

Est. 1966

TYPE I STUDIES
 COLORADO RIVER BASIN
 1965 DEPLETIONS CHARGEABLE TO COLORADO
 Units - 1,000 Acre Feet

	Transmountain Diversions	Irrigation & M&I	Total
Yampa & Green Rivers		83	83
Hayden Steam Plant		2	2
White River		37	37
Gunnison River		422	422
Smith Fork Project		6	6
Paonia Project		10	10
Colorado River - Main Stem (a)		455	455
Cameo Steam Plant (75 MW)		1	1
Collbran Project		7	7
Pueblo-Eagle River Diversions	5		5
Colorado-Big Thompson Project	250		250
Small Ditches	1		1
Colorado Springs-Blue River	8		8
Denver-Blue River	38		38
Denver-Fraser River	57		57
Denver-Williams Fork	5		5
Busk-Ivanhoe Tunnel	5		5
Twin Lakes Canal & Reservoir Co. (Independence Pass Tunnel)	43		43
Grand River Ditch	16		16
San Juan & Dolores Rivers		237	237
Florida Project		16	16
San Juan Export to Rio Grande	3		3
1965 TOTAL	431	1,276	*1,707

(a) Includes Little Dolores River Basin.

Transmountain Diversions are from records and estimates of Colorado Springs, Denver Board of Water Commissioners, Colorado State Engineer, U.S.G.S. and Colorado Water Conservation Board.

*For other than Type I studies, present main stem reservoir evaporation chargeable to Colorado is shown at 150,000 acre feet per year.

000240

COLORADO RIVER BASIN
ESTIMATED POTENTIAL DEPLETIONS CHARGEABLE TO COLORADO
Units - 1,000 Acre-Feet

Project	Total Irrigation & M&I	Cumulative Total
Total - Present, Authorized & Committed		2,715
Hayden Steam Plant (1,000 MW)	15 (b)	2,730
Battlement Mesa	13 (b)	2,743
Yellow Jacket	47 (b)	2,790
Milner Steam Plant (1,000 MW)	15 (b)	2,805
Bluestone - Phase 1	24 (b)	2,829
Grand Mesa	24 (b)	2,853
North Fork Steam Plant (2,500 MW)	37 (b)	2,890
Upper Gunnison (Tomichi Creek, East River & Ohio Creek)	10 (b)	2,900
Rangely Steam Plant (1,000 MW)	15 (b)	2,915
Basalt	24 (b)	2,939
Lower Yampa (Juniper & Great Northern)	102 (b)	3,041
Coal Basin Steam Plant (500 MW)	8 (b)	3,049
Upper San Juan River (From Jex Report)	6 (b)	3,055
Four Counties Export - Yampa	40 (b)	3,095
Middle Park (Troublesome, Rabbit Ear & Azure)	29 (c)	3,124
Upper Yampa (Wessels, Hayden Mesa & Toponas)	63 (c)	3,187
Eagle Divide (Eagle Divide & Gypsum)	19 (c)	3,206
Bluestone - Phase 2	36 (c)	3,242
Private Irrigation Development		
Green River Subregion	4 (c)	3,246
Upper Main Stem Subregion	9 (c)	3,255
San Juan - Colorado	18 (c)	3,273
Upper San Juan River Export to Rio Grande Basin	12 (c)	3,285
Potential Oil Shale Uses	34 (c)	3,319
Potential Transmountain Diversions	536 (c)	3,855

Colorado Allocation by Upper Basin Compact: $7,450 \times 51.75\% = 3,855$.

(b) Depletion by 2000.

(c) Depletion by 2020.

COLORADO RIVER BASIN

ESTIMATED AUTHORIZED OR COMMITTED DEPLETIONS CHARGEABLE TO COLORADO AFTER 1965
Units - 1,000 Acre-Feet

	Transmountain Diversions	Irrigation & M&I	Total
Yampa & Green Rivers			
Savery-Pot Hook Project		26	26 (a)
Hayden Steam Plant (500 MW)		8	8 (a)
Gunnison & Uncompahgre Rivers			
Bostwick Park Project		4	4 (a)
Fruitland Mesa Project		28	28 (a)
Dallas Creek Project		37	37 (a)
Colorado River - Main Stem			
Silt Project		6	6 (a)
Colorado-Big Thompson Project	18		18 (a)
Fryingpan-Arkansas Project	70		70 (a)
West Divide Project		76	76 (b)
Homestake & Cross Creek Diversions	71--26 (a)-45 (b)		71 (a) (b)
Pueblo-Eagle River	6		6 (a)
Colorado Springs-Blue River	8		8 (b)
Denver-Blue River)			
Denver-Fraser River)			
Denver-Williams Fork)			
Denver-Eagle & Piney Rivers)	260--110 (a)-150 (b)		260 (a) (b)
Englewood-Moffat Tunnel	10		10 (b)
Twin Lakes Canal & Reservoir Company	9		9 (b)
Dolores, Animas & San Miguel Rivers			
Dolores Project		74	74 (a)
Animas-La Plata Project (Including 1,500 MW steam plant @ 22,500 AF)		112	112 (b)
San Miguel Project (Including 1,000 MW steam plant @ 15,000 AF)		85	85 (b)
General			
Oil Shale Development	—	100	100 (b)
TOTAL AUTHORIZED & COMMITTED	452	556	1,008
GRAND TOTAL - PRESENT, AUTHORIZED & COMMITTED	883	1,832	*2,715

(a) Depletion by 1980.

(b) Depletion by 2000.

(c) Depletion by 2020.

*For other than Type I studies, present main stem reservoir evaporation chargeable to Colorado is shown at 150,000 A.F. per year and additional future evaporation is shown at 192,000 making a total chargeable to Colorado 342,000 A.F. per year.

TYPE I STUDIES, COLO. RIVER BASIN - 1965 DEPLETIONS CHARGEABLE TO COLORADO
Units - 1,000 Acre Feet

	Municipal and Industrial							Irrigation					Grand Total
	Muni- cipal	Power	Minerals	Fish & Wildlife	Recreation	Stockpond Evap. & Livestock	M&I Total	Cons. Use	Incid.	Res. Evap.	Irrig. Total	Export	
AMPA AND GREEN RIVERS (GR)	1.4		1.2	0.4	0.1	3.7	6.8	58.9	14.3	1.0	74.2		81.0
Hayden Steam Plant Unit 1 (163 mw)		1.6					1.6						1.6
Subtotal	1.4	1.6	1.2	0.4	0.1	3.7	8.4				74.2		82.6
HITE RIVER (GR)	0.3	0	3.2	0.3	0	1.2	5.0	27.5	6.5	0.6	34.6		39.6
UNNISON RIVER (UMS)	3.5	0.2 ⁽¹⁾	2.9	0.6	0.3	5.3	12.8	309.2	93.8	6.6	409.6		422.4
Smith Fork Project								6.0			6.0		6.0
Paonia Project								10.0			10.0		10.0
Small Ditches												0.8	0.8
Subtotal	3.5	0.2	2.9	0.6	0.3	5.3	12.8				425.6	0.8	439.2
COLORADO RIVER--MAIN STEM (UMS) ⁽²⁾	7.4	0	5.2	0.7	0.2	3.4	16.9	361.7	69.5	8.0	439.2		456.1
Cameo Steam Plant (75 mw)		1.0					1.0						1.0
Collbran Project								7.0			7.0		7.0
Pueblo-Eagle River												4.5	4.5
Colorado-Big Thompson Project												250.0	250.0
Colorado Springs-Blue River												8.3	8.3
Denver-Blue River												38.0	38.0
Denver-Fraser River & Williams Fork												61.5	61.5
Rocky Ford-Highline Ditch Co. (Busk-Ivanhoe Ditch)												5.1	5.1
Twin Lakes Canal and Reservoir Co. (Independence Pass Tunnel)												42.8	42.8
Grand River Ditch												15.9	15.9
Subtotal	7.4	1.0	5.2	0.7	0.2	3.4	17.9				446.2	426.1	890.2
SAN JUAN RIVER (SJ-C)	2.6	0 ⁽³⁾	1.9	0.7	0.1	4.9	10.2	154.2	12.0	8.7	174.9		185.1
Florida Project								16.0			16.0		16.0
San Juan Export to Rio Grande												2.5	2.5
Subtotal	2.6	0	1.9	0.7	0.1	4.9	10.2	170.2			190.9	2.5	203.6
DOLORES RIVER (UMS)	0.7	0.4 ⁽⁴⁾	2.5	0	0	2.2	5.8	40.8	2.6	2.2	45.6		51.4
STATE TOTAL	15.9	3.2	16.9	2.7	0.7	20.7	60.1	991.3	198.7	27.1	1217.1	429.4	1706.6

- (1) Bullock 10 mw.
(2) Includes Little Dolores River Basin.
(3) Durango insignificant.
(4) Nucla 38 mw.

