MEMORANDUM

Subject: **Bear River Basin Plan**
Key Structures and Diversions
COOPER DITCH DIVERSION

Date: August 7, 2000

Diversion Description: The Cooper Ditch headgate consists of a 44-inch rectangular slide gate set in a concrete headwall. The river is diverted using wood planks supported on vertical steel pipe piling driven into the river.

Cooper Ditch headgate structure

Diversion Location: The diversion is located on the Smiths Fork, tributary to the Bear River. The Diversion is regulated as part of the Central Division of the Bear River Compact. See location map hereafter.

Latitude N 42° 09' 37.5"
Longitude W 110° 53' 30.1"

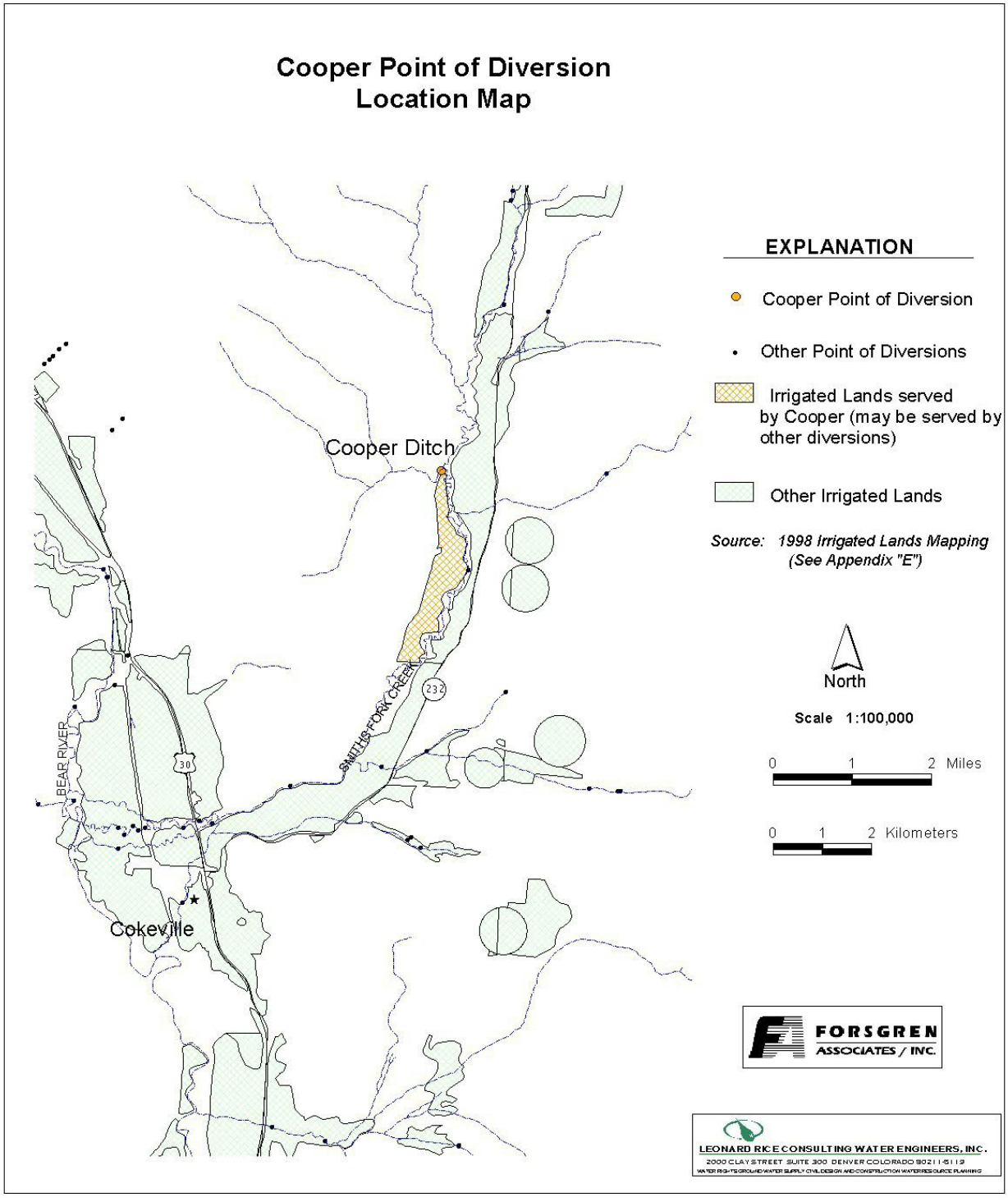
Conveyance Description: Open channel canal, approximately 15,840 feet in length.[1]

Direct Flow Water Rights:[2]

