were made by the Bureau of Reclamation. Values shown are largely arbitrary and reflect a growing use until the year 2040, when it is assumed that the State will have reached its total Colorado River water allocation under the Department's present conservative estimate of water availability. No attempt has been made to identify individual industrial uses.

Colorado

Miscellaneous Additional Depletions

Values shown in the 1983 column represent additional depletions that have been assumed to develop since the Comprehensive Framework Study (1965 level) estimates were prepared. They have not been specifically identified but are included to bring the Bureau's estimates of present uses more in line with State estimates. The 1983 values of "Miscellaneous Additional Depletions" may be either real additions or else differences resulting from new depletion accounting procedures.

Some of the Colorado depletion values through the year 2020 were provided by the Colorado Water Conservation Board, while others were provided to the Bureau of Reclamation by a project representatives or were estimated by the Reclamation staff. Unless stated otherwise, the Bureau of Reclamation provided all values beyond the year 2020 by assuming similar rates of increase as were reflected in periods prior to 2020.

Denver Expansion

Water for expanded Denver needs since 1965 has been met by increased diversions through Moffat and Roberts Tunnels. Average recorded diversions through both tunnels for the period 1977-82 was 141,000 acre-feet. The combined 1965 normalized diversion was 93,000 acre-feet yielding an increase of 48,000 acre-feet. Projections through the year 2040 were provided by the Colorado River Conservation Board.

Homestake Expansion

Present uses average about 28,000 acre-feet annually. Phase II of the expansion is expected to be on line by 1990 and yield an additional 20,000 acre-feet annually. Values were supplied by the Colorado Water Conservation Board.

Independence Pass Expansion, Pueblo Expansion, Colorado Springs Expansion, Englewood

Present and projected values for these exports were supplied by the Colorado Water Conservation Board in a July 28, 1980, letter to the Bureau.

Fryingpan Arkansas

Diversions through Boustead Tunnel began in 1971. Average annual diversion during the 1971-83 period was 44,000 acre-feet. Diversion in 1983 was 90,800 acre-feet. The Operating Principles for the Project state that diversions will not exceed 120,000 acre-feet in any one year and will not exceed a total aggregate of 2,352,800 acre-feet in any consecutive 34-year period. The latter requirement would mean a long-time average diversion of 69,200 acre-feet. Since the historical (1971-83) average diversion has been much less than this, it is likely that in the coming decade or so annual diversions will be much higher than 69,200 acre-feet (provided that water is

available for diversion) to bring the historical average back up. For purposes of this table, 69,200 (rounded to 69,000) is shown as the present and projected use.

Windy Gap

Construction on the dam began in 1981 and is scheduled for completion in 1985. Facilities of the Colorado-Big Thompson Project will be used to divert up to 54,000 acre-feet per year for domestic use by the cities of Longmont, Loveland, Estes Park, Greeley, and the Platte River Power Authority. The Colorado Water Conservation Board estimates that the full depletions will be on line by 1990.

Animas-La Plata Project

A Feasibility Report was prepared in 1962 and the project was authorized by Public Law 90-537, September 30, 1968. A Definite Plan Report was approved in August 1980. The plan provides for large amounts of water for irrigation, municipal and industrial use, and totals 154,800 acre-feet depletion; 120,700 acre-feet in Colorado and 34,100 acre-feet in New Mexico. Construction will not likely start before fiscal year 1986. Depletions will not begin until the early part of the 1990's when Ridges Basin Reservoir is completed. Uses will build up rapidly as other project facilities are constructed. The ultimate depletion of 121,000 acre-feet would be possible by 2000.

Bostwick Park Project

Construction of Silver Jack Dam commenced in late 1966 and was completed in 1971. Project water became available beginning in 1971 and all facilities were completed by 1974. Project depletions average 4,200 acre-feet annually.

Dallas Creek Project

The project was authorized by Public Law 90-537 on September 30, 1968. A Definite Plan Report was completed in November 1976 which indicated a total depletion of 17,100 acre-feet with the water being used for agricultural and municipal and industrial purposes. Estimated depletions are 5,100 acre-feet for irrigation, 10,400 acre-feet for municipal and industrial uses, and 1,600 acre-feet for reservoir evaporation. The control schedule of January 6, 1984, shows that initial storage will commence July 1986. Distribution facilities now exist for use of the project water. It is estimated by the Bureau of Reclamation that the combination of reservoir evaporation, irrigation use, and municipal and industrial use will deplete about 10,800 acre-feet by 1990, 12,800 acre-feet by 2000, and 17,100 acre-feet by 2010.