COLORADO RIVER BASIN ESTIMATED AUTHORIZED OR COMMITTED DEPLETIONS CHARGEABLE TO COLORADO AFTER 1965
Units - 1,000 Acre Feet

	Municipal and Industrial						Irrigation						
	Muni- cipal	Power	Minerals	Fish & Wildlife	Recreation	Stockpond Evap. & Livestock	M&I Total	Cons. Use	Incid.	Res. Evap.	Irrig. Total	Export	Grand Total
<u>- 1966-1980, INCLUSIVE</u>													
AMPA, WHITE AND GREEN RIVERS (GR)													
Savery-Pot Hook Project											15.0		15.0
Hayden Steam Plant Unit 2 (500 mw)		7.5					7.5						7.5
Subtotal		7.5					7.5				15.0		22.5
UNNISON AND UNCOMPAGRE RIVERS (UMS)													
Bostwick Park Project								3.3	0.5	0.3	4.0		4.0
Fruitland Mesa Project								23.3	4.2	0.5	28.0		28.0
Dallas Creek Project	5.3						5.3	23.2	4.3	4.2	31.7		37.0
Subtotal	5.3						5.3				63.7		69.0
OLORADO RIVER - MAIN STEM (UMS)													
Silt Project								4.5	0.8	0.7	6.0		6.0
Colorado-Big Thompson Project												18.0	18.0
Fryingpan-Arkansas Project												70.0	70.0
Rocky Ford-Highline Ditch Co. (USBR Tunnel)												4.0	4.0
Homestake and Cross Creek Diversions												26.0	26.0
Pueblo-Eagle River												6.0	6.0
Denver-Blue, Fraser, Williams Fork, Eagle and Piney Rivers												110.0	110.0
Subtotal											6.0	234.0	240.0
OLORES RIVER (SJ-C)													
Dolores Project	3.0						3.0				84.3		87.3
TOTAL 1966-1980	8.3	7.5					15.8				169.0	234.0	418.8
<u>I - 1981-2000, INCLUSIVE</u>													
OLORADO RIVER - MAIN STEM (UMS)													
West Divide Project (26.8 oil shale No. 1)	4.0		22.8				26.8	43.4	5.2	1.0	49.6		76.4
Homestake and Cross Creek Diversions												45.0	45.0
Colorado Springs-Blue River												8.0	8.0
Denver-Blue, Fraser, Williams Fork, Eagle & Piney Rivers												150.0	150.0
Englewood - Moffat Tunnel												10.0	10.0
Twin Lakes Canal & Reservoir Co.												9.0	9.0
Subtotal	4.0		22.8				26.8				49.6	222.0	298.4
ANIMAS, LA PLATA AND SAN MIGUEL RIVERS													
Animas-La Plata Project (SJ-C) (5)	3.0	22.5	15.0				40.5				71.8		112.3
San Miguel Project (UMS) (6)	1.1	15.0	9.5	0.5			26.1	52.6		6.3	58.9		85.0
Subtotal	4.1	37.5	24.5	0.5			66.6				130.7		197.3
	6.0		32.2				38.2						38.2
	3.0		17.0				20.0						20.0
	14.1		79.5				131.6						533.9
TOTAL 1981-2000	11.1	37.5	64.3	0.5			113.4				180.3	222.0	515.7

(5) Includes Southern Ute Steam Plant @ 1500 mw and coal hydrogenation products plant using 15.0.
(6) Includes Nucla steam @ 1000 mw and potash plant.

TOTAL 1965 DEPLETIONS

TOTAL PRESENT (1965) DEPLETIONS AUTHORIZED
OR COMMITTED
1966-1980 Depletions
1981-2000 Depletions
TOTAL

Municipal and Industrial							Irrigation						
Muni- cipal	Power	Minerals	Fish & Wildlife	Recreation	Stockpond Evap. & Livestock	M&I Total	Cons. Use	Incid.	Res. Evap.	Irrig. Total	Export	Grand Total	Cumul. Total
15.9	3.2	16.9	2.7	0.7	20.7	60.1				1217.1	429.4	1706.6	1706.6
8.3	7.5					15.8				169.0	234.0	418.8	2125.4
14.1	37.5	79.5	0.5			131.6				180.3	222.0	533.9	2659.3
38.3	48.2	96.4	3.2	0.7	20.7	207.5				1566.4	885.4	2659.3	

COLORADO RIVER BASIN ESTIMATED POTENTIAL DEPLETIONS CHARGEABLE TO COLORADO
Units - 1,000 Acre Feet

- 1966-1980, INCLUSIVE														
M&I Development for Requirements	0.9		2.6	36.1		4.3	43.9						43.9	2703.2
Private Irrigation - 1.0 (GR), 4.0 (UMS)											5.0		5.0	2708.2
I - 1981-2000, INCLUSIVE														
M&I Development for Requirements	5.7		1.3		0.2	5.5	12.7						12.7	2720.9
Private Irrigation - 3.0 (GR), 7.0 (UMS), 6.0 (SJ-C)											16.0		16.0	2736.9
Hayden Steam Plant Unit 3 (1000 mw) (GR)		15.0					15.0						15.0	2751.9
Battlement Mesa (UMS)	1.0						1.0				12.0		13.0	2764.9
Yellow Jacket (18.2 Oil Shale No. 2 postponed to 2001) (GR)				0.1	0.2		0.4 ⁽⁷⁾	22.9	3.5	1.7	28.1		28.5	2793.4
Milner Steam Plant (1000 mw) (GR)		15.0					15.0						15.0	2808.4
Bluestone Project - Phase I (22.0 Oil Shale No. 1) (UMS)	3.0		19.0				22.0	1.2	0.3	0.5	2.0		24.0	2832.4
Grand Mesa Project (UMS)								20.0	3.0	1.0	24.0		24.0	2856.4
Craig Steam Plant (1000 mw) (GR)		15.0					15.0						15.0	2871.4
Basalt Project (10.0 Oil Shale No. 1) (UMS)	1.0		9.0				10.0				11.0		21.0	2892.4
Lower Yampa Project (Juniper and Great Northern) (GR)											102.0		102.0	2994.4
Upper Gunnison Project (Tomichi, East & Ohio) (UMS)											10.0		10.0	3004.4
Rangely Steam Plant (1000 mw) (GR)		15.0					15.0						15.0	3019.4
Balance of Private Irrig. (UMS)											1.0		1.0	3020.4
North Fork Steam Plant (2500 mw) (UMS)		37.5					37.5						37.5	3057.9
Coal Basin Steam Plant - (Redstone) (500 mw) (UMS)		7.5					7.5						7.5	3065.4
Four Counties Export - Yampa (GR)												40.0	40.0	3105.4
Uncompahgre Project Extension (UMS)													15.0	3120.4
II - 2001-2020, INCLUSIVE														
Reductions in Mineral Requirements (4.1 (GR) and 0.2 (SJ-C) and M&I Development	20.1		-3.8		0.5	5.3	22.1						22.1	3142.5
Private Irrigation - 4.0 (GR), 10.0 (UMS) and 18.0 (SJ-C)											32.0		32.0	3174.5
Middle Park Project (Troublesome, Rabbit Bar and Azure) (UMS)							14.0				15.0		29.0	3203.5
Upper Yampa Project (Wessels, Hayden, Mesa, Toponas) (GR)													63.0	3266.5
Eagle Divide Project (Eagle Divide & Gypsum) (UMS)													21.0	3287.5

7) Flood protection 0.1.

COLORADO RIVER BASIN ESTIMATED POTENTIAL DEPLETIONS CHARGEABLE TO COLORADO
Units - 1,000 Acre Feet

Page 4

	Municipal and Industrial						Irrigation					Grand Total	Cumul. Total
	<u>Municipal</u>	<u>Power</u>	<u>Minerals</u>	<u>Fish & Wildlife</u>	<u>Recreation</u>	<u>Stockpond Evap. & Livestock</u>	<u>M&I Total</u>	<u>Cons. Use</u>	<u>Incid.</u>	<u>Res. Evap.</u>	<u>Irrig. Total</u>	<u>Export</u>	
III - 2001-2020, INCLUSIVE, Cont'd.													
Bluestone Project Phase 2 (UMS)							36.0					36.0	3323.5
Upper San Juan River Export to Rio Grande Basin (SJ-C)													
Yellow Jacket Project (Oil Shale No. 2) (GR)	3.0											12.0	3335.5
General Oil Shale No. 2 (GR)	11.0		15.2				18.2						3353.7
Potential Transmountain Diversions			67.8				78.2						3432.5
Burns Project (UMS)												422.5	3855.0
Harsha & Cataract Lake Projects (UMS)												6.0	3861.0
Fraser Project (UMS)												8.0	3869.0
Flat Tops Project (GR)												4.0	3873.0
De Beque Project (UMS)												32.0	3905.0
Woody Creek Project (UMS)												47.0	3952.0
Gateview Project (UMS)												1.0	3953.0
Pine Creek Project (UMS)												1.0	3954.0
Goddard Mesa Project (UMS)												4.0	3958.0
Kannah Creek Project (UMS)												1.0	3959.0
North Delta Project (UMS)												14.0	3973.0
Additional Transmountain Diversions												1.0	3974.0
												113.0	4087.0

Note: GR = Green River Subregion.
UMS = Upper Main Stem.
SJ-C = San Juan - Colorado.

000246

ADDITION TO TIPTON & KALMBACH
STUDY NO. 22 U. S. I. D. DEPLETIONS & DELIVERIES (1906-65)

Est. 1966
1472000

STUDY YEAR	WATER YEAR	VIRGIN FLOW	BASIC DEPLETION	DEPLETION FACTOR	DEPLETION DEMAND	CENTRAL'S PROPOSED 750 LESS DENVER'S BLUE RIVER PROJECTION	TOTAL RESULTING DEPLETION	UPPER BASIN RESERVOIR CONTENT	LEE FERRY DELIVERY	UPPER BASIN SPILL
1966	1906	19121	2787	1.13	3162	724	3886	9499	8833	0
1967	1907	23402	2946	1.27	3762	705	4467	19758	8676	0
1968	1908	12856	3105	.92	2878	705	3583	20378	8653	0
1969	1909	23275	3264	1.27	4155	704	4859	29000	8682	1112
1970	1910	14248	3423	.97	3331	704	4035	29000	8741	1472
1971	1911	16028	3583	1.03	3698	703	4401	29000	8794	2833
1972	1912	20520	3742	1.18	4420	702	5122	29000	8859	6539
1973	1913	14473	3901	.98	3825	702	4527	29000	8877	1069
1974	1914	21222	4060	1.20	4891	701	5592	29000	8855	6775
1975	1915	14027	4220	.96	4075	700	4775	28642	9610	0
1976	1916	19201	4278	1.13	4867	696	5563	29000	9555	3725
1977	1917	24037	4337	1.29	5630	692	6322	29000	9500	8215
1978	1918	15364	4396	1.01	4440	688	5128	29000	9446	790
1979	1919	12462	4454	.91	4070	684	4754	27317	9391	0
1980	1920	21951	4513	1.22	5546	680	6226	29000	9336	4706
1981	1921	23015	4572	1.26	5779	676	6455	29000	9282	7278
1982	1922	18305	4630	1.10	5129	672	5801	29000	9227	3277
1983	1923	18269	4689	1.10	5189	668	5857	29000	9172	3240
1984	1924	14201	4748	.97	4612	664	5276	28807	9118	0
1985	1925	13033	4806	.93	4483	660	5143	27634	9063	0
1986	1926	15853	4865	1.02	4993	656	5649	28830	9008	0
1987	1927	18616	4924	1.11	5505	652	6157	29000	8954	3335
1988	1928	17279	4982	1.07	5349	648	5997	29000	8899	2383
1989	1929	21428	5041	1.21	6107	644	6751	29000	8844	5833
1990	1930	14885	5100	.99	5070	640	5710	29000	8790	385
1991	1931	7769	5133	.75	3890	635	4525	23473	8771	0
1992	1932	17243	5166	1.07	5540	630	6170	25794	8752	0
1993	1933	11356	5199	.87	4559	626	5185	23232	8733	0
1994	1934	5640	5232	.68	3595	624	4219	15939	8714	0
1995	1935	11549	5265	.88	4651	620	5271	13522	8695	0
1996	1936	13800	5298	.95	5076	616	5692	12954	8676	0
1997	1937	13740	5331	.95	5097	612	5709	12328	8657	0
1998	1938	17545	5364	1.08	5806	608	6414	14821	8638	0
1999	1939	11075	5397	.86	4683	604	5287	11990	8619	0
2000	1940	8601	5430	.78	4265	600	4865	7126	8600	0
2001	1941	18148	5442	1.10	6000	596	6596	10090	8588	0
2002	1942	19125	5454	1.13	6191	592	6783	13856	8576	0
2003	1943	13103	5467	.93	5111	588	5699	12695	8565	0
2004	1944	15154	5479	1.00	5496	584	6080	13216	8553	0
2005	1945	13410	5491	.94	5191	580	5771	12314	8541	0
2006	1946	10426	5504	.84	4657	576	5233	8977	8530	0
2007	1947	15473	5516	1.01	5592	572	6164	9768	8518	0
2008	1948	15613	5528	1.01	5630	568	6198	10677	8506	0
2009	1949	16376	5541	1.04	5783	564	6347	12211	8495	0
2010	1950	12894	5553	.92	5154	560	5714	10908	8483	0
2011	1951	11647	5565	.88	4905	556	5491	8593	8471	0
2012	1952	20665	5578	1.18	6616	552	7168	13630	8460	0
2013	1953	10636	5590	.85	4769	548	5317	10501	8448	0
2014	1954	7661	5602	.75	4226	544	4770	4956	8436	0
2015	1955	9188	5615	.80	4520	540	5060	659	8425	0
2016	1956	10749	5627	.85	4822	536	5358	0	6050	0

000248

STUDY NUMBER 22
COLORADO RIVER - THOUSANDS OF ACRES
PERIOD 1906 - 1965

STUDY YEAR	WATER YEAR	VIRGIN FLOW	BASIC DEPLETION	DEPLETION FACTOR	DEPLETION DEMAND	DEPLETION SHORTAGE	RESULTING DEPLETION	UPPER BASIN RESERVOIR CONTENT	LEE FERRY DELIVERY	UPPER BASIN SPILL	NET GAIN LEE FERRY TO HOOVER	INFLOW TO LAKE MEAD		
2017	1957	20096	5639	1.16	6582	532	7114	6582	17959	4,581	8401	0	633	9034
2018	1958	16490	5652	1.04	5920	528	6448	5920	20139	6,233	8390	0	632	9022
2019	1959	8562	5664	.78	4442	524	4966	4442	15880	1,451	8378	0	631	9009
2020	1960	11230	5676	.87	4954	520	5474	4954	13708	0	8366	7,207	630	8995
2021	1961	8470	5689	.78	4444	516	4960	4444	9458	0	8355	3,510	629	8984
2022	1962	17170	5701	1.07	6100	512	6612	6100	12184	0	8343	10,068	628	8971
2023	1963	8360	5713	.77	4442	508	4950	4442	7769	0	8331	3,410	627	8958
2024	1964	10000	5726	.83	4764	504	6268	4764	4685	0	8320	4,732	626	8946
2025	1965	17500	5738	1.08	6203	500	6703	6203	3673	0	8308	10,797	625	8933
MEAN		15058	4965	.99	4911	0	4911	22049	8737	1650	663	10734		

ADDITION TO TIPTON & KALMBACH INC.
WATER SUPPLIES OF THE COLORADO RIVER
STUDY NO. 23 U. S. I. D. DEPLETIONS 8.25 MAF DELIVERY (1914-64)

642000

STUDY YEAR	WATER YEAR	VIRGIN FLOW	BASIC DEPLETION	DEPLETION FACTOR	DEPLETION DEMAND	CENTRAL'S PROPOSED 750 LESS DENVER'S BLUE RIVER PROJECTION	TOTAL RESULTING DEPLETION	UPPER BASIN RESERVOIR CONTENT	LEE FERRY DELIVERY	UPPER BASIN SPILL
1966	1914	21222	2787	1.00	2787	724	3511	11976	8833	0
1967	1915	14027	2946	1.00	2946	705	3651	13676	8676	0
1968	1916	19201	3105	1.00	3105	705	3810	20414	8653	0
1969	1917	24037	3264	1.00	3264	704	3968	31818	8665	0
1970	1918	15364	3423	1.00	3423	704	4127	32000	8720	2335
1971	1919	12462	3583	1.00	3583	703	4286	31434	8742	0
1972	1920	21951	3742	1.00	3742	702	4444	32000	8810	8131
1973	1921	23015	3901	1.00	3901	702	4603	32000	8877	9535
1974	1922	18305	4060	1.00	4060	701	4761	32000	8855	4689
1975	1923	18269	4220	1.00	4220	700	4920	32000	8250	5099
1976	1924	14201	4278	1.00	4278	696	4974	32000	8250	977
1977	1925	13033	4337	1.00	4337	692	5029	31754	8250	0
1978	1926	15853	4396	1.00	4396	688	5084	32000	8250	2273
1979	1927	18616	4454	1.00	4454	684	5138	32000	8250	5228
1980	1928	17279	4513	1.00	4513	680	5193	32000	8250	3836
1981	1929	21428	4572	1.00	4572	676	5248	32000	8250	7930
1982	1930	14885	4630	1.00	4630	672	5302	32000	8250	1333
1983	1931	7769	4689	1.00	4689	668	5357	26162	8250	0
1984	1932	17243	4748	1.00	4748	664	5412	29743	8250	0
1985	1933	11356	4806	1.00	4806	660	5466	27383	8250	0
1986	1934	5640	4865	1.00	4865	656	5521	19252	8250	0
1987	1935	11549	4924	1.00	4924	652	5576	16975	8250	0
1988	1936	13800	4982	1.00	4982	648	5630	16895	8250	0
1989	1937	13740	5041	1.00	5041	644	5685	16700	8250	0
1990	1938	17545	5100	1.00	5100	640	5740	20255	8250	0
1991	1939	11075	5133	1.00	5133	635	5768	17312	8250	0
1992	1940	8601	5166	1.00	5166	630	5796	11867	8250	0
1993	1941	18148	5199	1.00	5199	626	5825	15940	8250	0
1994	1942	19125	5232	1.00	5232	624	5856	20959	8250	0
1995	1943	13103	5265	1.00	5265	620	5885	19927	8250	0
1996	1944	15154	5298	1.00	5298	616	5914	20917	8250	0
1997	1945	13410	5331	1.00	5331	612	5943	20134	8250	0
1998	1946	10426	5364	1.00	5364	608	5972	16338	8250	0
1999	1947	15473	5397	1.00	5397	604	6001	17560	8250	0
2000	1948	15613	5430	1.00	5430	600	6030	18893	8250	0
2001	1949	16376	5442	1.00	5442	596	6038	20981	8250	0
2002	1950	12894	5454	1.00	5454	592	6046	19579	8250	0
2003	1951	11647	5467	1.00	5467	588	6055	16921	8250	0
2004	1952	20665	5479	1.00	5479	584	6063	23273	8250	0
2005	1953	10636	5491	1.00	5491	580	6071	19588	8250	0
2006	1954	7661	5504	1.00	5504	576	6080	12919	8250	0
2007	1955	9188	5516	1.00	5516	572	6088	7769	8250	0
2008	1956	10749	5528	1.00	5528	568	6096	4172	8250	0
2009	1957	20096	5541	1.00	5541	564	6105	9913	8250	0
2010	1958	16490	5553	1.00	5553	560	6113	12040	8250	0
2011	1959	8562	5565	1.00	5565	556	6121	6231	8250	0
2012	1960	11230	5578	1.00	5578	552	6130	3081	8250	0
2013	1961	8470	5590	1.00	5590	548	6138	0	5413	0
2014	1962	17170	5602	1.00	5602	544	6146	0	11024	0
2015	1963	8360	5615	1.00	5615	540	6155	0	2205	0
2016	1964	10000	5627	1.00	5627	536	6163	0	3837	0