Dolores Project

A Feasibility Report was prepared in 1963, and the project was authorized by Public Law 90-537 on September 30, 1968. A Definite Plan Report was completed in April 1977 with modifications to the original plan to meet

Indian requirements. Total depletions are estimated to be 80,900 acre-feet annually. The control schedule dated January 6, 1984, indicates that delivery of project water will begin in 1987. Average annual consumptive use will be 70,250 acre-feet for irrigation, 4,350 acre-feet for municipal and industrial, and 6,300 acre-feet for evaporation.

It is estimated by the Bureau of Reclamation that reservoir evaporation and the bulk of the irrigation uses will be depleting the Colorado River system by 61,000 acre-feet in 1990 and that by 2000 the project will be fully operational.

Fruitland Mesa Project

The project was authorized as a participating project of the Colorado River Storage Project by Public Law 88-568 on September 2, 1964. The authorization was based on a Feasibility Report prepared in 1963. A Definite Plan Report was prepared in June 1967 and a repayment contract executed in June 1969. Minor construction work was completed on the existing Gould Canal in 1973, but no other construction has been accomplished. The project plan was substantially revised as described in the Definite Plan Report of August 1977. Depletions then totaled 21,300 acre-feet. The President's Water Project Review in 1977 resulted in deletion of funding for the project, and no construction funding has been provided. The project has not been deauthorized. Therefore, it is considered on a deferred status until funding is provided. For planning purposes an administrative decision was made by the Bureau of Reclamation to defer depletions until after 2030.

Savery-Pot Hook Project

The project was authorized as a participating project of the Colorado River Storage Project by Public Law 88-568 on September 2, 1964. The authorization was based upon a feasibility report prepared in 1962. A Definite Plan Report was prepared in June 1971, revised in January 1972, and updated by an Advance Definite Plan Report dated May 1977. Stream depletions in the 1977 report are 11,900 acre-feet for Colorado and 10,500 acre-feet for Wyoming. The President's Water Project Review in 1977 resulted in deletion of funding for the project, and no construction funding has been provided. The project was not deauthorized. Therefore, it is considered on a deferred status until funding is provided. For planning purposes an administrative decision was made by the Bureau of Reclamation to defer depletions until after 2030.

San Miguel Project

A Feasibility Report was prepared in 1966, and the project was authorized as a participating project of the Colorado River Storage Project by the Colorado River Basin Project Act (Public Law 90-537) on September 30, 1968. Advance planning studies have continued and various plans have been considered, but none are feasible based upon current policies and procedures for planning water and related land resources. A wide array of development plans have been investigated including a mix of agricultural, municipal and industrial uses. A Concluding Report has been prepared summarizing data available. This included data from a large acreage alternative, a small

acreage alternative, and a conservation alternative. Figures for depletion were selected from the small acreage alternative which included depletions of 12,000 for irrigation, 12,000 for industrial use, and 1,000 for municipal. For planning purposes an administrative decision was made by the Bureau of Reclamation to defer depletions until after 2030.

Upper Gunnison River Basin Projects

Water rights with a priority date of November 13, 1957, for the Wayne N. Aspinall Unit (formerly Curecanti Unit) of the Colorado River Storage Project were granted by the State of Colorado to the Colorado River Water Conservation District. These rights were assigned by the district to the United States in January 1962 subject to the condition that the unit would be developed and operated in a manner consistent with beneficial use of the waters in the Gunnison River Basin. In order that future developments in the Upper Gunnison Basin would be assured of rights to use of water, a form of contract was developed for execution between the United State Government, the Upper Gunnison River Water Conservancy District, and water users in the upper basin whereby the diversion and storage rights of the Aspinall Unit were to be subordinated to future developments upstream, both private and Federal, even though the rights of the upstream developments might be junior to the Aspinall Unit right. The aggregate amount of upstream depletions for which the priority of the Aspinall right may be waived has not yet been determined.

The authorizing legislation of the Colorado River Storage Project listed the following five projects in the Upper Gunnison River Basin for priority of investigations:

1. Bostwick Park
2. East River
3. Fruitland Mesa
4. Ohio Creek
5. Tomichi Creek

The total depletion by these five projects was estimated to be about 60,000 acre-feet annually, of which 40,000 acre-feet would be depleted above Blue Mesa Dam. An additional 10,000 acre-feet would be depleted from streams entering the river between Morrow Point and Blue Mesa Dams, and another 10,000 acre-feet would be depleted from streams entering the river between Crystal and Morrow Point Dams. An increased upstream depletion of 60,000 acre-feet was assumed in the operation studies for the Aspinall Unit in the determination of the water supply available for power generation.

In 1973, the Bureau issued a Concluding Report on its Upper Gunnison Project investigations which included the East River, Ohio Creek and Tomichi Creek Units. Although it was concluded that there were limited potentialities for Federal water resource development under existing evaluation criteria and projected economic conditions, the Bureau still recognizes its commitment to allow beneficial development of waters of the upper Gunnison River Basin up to an amount of about 60,000 acre-feet. Allowing for an existing 4,000 acre-foot depletion of the Bostwick Park Project and assuming the depletion

of 21,000 acre-feet is realized on Fruitland Mesa Project by 2040, there would be a remainder of 35,000 acre-feet available for depletion in 2040. The table shows this value in 2040 with arbitrary levels of development in the intervening years.

West Divide Project

A Feasibility Report was prepared in 1966, and the project was authorized by Public Law 90-537 on September 30, 1968, as a participating project of the Colorado River Storage Project. Advance planning studies have continued and various plans have been considered but none are feasible, based upon current policies and procedures for planning water and related land resources. Plans include a mix of water for irrigation and municipal use. A Concluding Report has been drafted to summarize data available. A plan is presented which is not economically justified but totals 38,200 acre-feet depletion. For planning purposes an administrative decision was made by the Bureau of Reclamation to defer depletions until after 2030.

Taylor Draw Reservoir Project

Taylor Draw Dam is under construction a few miles east of Rangely, Colorado. Financing was approved by the electorate in August 1980 and bonds have been issued. Construction commenced August 1982. Depletion values were supplied by the Colorado Water Conservation Board.

Stagecoach Project

The Upper Yampa Water Conservancy District's Stagecoach Project involves construction of a dam on the Yampa River near Steamboat Springs and exchange agreements for water out of Yamcola Reservoir. The project would supply about 4,000 acre-feet of water for irrigation, 1,000 acre-feet for municipal uses, and 10,000 acre-feet for thermal powerplant uses. Depletion values for the irrigation and municipal components were derived by the Bureau. Depletion values for thermal powerplant uses are discussed below under Colorado Ute-Southwest Project.

Ruedi Contracts

Estimates of projected depletions from water contracts out of Ruedi Reservoir were provided by the Lower Missouri Regional Office of the Bureau of Reclamation. They are 0 in 1983, 16,000 acre-feet in 1990 and the ultimate yield of contracted water of 49,000 acre-feet in 2000. Depletions were computed assuming 100 percent consumption of industrial water and 40 percent consumption of water delivered to municipal and domestic users. Ruedi water would go primarily to the oil shale industry.

Blue Mesa Contracts

The Upper Colorado Regional Office of the Bureau of Reclamation has determined that up to 10,000 acre-feet of water can be contracted for out of Blue Mesa Reservoir for industrial purposes. It has been assumed that this water will be contracted by 1990 and that it will be 100 percent consumed.

Oil Shale

Projections of depletions of water for oil shale development contain a high degree of uncertainty. Values shown through 2040 were provided by the Colorado Water Conservation Board. These values do not include water contracted out of Ruedi Reservoir for the oil shale industry.

Craig-Hayden Powerplants

In 1983, the following units were on line:

Hayden No. 1	165 MW
Hayden No. 2	250 MW
Craig No. 1	410 MW
Craig No. 2	410 MW

Average annual use of water over the 1981-83 period at Hayden plant was 4,525 acre-feet. Average use at the Craig plant for the same period was 8,038 acre-feet. Combined use was 12,563 acre-feet rounded to 13,000. Plans call for Craig No. 3 to go on line sometime in 1984, which would increase depletions by about 4,000 acre-feet.

Colorado-Ute is planning to upgrade its Nucla plant from 36 to 100 MW by 1990. This is expected to result in about a 1,000 acre-foot increase in depletions.