ADDITION TO TIPTON & KALMBACH INC.
WATER SUPPLIES OF THE COLORADO RIVER (THOUSANDS OF ACRE-FEET)
STUDY NO. 7 U. S. I. D. DEPLETIONS 8.25 MAF DELIVERY (1930-64)

052000

STUDY YEAR	WATER YEAR	VIRGIN FLOW	BASIC DEPLETION	DEPLETION FACTOR	DEPLETION DEMAND	CENTRAL'S PROPOSED 750 LESS DENVER'S BLUE RIVER PROJECTION	TOTAL RESULTING DEPLETION	UPPER BASIN RESERVOIR CONTENT	LEE FERRY DELIVERY	UPPER BASIN SPILL
1966	1930	14885	2787	1.03	2880	724	3604	5546	8833	0
1967	1931	7769	2946	.77	2293	705	2998	1641	8676	0
1968	1932	17243	3105	1.11	3471	705	4176	6055	8653	0
1969	1933	11356	3264	.90	2961	704	3665	5116	8630	0
1970	1934	5440	3423	.70	2404	704	3108	0	7648	0
1971	1935	11149	3383	.91	3274	703	3977	0	7572	0
1972	1936	13000	3742	.99	3722	702	4424	916	8460	0
1973	1937	13740	3901	.99	3872	702	4574	1845	8237	0
1974	1938	17545	4060	1.12	4583	701	5284	6092	8014	0
1975	1939	11075	4220	.89	3735	700	4485	4432	8250	0
1976	1940	8601	4278	.80	3458	696	4154	1379	7500	0
1977	1941	18148	4337	1.15	4089	692	5681	6346	7500	0
1978	1942	19125	4396	1.18	5211	688	5899	11322	8250	0
1979	1943	13103	4454	.96	4319	684	5003	11172	8250	0
1980	1944	11154	4513	1.04	4707	680	5387	12689	8250	0
1981	1945	13510	4572	.98	4583	676	5159	12690	8250	0
1982	1946	10426	4630	.87	4045	672	4717	10149	8250	0
1983	1947	15473	4689	1.05	4945	668	5613	11759	8250	0
1984	1948	15613	4748	1.05	5030	664	5694	13509	8250	0
1985	1949	16376	4806	1.08	5224	660	5884	15751	8250	0
1986	1950	12894	4865	.96	4681	656	5337	15058	8250	0
1987	1951	11647	4924	.91	4517	652	5169	14286	8250	0
1988	1952	20665	4982	1.24	6181	648	6829	18872	8250	0 18,791
1989	1953	10636	5041	.88	4142	644	5086	16372	8250	0 16,091
1990	1954	7661	5100	.77	3630	640	4590	10,912	8250	0 10,912
1991	1955	9188	5133	.82	4126	635	4891	10,912	8250	0 10,912
1992	1956	10749	5166	.88	4573	630	5203	10,912	8250	0 10,912
1993	1957	20096	5199	1.22	6344	626	6970	20,096	8250	0 20,096
1994	1958	16490	5232	1.09	5708	624	6332	16,490	8250	0 16,490
1995	1959	8562	5265	.80	4243	620	4868	8,562	8250	0 8,562
1996	1960	11230	5298	.90	4781	616	5397	11,230	8250	0 11,230
1997	1961	8470	5331	.80	4283	612	4895	8,470	8250	0 8,470
1998	1962	17170	5364	1.11	5982	608	6590	17,170	8250	0 17,170
1999	1963	8360	5397	.79	4315	604	4919	8,360	8250	0 8,360
2000	1964	16000	5430	.85	4661	600	5261	16,000	8250	0 16,000

18,791 16,091 10,912 20,096 8,562 11,230 8,470 17,170 8,360 16,000

COLORADO RIVER BASIN
PRESENT DEPLETIONS CHARGEABLE TO COLORADO
Units - 1,000 Acre Feet

		Transmountain Diversions	Irrig., M&I, & Res. Evap.	Total
Yampa & Green Rivers	(a)		65	65
Hayden Steam Plant			4	4
White River	(a)		34	34
Gunnison River	(b)		407	407
Smith Fork Project	(c)		6	6
Paonia Project	(c)		10	10
Colorado River - Main Stem	(d)		481	481
Collbran Project	(c)		7	7
Pueblo-Eagle River Diversions		8		8
Colorado-Big Thompson Project		260		260
Small Ditches		1		1
Colorado Springs-Blue River		15		15
Denver-Blue River		45		45
Denver-Fraser River		65		65
Denver-Williams Fork		10		10
Busk-Ivanhoe Tunnel		5		5
Independence Pass Tunnel		38		38
Grand River Ditch		20		20
Silt Project	(c)		6	6
Homestake Creek Diversions		33		33
Main Stem Res. Evaporation	(c)		150	150
San Juan & Dolores Rivers	(b)	4	285	289
Florida Project	(c)		16	16
TOTAL PRESENT		504	1,471	1,975

(a) Engineering Advisory Committee Report.

(b) Jex Report.

(c) USBR Information and Reports.

(d) SCS Estimate as of 1960 adjusted to 1968 as shown, and includes Little Dolores River Basin.

Transmountain Diversions are from records and estimates of Colorado Springs, Denver Board of Water Commissioners, Colorado State Engineer and Colorado Water Conservation Board.

000253

COLORADO RIVER BASIN
ESTIMATED POTENTIAL DEPLETIONS CHARGEABLE TO COLORADO
(Subject to Adjustment)
Units - 1,000 Acre Feet

Project	Oil Shale	Total Irrig., M&I, & Res. Evap.	Cumulative Total
Total - Present, Authorized & Committed			3,101
Hayden Steam Plant		4	3,105
*Battlement Mesa		12	3,117
*Yellow Jacket		47	3,164
*Bluestone - Phase 1		24	3,188
Bluestone - Phase 2		36	3,224
*Grand Mesa		23	3,247
*Upper Gunnison (Tomichi Creek, East River & Ohio Creek)		10	3,257
*Basalt		26	3,283
*Lower Yampa (Juniper & Great Northern)		102	3,385
Middle Park (Troublesome, Rabbit Ear & Azure)		29	3,414
Upper Yampa (Wessels, Hayden Mesa & Toponas)		63	3,477
Eagle Divide (Eagle Divide & Gypsum)		19	3,496
Upper San Juan River (From Jex Report)		6	3,502
Four Counties Export - Yampa		40	3,542
Potential Oil Shale Uses	34	34	3,576
Potential Transmountain Diversions (Denver)		130	3,706

Colorado Allocation by Upper Basin Compact : $7,450 \times 51.75\% = 3,855$.
Supply Indeterminate.

Additional Oil Shale water will be available from the Yellow Jacket and Bluestone Projects.

*Feasibility study in progress.