Colorado Ute-Southwest Project

Colorado-Ute Electric Association is planning two 400 MW units in western Colorado. Two years ago, start up dates of 1987 and 1989 were projected. But recent discussion with Association officials indicate that plans to go forward have been delayed indefinitely. For purpose of this table, the Bureau has assumed that one unit will be constructed and on line by 2000 and depleting 5,000 acre-feet of water and the other unit on line in 2020 making a total depletion then of 10,000 acre-feet.

New Mexico

Adjusted Comprehensive Framework Study

Several water uses listed in the table were included in the Comprehensive Framework Study. So, their Framework Study values were subtracted out to avoid double counting. They are:

Navajo Reservoir Evaporation	31,000
Hammond Project Irrigation	10,000
Four Corners Powerplant	15,000
Total	56,000

The adjusted Comprehensive Framework Study value is 144,900 - 56,000 = 88,900 acre-feet.

Miscellaneous Additional Depletions

These are depletions that have come into being since the Comprehensive Framework Study estimates were prepared. These include 5,000 acre-feet of private rights developed for M&I purposes. Values shown were developed from data provided by the New Mexico Interstate Stream Commission.

Navajo Reservoir Evaporation

Reservoir evaporation is based upon a 60-year Colorado River Storage Project sequence study made in 1973.

Animas-La Plata Project (Colorado-New Mexico)

See discussion under Colorado. The New Mexico Interstate Stream Commission estimates a depletion level of 14,000 acre-feet by 2000. It is assumed the full authorized depletion of 34,000 will be reached by 2010.

San Juan-Chama Project

The San Juan-Chama Project was authorized by Public Law 87-483. Transmountain diversions began in 1971. The May 1957 Supplemental Project Report indicates that diversions are expected to average about 110,000 acre-feet a year, although more recent hydrologic studies performed by the Southwest Regional Office indicate that the long-term average annual yield may be closer to 104,000 acre-feet. Historical (1971-83) average diversion has been 99,640 acre-feet a year. For purposes of this table, 110,000 acre-feet has been selected as the level of existing and future average depletions.

Navajo Indian Irrigation Project

Various estimates for projected agricultural use depletions have been prepared, including the studies for the all-sprinkler irrigation system for the Navajo Indian Irrigation Project prepared by the Southwest Region of the Bureau of Reclamation. This study estimated agricultural consumptive use of

226,000 acre-feet. Several other estimates have been made, and a 5-year field study to determine actual consumptive use on the project was begun in 1978 and recently concluded. Recent technical estimates reported in a Secretary, Department of the Interior Report, Economic Study, May 1980, are 254,000 acre-feet for agricultural depletions. In November 1981, it was concluded and agreed by Interior's Assistant Secretary - Land and Water Resources and Assistant Secretary - Indian Affairs that the project's productive acreage should be 110,630 acres, rather than the 105,000 acres which had been assumed in the past. Correspondingly, the annual depletion estimate has been revised from 254,000 acre-feet to 267,000 acre-feet.

The first block of land (about 9,300 acres) was irrigated in 1976. In 1983, Blocks 1 through 5 were in production. Historical net diversion from Navajo Reservoir in 1983 was 128,523 acre-feet, rounded to 129,000 acre-feet for the table. To date only small amounts of return flow from the project have been observed. Therefore, it has been assumed that the depletion of river flow is, as yet, very nearly equal to the water diverted from Navajo Reservoir. Return flow to the river will increase as deep percolation from irrigation changes the aquifer.

It was originally expected that water deliveries could be made to Blocks 1 through 9 by 1990 and to the remaining blocks by 2000. Recent funding constraints have delayed development of the Project, but if funding were restored, it is assumed that up to one additional block could be developed each year. Based on this assumption, the table shows 208,000 acre-foot depletion in 1990 and the full 267,000 acre-foot depletion in 2000.

Hammond Project

The New Mexico Interstate Stream Commission estimates that depletions on the nearly fully developed Hammond Project currently average 8,000 acre-feet a year and that fully developed depletions of 10,000 acre-feet a year will be occurring by 1985.

Hogback Expansion

Minor increases in depletions are expected to occur between now and 1990. Studies are underway by the Bureau of Indian Affairs and the Navajo Tribe to determine additional water requirements in this area. Present uses are estimated to be 5,000 acre-feet a year with a projected ultimate level of 10,000 acre-feet a year by 1990.