CWCB/mb
8/26/68

ESTIMATED FUTURE DEPLETION OF THE COLORADO RIVER BASIN

State of Wyoming
(Units: 1000 Acre-Feet Per Year)

	Present 1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
A. Out of Basin Exports															
1. Cheyenne - Laramie	7.0	7.0	7.0	7.0	7.0	7.0	7.0	25.0	25.0	25.0	25.0	25.2	31.0	31.0	31.0
2. Other (Sublette)													50.0	75.0	100.0
Subtotal	7.0	7.0	7.0	7.0	7.0	7.0	7.0	25.0	25.0	25.0	25.0	25.2	81.0	106.0	131.0
B. In Basin Agriculture Uses															
1. Irrigation *	276.0	277.0	279.0	281.0	286.0	288.0	293.0	300.0	307.0	313.0	320.0	325.0	331.0	336.0	341.0
2. Stock Water	2.0	2.0	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3
Subtotal	278.0	279.0	281.1	283.1	288.1	290.1	295.2	302.2	309.2	315.2	322.2	327.3	333.3	338.3	343.3
C. In Basin Coal Development															
1. Steam Electric	10.7	10.7	18.2	25.7	33.2	33.2	33.2	40.7	40.7	48.2	48.2	55.7	55.7	63.2	63.2
2. Synthetic Liquid Fuels & Coking	2.0	2.3	2.6	2.9	3.1	3.4	3.7	4.0	4.9	5.9	6.9	7.8	8.8	9.7	10.7
Subtotal	12.7	13.0	20.8	29.6	36.3	39.6	36.9	44.7	45.6	54.1	55.1	63.5	64.5	72.9	73.9
D. In Basin Oil Shale		1.3	2.7	4.0	5.4	6.7	8.1	9.4	9.6	9.9	10.1	10.3	10.6	10.8	11.0
E. In Basin Municipal and Other Industrial Uses															
1. Municipal and Domestic	3.3	3.3	3.4	3.5	3.5	3.6	3.7	3.8	3.8	3.9	3.9	4.0	4.0	4.1	4.1
2. Other Industrial	16.0	16.5	16.9	17.3	18.3	18.3	18.7	19.2	19.5	19.9	20.2	20.6	20.9	21.5	21.7
3. Seedskadee Wildlife Refuge	4.0	8.0	12.0	16.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Subtotal	23.3	27.8	32.3	36.8	41.8	41.9	42.4	43.0	43.3	43.8	44.1	44.6	44.9	45.6	45.8
TOTAL	321.0	328.1	343.9	360.5	378.6	385.3	389.6	424.3	457.7	448.0	456.5	470.9	534.3	573.6	605.0

*Includes reservoir evaporation

Estimated Colorado River Depletions In Acre-Feet

LDMorrill-12/14/73

	1	2	3	4	5	6	7	8	9	10	11	12
									1970	Type I		
									State Water			
									Plan	1965	1973	1974
1	Out of Basin Exports								418,000	429,400	470,000	521,500
2	Agricultural Use (Including Reservoir Evaporation, Livestock & Stockpond Evaporation)								277,000	277,800	274,800	274,800
3	Oil Shale Use									0	0	0
4	Other Minerals & Coal Use (Including Coal For Steam Power Plants)								89,000	20,100	20,100	20,100
5	Municipal & Other Industrial Use									15,900	15,900	15,900
6	Fish & Wildlife & Recreation (Including Initial Filling Of Permanent Pools & Evaporation)									3,400	3,400	3,400
7									1,773,400	1,706,600	1,751,200	1,809,300
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												
23												
24												
25												
26												
27												

Vern - These are the best estimates I can make. They vary a little from what

chart 1

13	14	15	16	17	18	19	20	21	22	23	24	25
1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985		
520100	532700	601700	611700	620700	671900	688900	695900	702900	707900	712900		
241800	1241800	1241800	1241800	1241800	1241800	1241800	1275300	1282500	1336500	1341700		
0	0	0	10000	10000	20000	25000	30000	35000	40000	45000		
20100	23400	25100	34600	35800	35800	38200	39900	41800	45400	46600		
15900	15900	15900	16200	17000	18000	30700	31900	34000	35300	36700		
3400	3400	3400	3400	3400	25000	134600	65200	9400	9400	9400		
804300	817200	887900	917700	1928700	2012500	2159200	2137900	2105600				
					1940900	20340	2082100					

at I gave you in Las Vegas because of some better information

Merry Christmas

Harry My mill

Estimated Colorado River Depletions

Type I		1965	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1990	1995
Total Type I		1706600															
Taconics																	
Harris-Lakes			3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300
Boschwick Park			4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
Butler Creek										31600	49500	25500	27000	28200	29400		
SIT			6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
Frye Park			38000	38000	38000	38000	48000	48000	48000	59200	67200	69200	69200	69200	69200	69200	69200
Rucker Field Hydro			3000	4000	4000	1000	1000	3000	4000	2000	2000	2000	2000	2000	2000	2000	2000
Grand Island (Boschwick Park) (SIT)			30000	30000	30000	30000	30000	30000	30000	50000	50000	50000	50000	50000	50000	50000	50000
Dwyer White Beach			31000	30000	30000	31000	30000	45000	54000	64000	81000	82000	95000	120000	125000	125000	125000
Dwight Project										130000	161000	164000	373000	407000			
Frye City (Whaley Gap)							54000	54000	54000	54000	54000	54000	54000	54000	54000		
Cedar Bay (Thompson)																	
Sandy Pt. Hook															33500	36600	
Frontland Mass													1700	28000	38000		
Cedar Point							10000	10000	25000	25000	30000	35000	40000	45000			
Cedar Point Plant																	
Hayden #2					3300	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000
Cedar Pt. White River										3600	3600	3600	3600	3600	3600	3600	3600
Cedar Pt. Garrison														2400	3600		
Cedar #1							5500	6700	6700	6700	6700	6700	6700	6700	6700	6700	6700
Cedar #2								4000	6000	6000	6000	6000	6000	6000	6000	6000	6000
Eastern City Sites												3400	3600	3600	3600		
Additional after 1965			50600	100700	100700	116600	138300	212800	22000	312500	497800	514600	585200	484800	495700		
Total Depletions			1759200	1808300	1810300	1833200	1897900	1919700	1933600	2019400	2160900	2221200	2291800	2191400	2200300		
Type I Study Estimates									9171300					2667000			
Type I Estimates																	
Sent to Vroom Valentin 1911475			429700	470000	501100	520100	532700	601700	611700	820700	671900	688900	695900	709900	707900	712900	727900
Actual			467900	489740	476600	570000	494780										

000258

LDM - 11/28/73

River Discharge

[illegible]

1974-1975

COLORADO RIVER BASIN - DEPLETIONS TO COLORADO RIVER FLOWS

APR 1974 INCLUDED

652000

I. Upper Colorado River Basin

A. Out-of-Basin Exports

Depletions (Thousands of Acre-feet)
Present 1974 1975 1976 1977

1978 1979 1980 1981 1982 1983 1984 1985 1986 1987

Colorado	470	521	523	533	602
New Mexico	101	101	101	101	101
Utah	143	143	143	143	159
Wyoming	7	7	7	7	7
(Subtotals)	(721)	(772)	(774)	(784)	(869)

612	621	672	689	686	703	708	713	713	713
101	101	110	118	118	118	118	118	118	118
160	192	192	192	272	272	272	272	272	272
7	7	25	25	25	25	81	106	131	131
(880)	(921)	(999)	(1,024)	(1,111)	(1,118)	(1,123)	(1,184)	(1,209)	(1,234)

B. In-Basin Agricultural Use (incl. Res. Evap.)

Arizona	1,242	1,242	1,242	1,242	1,242
Colorado	100	100	113	154	205
New Mexico	542	543	546	550	556
Utah	218	279	281	283	288
Wyoming	(2,162)	(2,164)	(2,182)	(2,234)	(1,291)

1,242	1,242	1,242	1,242	1,275	1,282	1,336	1,342	1,342	1,342
251	317	373	397	397	397	397	397	397	397
575	576	581	593	596	629	632	688	620	625
290	295	302	309	315	322	327	333	338	343
(2,358)	(2,430)	(2,508)	(2,547)	(2,583)	(2,630)	(2,642)	(2,680)	(2,697)	(2,707)

C. In-Basin Coal Development (including Power Generation)

Arizona	20	20	20	23	25
Colorado	46	46	46	54	68
New Mexico	1	8	14	14	29
Utah	13	13	21	30	36
Wyoming	(80)	(87)	(101)	(124)	(158)

35	36	36	38	39	42	45	47	47	47
68	84	104	109	121	145	145	153	153	153
59	74	89	103	117	117	117	117	117	117
40	37	45	46	54	55	64	65	73	74
(202)	(231)	(274)	(296)	(341)	(359)	(371)	(382)	(390)	(391)

D. In-Basin Oil Shale Development

Colorado	0	0	0	0	0
Utah	0	0	0	0	0
Wyoming	0	1	3	4	5
(Subtotals)	(0)	(1)	(3)	(4)	(5)

10	10	20	25	30	35	40	45	45	45
0	0	9	9	9	9	9	9	9	9
7	8	9	10	10	10	10	11	11	11
(17)	(18)	(38)	(44)	(49)	(54)	(59)	(65)	(65)	(65)

E. Other In-Basin M & E Uses

Colorado	16	16	16	16	16
New Mexico	4	4	4	4	5
Utah	8	8	8	8	8
Wyoming	19	20	20	21	22
(Subtotals)	(47)	(48)	(48)	(49)	(51)

16	17	18	31	32	34	35	37	37	37
5	5	6	6	6	7	7	8	8	8
8	8	9	9	9	9	10	11	11	12
22	22	23	23	24	24	25	25	26	26
(51)	(52)	(56)	(69)	(71)	(74)	(77)	(81)	(82)	(84)

F. In-Basin Fish and Wildlife and Recreation Use

Colorado	3	3	3	3	3
New Mexico	13	13	13	14	14
Utah	24	24	24	24	24
Wyoming	4	8	12	16	20
(Subtotals)	(44)	(48)	(52)	(57)	(61)

3	3	25	135	65	9	9	9	9	9
14	15	15	15	16	16	16	17	17	18
24	24	24	24	24	24	24	24	24	24
20	20	20	20	20	20	20	20	20	20
(61)	(62)	(84)	(194)	(125)	(69)	(69)	(70)	(70)	(71)

G. Total Upper Basin Depletions

Arizona	1,751	1,802	1,804	1,817	1,883
Colorado	264	264	277	332	393
New Mexico	718	726	735	739	776
Utah	321	328	344	361	378
Wyoming					

1,918	1,929	2,013	2,160	2,137	2,165	2,173	2,193	2,193	2,193
439	522	608	645	668	683	683	693	693	693
826	874	914	930	1,027	1,060	1,064	1,041	1,053	1,059
386	389	424	433	448	456	471	535	574	605

TOTAL, All States

3,054	3,120	3,160	3,249	3,435
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3,569	3,714	3,959	4,168	4,280	4,304	4,391	4,462	4,513	4,552
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Values for 1986-1987 for Colorado were assumed to be equal to 1985 values.
CRSP, Desposition, Evaporation and "Salvage" not included.

II. Lower Colorado River Basin^{a/}

Depletions (Thousands of Acre-feet)

Present ^{b/}	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
A. Out-of-Basin Exports														
California	4,712	4,712	4,500	4,350	4,300	4,300	4,280	4,280	4,250	4,300	4,330	4,310	4,100	3,731
Utah ^{d/}	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotals	4,712	4,712	4,500	4,350	4,300	4,300	4,280	4,280	4,250	4,300	4,330	4,310	4,100	3,731
B. In-Basin Agricultural Use (incl. Res. Evap)														
Arizona	910	934	949	985	990	1,006	1,044	1,078	1,079	1,511	1,506	2,534	2,533	2,466
California	557	557	557	547	547	547	537	537	527	532	527	552	552	559
Nevada	10	12	12	13	13	14	15	16	17	17	18	18	19	20
New Mexico ^{e/}	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Utah ^{d/}	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotals	1,477	1,503	1,518	1,545	1,547	1,567	1,596	1,631	1,623	2,060	2,051	3,104	3,104	3,045
C. In-Basin Coal Development (including Power Generation)														
Arizona	0	0	0	0	0	0	0	0	0	0	0	0	0	0
California	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nevada	15	17	18	19	21	24	32	44	53	61	66	65	64	66
Subtotals	15	17	18	19	21	24	32	44	53	61	66	65	64	66
D. Other In-Basin M & I Uses^{e/}														
Arizona	13	14	16	17	19	21	23	25	27	65	74	118	197	214
California	1	1	1	1	1	6	6	12	22	45	56	67	80	95
Nevada	76	80	88	98	108	117	124	131	137	143	153	163	170	183
New Mexico ^{e/}	0	0	0	0	0	0	0	0	0	18	18	18	18	18
Utah ^{d/}	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotals	90	95	105	116	128	144	153	168	186	271	301	366	466	510
E. In-Basin Fish & Wildlife and Recreation Use														
Arizona	39	42	46	50	56	61	69	80	82	84	86	88	89	91
California	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nevada	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotals	39	42	46	50	56	61	69	80	82	84	86	88	89	91
F. Total Lower Basin Depletions														
Arizona	462	490	1,011	1,052	1,065	1,088	1,136	1,183	1,188	1,660	1,666	2,740	2,819	2,805
California	5,270	5,270	5,058	4,898	4,848	4,853	4,843	4,829	4,829	4,827	4,883	4,944	4,942	4,747
Nevada	101	109	118	130	142	155	171	191	207	221	227	246	255	267
New Mexico	0	0	0	0	0	0	0	0	0	18	18	18	18	18
Utah ^{d/}	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	6,333	6,369	6,187	6,080	6,055	6,096	6,150	6,203	6,224	6,726	6,804	7,953	8,034	7,831

Notes:

a. Only diversions from the mainstream are shown herein. Tributary uses below Lee Ferry are considered to be a depletion to the virgin flow in the same manner as Upper Basin depletions at Lee Ferry. The Imperial and Coachella Valleys are considered to be outside the basin.

b. "Present" means 1973 conditions.

c. New Mexico's ^{M&I} diversions from the mainstream, beginning in 1982, are for CAP's Hooker Reservoir. No other diversions.

d. Utah has no mainstream diversions.

e. California's M&I uses also include power generation (nuclear);

State of California COLORADO RIVER BASIN - DEPLETIONS TO COLORADO RIVER FLOWS

192000

Project Name or
Location of Depletion

Depletions (Thousands of Acre-feet)														
Present	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987

III. Total Upper & Lower Basin Depletions

Arizona	462	990	1,011	1,052	1,065	1,088	1,136	1,183	1,188	1,660	1,666	2,740	2,819	2,805	2,785
California	5,270	5,270	5,058	4,848	4,848	4,853	4,843	4,829	4,829	4,827	4,883	4,444	4,442	4,747	4,400
Colorado	1,751	1,802	1,804	1,817	1,888	1,918	1,929	2,013	2,160	2,137	2,185	2,173	2,143	2,143	2,143
Nevada	101	104	118	130	142	155	171	191	207	221	237	246	255	267	280
New Mexico	264	264	277	332	393	439	522	608	645	686	701	701	711	711	713
Utah	718	726	735	739	776	826	874	914	930	1,027	1,060	1,064	1,041	1,053	1,059
Wyoming	321	328	344	361	378	386	389	424	433	448	456	471	535	574	605
Total	9,387	9,489	9,347	9,329	9,490	9,665	9,864	10,162	10,392	11,006	11,108	12,344	12,446	12,350	12,035

UPPER COLORADO RIVER BASIN DEPLETIONS
Depletions (Thousands of Acre-feet)

Vern Valentine Task Force
March, 1974

YEAR	Out-of Basin Exports	In-Basin Agricultural Use	In-Basin Coal Development	In-Basin Oil Shale Development	Other In-Basin M&I Uses	In-Basin Fish and Wildlife & Recreation Use	Total Upper Basin Depletions
Present	721	2,168	81	0	49	46	3,065
1974	772	2,171	97	1	50	50	3,141
1975	774	2,189	124	3	50	54	3,194
1976	784	2,241	155	4	52	59	3,295
1977	869	2,299	192	5	54	63	3,482
1978	880	2,366	236	17	54	63	3,616
1979	921	2,438	265	18	55	64	3,761
1980	999	2,517	308	38	59	86	4,007
1981	1,024	2,550	330	44	72	196	4,216
1982	1,111	2,592	375	49	75	127	4,329
1983	1,118	2,639	393	54	78	71	4,353
1984	1,123	2,701	405	59	81	71	4,440
1985	1,184	2,689	416	65	85	72	4,511
1986	1,209	2,706	424	65	86	72	4,562
1987	1,234	2,716	425	65	88	74	4,602

NOTES:

"Present" means 1973 conditions.

Upper Basin CRSP Reservoir Evaporation and "Salvage" not included.

292000

Vern Valentine Task Force
March, 1974

LOWER COLORADO RIVER BASIN DEPLETIONS

892000

Year	Depletions (Thousands of Acre Feet)					Total Lower Basin Depletions
	Out-of Basin Exports	In-Basin Agricultural Use	In-Basin Coal Development	Other In-Basin M & I Uses	In-Basin Fish and Wildlife and Recreation Use	
Present	4,712	1,477	15	90	39	6,333
1974	4,712	1,503	17	95	42	6,369
1975	4,500	1,518	18	105	46	6,187
1976	4,350	1,545	19	116	50	6,080
1977	4,300	1,550	21	128	56	6,055
1978	4,300	1,567	24	144	61	6,096
1979	4,300	1,596	32	153	69	6,150
1980	4,280	1,631	44	168	80	6,203
1981	4,280	1,623	53	186	82	6,224
1982	4,250	2,060	61	271	84	6,726
1983	4,300	2,051	66	301	86	6,804
1984	4,330	3,104	65	366	88	7,953
1985	4,310	3,104	65	466	89	8,034
1986	4,100	3,072	64	510	91	7,837
1987	3,731	3,045	66	548	93	7,483

NOTES:

"Present" means 1973 conditions.

Only diversions from the mainstream are shown herein.

Mainstream losses and operational losses in conjunction with Treaty deliveries to Mexico not included.