Jicarilla Apache Indian Uses

This depletion is based upon preliminary results of planning studies. Results, to date, indicate that about 3,000 acre-feet could be depleted under present proposals. Studies are continuing to develop plans for additional depletions, but no more feasible uses have developed. In a letter of July 9, 1976, to Mr. S. E. Reynolds, Secretary, New Mexico Interstate Stream Commission, the Secretary of the Interior indicated that there may be 26,000 acre-feet available annually for use on the Jicarilla Apache Indian

Reservation, but such an amount cannot be guaranteed unconditionally. This water would have to be contracted for. Such a contract would require certification by the Secretary of the Interior as to the availability of such supplies and subsequent approval by the Congress. Also, that shortages may develop induced by a Lee Ferry call. The July 9, 1976, letter also proposed the necessary engineering, environmental, and economic feasibility studies. Thus, 3,000 acre-feet development is estimated to take place within 10 years with any remaining amounts dependent upon results of continued feasibility studies.

Utah International Inc. (Private Right)

The primary use under this right is the sale of water to Arizona Public Service Company for the five units of the Four Corners Powerplant. Average historical use over the past 12 years has been 19,000 acre-feet. As indicated below under the discussion for Public Service Company of New Mexico, approximately 8,000 acre-feet of water was purchased from UII for use in Unit 4 of the San Juan Powerplant. This results in a 1983 level of total use under this right of 27,000 acre-feet. It is expected that increased use of the five units at Four Corners, plus the transfer of up to 8,000 acre-feet to the San Juan Plant, will fully utilize the total right of 39,000 acre-feet by 1990.

Navajo Reservoir Contracts

(a) Public Service Company of New Mexico

This contract provides water deliveries from Navajo Reservoir for use at the San Juan Powerplant. In 1983, all four generating units were in operation. Water use at this level is about 24,000 acre-feet a year. The contract provides for delivery of 16,200 acre-feet. The remaining water used at the plant is purchased from Utah International's private right. Thus, in the table, a value of 16,000 is shown for Public Service and an additional value of 8,000 acre-feet has been included in the total for Utah International, Inc. (Private Right). The contract for water delivery from Navajo Reservoir terminates December 31, 2005.

(b) Utah International Inc.

Utah International will furnish water to potential customers for industrial uses in the area. A Utah International official indicated the contract amount of 35,000 acre-feet was expected to be utilized by 1990 and continued through the year 2030. At present the contract for water delivery terminates December 31, 2005. The table assumes that the Secretary of Interior will present a hydrologic determination to Congress showing that the contract can be extended to 2039 without jeopardizing other water uses in the San Juan and Colorado River basins.

(c) Gallup-Navajo Indian Water Supply Project

The Southwest Region, Bureau of Reclamation, is currently conducting project investigation to supply water to Gallup and Navajo Indian

communities in New Mexico, Arizona, and Utah. Present estimates indicate a requirement of 29,000 acre-feet of depletions for New Mexico. This requirement includes approximately 5,000 acre-feet for the Shiprock area. Animas-La Plata Project includes 7,600 acre-feet delivery to the Indian communities near Shiprock with 3,800 acre-feet of annual depletion. The ultimate Gallup-Navajo depletion in New Mexico without Shiprock would be approximately 24,000 acre-feet, of which 1990 requirements would be 10,000 acre-feet, 2000 requirements would be 14,000 acre-feet, and 2010 requirements would be 18,000 acre-feet. There is sufficient water available within the Navajo municipal and industrial contracts to cover these requirements, and water is physically available within the San Juan Basin. The table assumes that a water supply will be available until 2040.

(d) Not Identified

The remaining block of Navajo Reservoir water supply will be marketed by the United States and will be allocated in consultation with the New Mexico Stream Commission.

Utah

Miscellaneous Additional Depletions

Values shown in the 1983 column represent additional depletions that have developed since the Comprehensive Framework Study (1965 level) estimates were prepared. These values and the projections to 2020 were provided by the Utah Division of Water Resources. Projections beyond 2020 are Bureau estimates and assume a similar rate of increase.

Bonneville Unit, CUP

Present depletions from the Bonneville Unit include reservoir evaporation, storage accrual, and irrigation uses from Currant Creek, Strawberry, Soldier Creek, and Starvation Reservoirs. Project storage which was accruing in Strawberry Reservoir was spilled into Soldier Creek Reservoir in 1983 because of high runoff conditions and prior storage rights of the Strawberry Valley Water Users in Strawberry Reservoir. Reservoir water surface elevation limitations in Soldier Creek Reservoir further reduced the capability of storing water for project purposes. Net depletions to the Colorado River System in 1983, including the initial filling of Currant Creek Reservoir, are estimated to be 32,300 acre-feet.

Based upon the present construction schedule, the depletions to the Colorado River are expected to rise to 136,000 acre-feet by 1990 and 166,000 acre-feet by 2000. The latter figure is correct if replacement of an increased fishery bypass for maintenance of fishery flows for streams along the Strawberry Aqueduct of up to 37,000 acre-feet is developed in the Uinta Basin. If alternate supplies are developed in the Bonneville Basin, the depletion from the Uinta Basin will ultimately be about 128,000 acre-feet rather than 166,000 acre-feet.

Upalco Unit, CUP

The March 1980 Definite Plan Report and the May 1981 Supplement thereof, estimated total depletion of 11,900 acre-feet. The control schedule dated August 1983 indicates Taskeech Dam completion in 1990 and initial filling to occur at that time. Primary uses are for municipal, industrial, and supplemental water for irrigation. All of the project depletion is expected to occur by 2000.

Jensen Unit, CUP

The Definite Plan Report was revised in 1976. The plan provided irrigation water primarily for supplemental service, and water for municipal and industrial use. Evaporation and irrigation consumptive use totalled 4,000 acre-feet in 1983. Total depletion is estimated at 15,000 acre-feet. The project depletion would gradually increase to the full amount by 1990.

Uintah Unit, CUP

A report for certification of physical, economic, and financial feasibility dated April 1975 was certified by the Acting Secretary of the Interior on

August 22, 1975; approved by the Office of Management and Budget on March 25, 1967; and forwarded to Congress on April 6, 1976. Project water supply uses are primarily for supplemental irrigation service to Indian and non-Indian lands and full service to Indian lands, and a minor amount for municipal and industrial. Total depletions would be 28,000 acre-feet. Over the past few years, the Ute Tribal Business Committee has expressed various levels of interest for the Uintah Unit, potential developments on Leland Bench, and the Bonneville Unit mitigation package. On November 9, 1982, the Ute tribe submitted to the Bureau of Reclamation an "Interim Exploration and Planning Agreement Regarding Ute Water Resources." This agreement, which allows for further development of a study and a plan for construction of Uinta Unit, has been agreed to by Reclamation. Since Tribal attitude to development of a recommended plan is nonsupportive at this time, and for purpose of this report, depletions to the Colorado River System are those which were determined for the 1978 Definite Plan Report. It is unlikely that major facilities can be completed before the late 1980's. It is estimated the project depletion would occur by 2000.

Emery County Project

The Emery County Project as originally constituted depleted about 14,000 acre-feet. Utah Power and Light Company has contracted for 6,000 acre-feet of the project water for the Huntington Powerplant. Negotiations are underway between the Bureau, the power company, and the water district for the purchase of 6,000 acre-feet of additional project water by 1990. It is estimated that this has and will result in a decrease of Emery County depletions to 11,000 acre-feet in 1983 and 8,000 acre-feet in 1990. This assumes a 2 to 1 conversion rate, i.e., 6,000 acre-feet of project water sold to UP&L will result in a 3,000 acre-foot reduction in irrigation depletion.

Gallup-Navajo Indian Water Supply Project

See discussion under New Mexico. The project will supply 1,180 acre-feet to the Utah community of White Mesa Village.

Ute Indian Lands

Under the Deferral Agreement of September 20, 1965, the Ute Indians agreed to defer development of 15,242 acres of land, but not beyond January 1, 2005. On August 13, 1975, the Ute Indian Tribe passed a resolution requesting that development of Indian facilities proceed concurrently with development of non-Indian facilities. The Secretary agreed on August 21, 1975. Leland Bench was recognized as a means of developing 15,242 acres of land. However, this plan, as with the Uinta Unit, is not being strongly supported by the Ute Indian Tribe and has been included for further study with the Interim Agreement. For purposes of this report, depletions are based on the previous Leland Bench Development Plan. No construction schedule is available, and it does not appear that significant uses of water will be made by 1990. Total ultimate depletions are estimated to be about 45,000 acre-feet.

The Ute Indian Compact (yet to be ratified) recognizes Indian rights to irrigate 12,845 acre of Class 6 and 7 lands in the White River drainage, and 4,068 acres of Class 7 lands along the green River, which would result in depletions of approximately 30,000 and 9,000 acre-feet, respectively. The State of Utah estimates that the latter will materialize by about 2000, with depletions in 1990 at about a level of 20,000 acre-feet.