The Imperial and Coachella Valleys are considered to be outside the Basin.

000264

Depletion comparisons
Western Colorado Projects
Office

December 6, 1974

Sheet 1 of 2

Project	Projected depletion at time of author- ization (1,000 acre-feet)	Depletion from Kauffman Report <u>1</u> / (1,000 acre-feet)	Latest depletion estimate (1,000 acre-feet)
<u>Authorized</u>			
Fruitland Mesa			
M&I	0	—	0
Irrigation	28.0	—	28.0
Total	28.0	26.0	28.0
Savery Pot-Hook			
M&I	0	—	0
Irrigation	26.6	—	26.6
Total	26.6	27.0	26.6
Dallas Creek			
M&I	6.0	—	37.4
Irrigation	31.0	—	7.5
Recreation	0	—	1.1
Total	37.0	46.0	46.0
Dolores			
Irrigation	84.3	—	85.0
M&I	3.0	—	6.0
Total	87.3	91.0	91.0
Animas LaPlata			
Irrigation	75.2	—	68.0 to 101.0
M&I	37.2	—	32.0 to 57.0
Total	112.4 <u>2</u> / ₁	134.0 <u>3</u> / ₁	100.0 to 158.0 <u>4</u>
San Miguel			
Irrigation	58.6	—	18.0 to 36.0
M&I	26.4	—	3.0 to 24.0
Total	85.0	16.0	21.0 to 60.0
West Divide			
M&I	26.6	—	50.0 to 100.0
Irrigation	49.8	—	26.0 to 50.0
Total	76.4	76.0	76.0 to 150.0
<u>Potential</u>			
Yellow Jacket			
M&I	—	—	65.0 to 84.0
Irrigation	—	—	10.0 to 16.0
Total	—	57.0	75.0 to 100.0

Project	Projected depletion at time of author- ization (1,000 acre-feet)	Depletion from Kauffman Report <u>1/</u> (1,000 acre-feet)	Latest depletion estimate (1,000 acre-feet)
Basalt			
M&I	--	--	2.0 to 6.0
Irrigation	--	--	.0 to 4.0
Total	--	--	2.0 to 10.0
Dominquez			
Power	--	--	8.0
M&I	--	--	.0 to 20.0
Recreation	--	--	8.0
Total	--	--	16.0 to 36.0

1/ From Table 13, page 45, in the report on Water for Energy in the Upper Colorado River Basin.

2/ Total including New Mexico depletion = 146,500 acre-feet.

3/ Includes 34,000 acre-feet of New Mexico depletion.

4/ Range of Colorado Depletions only

Present and Estimated Future Colorado River Depletions in Colorado
in Thousands of Acre-Feet

L.D.M. - 10/27/75

	Salinity Forum									
	1980				1985			1990		
	1973	Low	Moderate	High	Low	Moderate	High	Low	Moderate	High
Out of basin exports	480	605	650	680	640	680	715	700	730	730
In basin agricultural use	1245	1245	1245	1250	1255	1295	1345	1335	1365	1495
In basin coal development	20	35	40	50	40	55	55	65	105	120
In basin oil shale	0	15	20	45	25	50	60	95	110	125
Other in basin use	19	24	34	44	39	54	69	39	69	89
Total	1764	1924	1989	2069	1999	2134	2244	2234	2379	2559

	1980				1985				1990			
	State	PSIAC	Committee of 14	Energy Report	State	PSIAC	Committee of 14	Energy Report	State	PSIAC	Committee of 14	Energy Report
Out of basin exports	672	682	630	606	713	723	665	643	728	-	700	725
In basin agricultural use	1245	-	1248	-	1342	1345	1264	-	1384	-	1337	1492
In basin coal development	53	55	55	54	56	47	56	32	64	-	106	119
In basin oil shale	20	20	15	45	60	45	25	45	125	-	95	108
Other in basin use	41	43	22	-	67	46	37	-	88	-	42	-
Total	2031		1970		2238	2206	2047		2389		2280	

In addition to the depletions shown above, Colorado is charged with 51.75% of the evaporation from main stem reservoirs. This is estimated to average 269,100 acre-feet per year (51.75% of 520,000).

ESTIMATED DEPLETIONS OF COLORADO RIVER IN COLORADO

292000

IN THOUSANDS OF ACRE-FEET

	Type 1 1965	Morrill Salinity Forum 1973	1975	1980	1985	1990	1995	2000
Exports	429.4	480.0	540.6	679.6	778.6	823.6	868.6	913.6
Agriculture and Livestock	1237.8	1245.0	1197.6	1197.6	1280.7	1379.7	1379.7	1379.7
Coal and Thermal Plants	3.2	3.2	7.0	28.1	48.0	67.5	67.5	67.6
Other M&I (Including Minerals)	32.8	32.8	39.7	41.2	56.7	75.9	89.1	103.4
Fish, Wildlife and Recreation	3.4	3.0	15.2	16.1	21.0	25.2	26.1	27.1
Totals	1706.6	1764.0	1800.1	1962.6	2185.0	2371.9	2431.0	2491.4

Notes:

1975 exports from USGS report. Estimated future exports from estimates by the Denver Board of Water Commissioners (Denver), the Southeastern Colorado Water Conservancy District (Fryingpan-Arkansas), the Northern Colorado Water Conservancy District (5 cities), other water entities, and the environmental impact statement for the Fryingpan-Arkansas Project.

Water use by thermal electric plants and oil shale include use by plant workers and municipal users resulting from the increase in population as a result of the thermal plants, coal mining, and oil shale development. Oil shale development was assumed to be primarily by in-situ methods.

Fish, wildlife, and recreational uses include evaporation from single-purpose reservoirs and wildlife habitat installations of the U. S. Fish and Wildlife Service and the Colorado Division of Wildlife, and a proportionate share of evaporation from large multi-purpose reservoirs of the U. S. Bureau of Reclamation.

The 1975 Agriculture and Livestock use is the average of 1971 through 1975 agriculture depletions as reported by the U. S. Bureau of Reclamation in the publication entitled "Colorado River System Consumptive Uses and Losses 1971-1975." These figures are: 1971 - 1236.9, 1972 - 1236.8, 1973 - 1043.8, 1974 - 1304.3, 1975 - 1166.1; average of these five years is 1197.6.

L. D. Morrill
7/13/77

1975 data is what appears in the 1973 SCF report except that the report shows 1974 actual exports for 1975. 1980, 85, 87 data here don't compare at all to SCF report.

as 1976 base condition

Salinity Forum Projections Of Depletions In Upper Colorado River Basin In Millions Of Acre-Feet *

	1980	1985	1990
Low	3.689	3.892	4.145
Moderate	4.022	4.357	4.743
High	4.291	5.129	5.535

* Totals from estimates by individual states. Includes main stem reservoir evaporation of 500,000 acre-ft/yr.

Lee Ferry Virgin Flow In Millions Of Acre-Feet *

Years	Water Year	Less 8.225 **
81	1896-1977 - 14.7	6.475
63	1914-1977 - 14.3	6.075
46	1930-1977 - 13.1	4.875
11	1953-1964 - 11.6	3.375

* From Upper Colorado River Commission 28th annual report with addition of 1977 estimate of 5.3 MAF.

** 7.5 MAF to Lower Basin + .755 MAF as $\frac{1}{2}$ of Mexican Treaty obligation.

PRESENT
COLORADO DEPLETIONS
OF THE
COLORADO RIVER SYSTEM

Exports

Average Under
1979 Conditions^{1/}
(1000 AF)

Actual 1979^{2/}
(1000 AF)

Grand River Ditch	18.6	17.9
Eureka Ditch	.0	.1
Adams Tunnel	253.2	198.5
Berthoud Pass Ditch	.4	.4
Moffat Tunnel	62.6	55.7
Boreas Pass Ditch	.1	.2
Vidler Tunnel	.3	.6
Roberts Tunnel	90.7	73.8
Hoosier Pass Tunnel	8.2	9.9
Columbine Ditch	1.7	2.0
Ewing Ditch	1.1	1.6
Wurtz Ditch	2.9	4.3
Homestake Tunnel	15.4	30.8
Twin Lakes Tunnel	40.8	47.1
Boustead Tunnel	35.6	54.0
Busk-Ivanhoe Tunnel	5.5	6.7
Larkspur Ditch	.2	.2
Tarbell Ditch	.2	.3
Tabor Ditch	.7	1.3
Treasure Pass Ditch	.2	.4
Don la Font Ditches 1 & 2	.1	.2
Williams Creek - Squaw Pass Ditch	.2	.0
Pine River - Weminuche Pass Ditch	.2	.2
Weminuche Pass Ditch	1.3	1.2
TOTALS	540.2	507.4

Agriculture

Miscellaneous	1102.0	Unknown
Smith Fork	6.0	"
Paonia	10.0	"
Bostwick Park	3.2	"
Collbran	7.0	"
Silt	6.0	"
Florida	16.0	"
TOTALS	1150.2	