It is estimated that about 1,500 acres of Indian lands near the White River have come under irrigation since the Comprehensive Framework Study determinations. Depletion is about 4,000 acre-feet.

Division of Water Resource (DWR) Projects

In August 1983 the Division of Water Resources of the State of Utah made a determination which showed that 11,400 acre-feet of water were being depleted in 1983 by DWR sponsored projects. The Division estimates that depletions will increase to 28,000 acre-feet by 2020. Projections beyond 2020 are Bureau estimates and assume a similar rate of increase.

Emery County Powerplants

Both units of the Utah Power and Light Company's Huntington Powerplant were in service in 1983. Water use records indicate that the plant uses up to 12,000 acre-feet a year. Two units of UP&L's Hunter Powerplant, located near Castledale, were on line in 1982. Water use records for this plant also indicate a maximum annual use of about 12,000 acre-feet. One additional unit began operaton in March of 1983. The fourth unit is projected to be in operation in 1991. It was assumed that each new unit will also require 6,000 acre-feet a year. These figures result in an estimated 1983 use of 24,000 acre-feet and a projected use of 30,000 acre-feet in 1990, and 36,000 acre-feet in 2000.

Water from these two powerplants is and will come from (1) the purchase of 12,000 acre-feet of Emery County Project water, (2) purchase of up to 24,000 acre-feet of private irrigation water rights, and (3) the development of 3,000 to 5,000 acre-feet of new water made possible by construction of Electric Lake. Water surplus to powerplant needs is leased back to the irrigation users.

Conversion of Irrigation to Power

Most of the water developed for the Emery County powerplants comes from the purchase of irrigation water rights. It is assumed that for every thousand acre-feet of diversion rights purchased and used by the power company, irrigation consumptive use will decrease by 500 acre-feet. (There are some reasons to believe that irrigation use may not be declining by this high a rate. Additional data and analysis are needed to refine these estimates.)

It is estimated that in 1983, about 14,000 acre-feet of diversion rights were used by the plants and that by 2000, 20,000 acre-feet of diversion rights will be used. This translates into a decrease in irrigation depletion of 7,000 and 10,000 acre-feet, respectively.

Conversions of irrigation water to powerplant consumption was not increased beyond 2000. It was assumed that State policy would favor retaining an agricultural economic base and new development would come from the State's unused allotment of Colorado River water.

Other UP&L Co. Powerplants

The Utah Division of Water Resources, after consultation with Utah Power and Light Company, has estimated that beginning in the year 2000, about one new 400 to 500 MW unit will come on line every 5 to 7 years somewhere in the Colorado River Basin. Exact locations for these new units will depend on how load demands develop. Assuming a depletion of 6,000 acre-feet per unit, the table shows an increase of 6,000 acre-feet of depletion each decade.

Deseret Generation and Transmission Co-op

Deseret Generation and Transmission Co-op has begun construction of a 400 MW unit east of the Green River near Bonanza, Utah. Commercial operation is scheduled for December 1984. Water depletion is estimated at 6,000 acre-feet with pumping from the Green River. Unit 2, also 400 MW, is scheduled for operation in 1992.

White River Dam

Evaporation from the White River Reservoir is estimated to be 5,500 acre-feet, rounded to 6,000 acre-feet. It was assumed that the dam will be in place by 1990.

Oil Shale

Present planning indicates that White River Dam and Reservoir may be capable of yielding up to 75,000 acre-feet of water annually. Projections of water use for the oil shale industry are down considerably from projections made 2 years ago. Values shown through the year 2020 were supplied by the Division of Water Resources. Projections beyond 2020 were estimated by the Bureau. It should be realized that all of the projected oil shale depletion values contain a high degree of uncertainty.

Tar Sands

In November 1983, the BLM issued a Draft EIS describing development alternatives for special tar sand areas in Utah. Two development alternatives are presented, high commercial production and low commercial production which would result in 88,295 and 22,200 acre-feet per year of depletion, respectively, by the year 2005. The Utah State Division of Water Resources has requested that for purposes of this table a level of development midway between the Low Commercial and High Commercial production scenarios be assumed through the year 2020, which results in the numbers shown. Beyond 2020, the Bureau has assumed a constant level of depletion.