<u>Steam-Electric</u>	000270	Average Under 1979 Conditions ^{1/} (1000 AF)	Actual 1979 ^{2/} (1000 AF)
Hayden 1 & 2		5.4	5.4
Craig 1		4.6	4.6
Miscellaneous		<u>2.0</u>	<u>2.0</u>
		TOTALS	12.0
<u>Oil Shale</u>		.0	.0
<u>Coal Gasification</u>		.0	.0
<u>Municipal and Other Industrial</u>			
Miscellaneous		43.0	Unknown
<u>Fish and Wildlife</u>			
Miscellaneous		15.0 <i>was a depletion?</i>	Unknown
		GRAND TOTAL	1760.4 ^{3/}
			Incomplete

NOTES

- Figures in this column are estimates of the average annual depletions which would occur were 1979 conditions of development to be held constant over time. Exports are based upon USGS records for the period 1976-1979. Estimates for agriculture assume the average for 1971-1975 depletions (1198 KAF per year) as reported in the Bureau's Consumptive Losses and Uses Report less 48 KAF assumed reductions due to decreased acreage being irrigated. Estimates for the other uses are derived from various sources. Steam-electric is slightly higher than the estimate used in the "1976 Base Condition" in the 1978 SCF report due to the Craig No. 1 unit coming on line in 1979. The sum of M & I and F & W is higher than the "1976 Base Condition" because it was assumed that M & I has increased by 3,000 AF/year over the last few years (from 40,000 to 43,000 AF/year depletion).
- Figures in this column represent the actual depletions which occurred in water year 1979. Data on exports comes from USGS records. Data on steam-electric are estimates based on past use, it being assumed that consumption does not vary significantly from year to year. Where the word "unknown" has been entered, this indicates that there is no estimate available of actual 1979 depletions.

NOTES, Continued

3. By way of comparison, average annual depletions for the period 1971-75 as reported in the Bureau's Consumptive Losses and Uses Report were as follows:

Exports	483 KAF
Agriculture	1198
Steam-Electric	5
Oil Shale	0
Coal Gasification	0
M & I	38
F & W	<u>6</u>

TOTAL 1730 KAF

If the average annual depletions for exports for the period 1976-79 is substituted for the figure above while all other uses are assumed to remain constant, then the total would be 1787 KAF.

PROJECTED
COLORADO DEPLETIONS
OF THE
COLORADO RIVER SYSTEM^{10/}

Trend Projection

	1980	1985	1990	1995	2000
	(1000 AF/year)				
<u>Exports</u>					
1979 uses	540	540	540	540	540
Denver expansion ^{1/}	0	25	50	75	100
Fry-Ark completion ^{2/}	16	33	33	33	33
Homestake expansion ^{3/}	0	0	0	15	31
Windy Gap ^{4/}	0	0	15	30	54
Twin Lakes completion ^{5/}	5	10	10	10	10
Colorado Springs expansion ^{6/}	0	0	0	0	0
Englewood expansion	10	10	10	10	10
Pueblo expansion	3	3	3	3	3
TOTALS	574	621	661	716	781
<u>Agriculture</u>					
1979 uses	1150	1150	1150	1150	1150
Misc. reductions ^{7/}	0	-10	-20	-30	-40
Misc. increases	0	0	5	10	15
Dolores	0	0	74	74	74
Dallas Creek	0	0	5	5	5
Animas-La Plata	0	0	0	81	81
West Divide	0	0	0	0	11
San Miguel	0	0	0	0	0
Yamcolo	0	4	4	4	4
TOTALS	1150	1144	1213	1294	1300
<u>Steam-Electric</u>					
1979 uses	12	12	12	12	12
Craig No. 2	5	5	5	5	5
Craig No. 3	0	5	5	5	5
Unnamed unit(s)	0	0	5	10	15
TOTALS	17	22	27	32	37
<u>Oil Shale</u>					
1979 uses	0	0	0	0	0
Unnamed plant(s)	0	10	24	36	48
TOTALS	0	10	24	36	48
<u>Coal Gasification</u>					
1979 uses	0	0	0	0	0
Unnamed plant(s)	0	0	0	0	0
<u>Hydropower (reservoir evap.)^{8/}</u>					
1979 uses	0	0	0	0	0
Juniper-Cross Mtn.	0	0	0	70	70

000272

000273

	1980	1985	1990	1995	2000
	(1000 AF/year)				
<u>Municipal & Other Industrial^{9/}</u>					
1979 uses	43	43	43	43	43
Misc. increases	0	1	2	3	4
Dolores	0	0	4	4	4
Dallas Creek	0	0	11	11	11
Animas-La Plata	0	0	0	10	10
West Divide	0	0	0	0	27
TOTALS	43	44	60	71	99
<u>Fish and Wildlife</u>					
1979 uses	15	15	15	15	15
Dolores	0	0	3	3	3
Dallas Creek	0	0	1	1	1
Animas-La Plata	0	0	0	5	5
San Miguel	0	0	0	0	0
Misc. increases	0	1	2	3	4
TOTALS	15	16	21	27	28
GRAND TOTALS	1799	1857	2006	2246	2363

<u>Accelerated Projection</u>					
	1980	1985	1990	1995	2000
	(1000 AF/year)				
<u>Exports</u>					
1979 uses	540	540	540	540	540
Denver expansion ^{1/}	0	60	110	135	160
Fry-Ark completion ^{2/}	16	33	33	33	33
Homestake expansion ^{3/}	0	0	15	15	31
Windy Gap ^{4/}	0	0	30	30	54
Twin Lakes completion ^{5/}	5	10	10	10	10
Colo. Springs expansion ^{6/}	0	0	0	0	5
Englewood expansion	10	10	10	10	10
Pueblo expansion	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>
TOTALS	574	656	751	776	846

<u>Agriculture</u>					
1979 uses	1150	1150	1150	1150	1150
Misc. reductions ^{7/}	0	-5	-10	-15	-20
Misc. increases	0	5	10	20	30
Dolores	0	0	74	74	74
Dallas Creek	0	0	5	5	5
Animas-La Plata	0	0	81	81	81
West Divide	0	0	11	11	11
San Miguel	0	0	0	19	19
Yamcolo	0	4	4	4	4
TOTALS	1150	1154	1325	1349	1354

000274

	1980	1985	1990	1995	2000
	(1000 AF/year)				
<u>Steam-Electric</u>					
1979 uses	12	12	12	12	12
Craig No. 2	5	5	5	5	5
Craig No. 3	0	5	5	5	5
Unnamed unit(s)	<u>0</u>	<u>5</u>	<u>10</u>	<u>20</u>	<u>30</u>
TOTALS	17	27	32	42	52
<u>Oil Shale</u>					
1979 uses	0	0	0	0	0
Unnamed plant(s)	<u>0</u>	<u>10</u>	<u>48</u>	<u>66</u>	<u>84</u>
TOTALS	0	10	48	66	84
<u>Coal Gasification</u>					
1979 uses	0	0	0	0	0
Unnamed plant(s)	0	0	0	0	0
<u>Hydropower (reservoir evap.)^{8/}</u>					
1979 uses	0	0	0	0	0
Juniper-Cross Mtn.	0	0	70	70	70
Dominguez	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>25</u>
TOTALS	0	0	70	70	95
<u>Municipal & Other Industrial^{9/}</u>					
1979 uses	43	43	43	43	43
Misc. increases	0	1	2	3	4
Dolores	0	0	4	4	4
Dallas Creek	0	0	11	11	11
Animas-La Plata	0	0	10	10	35
West Divide	<u>0</u>	<u>0</u>	<u>15</u>	<u>27</u>	<u>27</u>
TOTALS	43	44	85	98	124
<u>Fish and Wildlife</u>					
1979 uses	15	15	15	15	15
Dolores	0	0	3	3	3
Dallas Creek	0	0	1	1	1
Animas-La Plata	0	0	5	5	5
San Miguel	0	0	0	2	2
Misc. increases	<u>0</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
TOTALS	15	16	26	29	30
GRAND TOTALS	1799	1907	2337	2430	2585

NOTES

1. Assumes increased diversions primarily through Roberts Tunnel.
2. Diversions will be through the Boustead Tunnel.

000275

NOTES, Continued

3. Diversions will be through the Homestake Tunnel.
4. Diversions will be through the Adams Tunnel.
5. Diversions will be through the Twin Lakes (Independence Pass) Tunnel.
6. Diversions will be through the Hoosier Pass Tunnel.
7. It is anticipated that some acreage presently being irrigated will be withdrawn from production in the years ahead. This line reflects this assumption. To the extent that such reductions result in transfers of water to new uses, that has been accounted for by showing increased depletions for other uses (such as oil shale).
8. Proposed new reservoirs, the primary purposes of which are hydro-power generation, will result in substantial amounts of evaporation. The depletions shown here reflect such evaporation.
9. To the extent that population growth will be prompted by the oil shale and steam-electric industries' work forces, increased municipal demands are reflected in this use category. As a corollary, the oil shale and steam-electric categories reflect depletions for industrial use only.
10. Projections represent the average annual depletions which would occur under any given year's level of development (i.e., 1980, 1985, etc.), were that level of development to remain constant over time.