Priority Date	Permit Number	Permitted Use	Permitted Acres	Flow (CFS)	Cumulative (CFS)	Comments
08-27-1892	330	Irrigation, Storage	206	2.94	2.94	
01-31-1900	578E	Irrigation	135	1.92	4.86	
09-23-1907	1844E	Irrigation	25	0.35	5.21	
09-05-1911	2556E	Irrigation, Domestic, Storage	60	0.86	6.07	

Associated Storage Rights: None

Irrigation Practices: Land is flood irrigated. [3]


Cooper Point of Diversion
Location Map
Cooper Ditch
SMITHS FORK CREEK
BEAR RIVER
232
30
Cokeville
EXPLANATION
Cooper Point of Diversion
Other Point of Diversions
Irrigated Lands served by Cooper (may be served by other diversions)
Other Irrigated Lands
Source: 1998 Irrigated Lands Mapping (See Appendix "E")
North
Scale 1:100,000
0 1 2 Miles
0 1 2 Kilometers
FORSGREN ASSOCIATES / INC.
LEONARD RICE CONSULTING WATER ENGINEERS, INC.
2000 CLAY STREET SUITE 300 DENVER COLORADO 80211-5119

Estimated Diversion Efficiency:

Calculated Diversion Efficiency = Conveyance Efficiency X Application Efficiency:

Conveyance Efficiency:	65%
Application Efficiency:	55%
Overall Diversion Efficiency:	**36%**

Conveyance efficiency is estimated based on total length of main canal. Application efficiency for flood irrigation and sprinkler irrigation is estimated at 55% and 85% respectively.

Crop Types / Consumptive Use: Water is used entirely to irrigate meadow grasses, primarily Timothy, Meadow Foxtail, etc.[3]

Return Flows: Return flow is primarily captured by the Covey Canal.

The following return flow pattern was adopted for modeling in this study are as follows:

Month (after initial Diversion)	Percent of Return
0	70%
1	20%
2	10%
3	0%
	100%

References:

1) *USDA -Soil Conservation Service Economic Research Service-Forest Service in Cooperation with the States of Idaho, Utah, Wyoming, Irrigation Conveyance Systems, Working Paper for the Bear River Basin Type IV Study, Idaho-Utah-Wyoming, April 1976*

2) *Water rights summary obtained from State Engineer Interstate Reglist – revised April 14, 1999*

3) *Irrigation practices based on field investigation and interview with Mr. Kevin Wilde, Water Hydrographer-Commissioner – November 30, 1999.*

4) *State of Utah Natural Resources, Water Budget Studies – Utah, Bear River Study Area, September 1994*

BEAR RIVER WYOMING DIVERSIONS
MONTHLY DIVERSION RECORDS

COOPER
(on Smith's Fork)

YEAR	MAY			JUNE			JULY			AUGUST			SEPTEMBER		
	Total of Daily Ave for Month	Average CFS	Monthly Total Ac-Ft	Total of Daily Ave for Month	Average CFS	Monthly Total Ac-Ft	Total of Daily Ave for Month	Average CFS	Monthly Total Ac-Ft	Total of Daily Ave for Month	Average CFS	Monthly Total Ac-Ft	Total of Daily Ave for Month	Average CFS	Monthly Total Ac-Ft
1970	0	0.0	0.0	328	10.9	650.6	74	2.4	146.8	20	0.6	39.7	0	0.0	0.0
1971	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
1972	0	0.0	0.0	0	0.0	0.0	353	11.4	700.2	93	3.0	184.5	13	0.4	25.8
1973	0	0.0	0.0	47	1.6	93.2	1	0.0	2.0	0	0.0	0.0	0	0.0	0.0
1974	0	0.0	0.0	195	6.5	386.8	539	17.4	1069.1	21	0.7	41.7	12	0.4	23.8
1975	0	0.0	0.0	282	9.4	559.3	567	18.3	1124.6	52	1.7	103.1	0	0.0	0.0
1976	0	0.0	0.0	256	8.5	507.8	181	5.8	359.0	103	3.3	204.3	95	3.2	188.4
1977	105	3.4	208.3	22	0.7	43.6	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
1978	124	4.0	246.0	93	3.1	184.5	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
1979	158	5.1	313.4	112	3.7	222.1	104	3.4	206.3	32	1.0	63.5	0	0.0	0.0
1980	170	5.5	337.2	159	5.3	315.4	56	1.8	111.1	0	0.0	0.0	0	0.0	0.0
1981	190	6.1	376.9	249	8.3	493.9	81	2.6	160.7	4	0.1	7.9	0	0.0	0.0
1982	15	0.5	29.8	52	1.7	103.1	182	5.9	361.0	16	0.5	31.7	71	2.4	140.8
1983	42	1.4	83.3	0	0.0	0.0	44	1.4	87.3	7	0.2	13.9	0	0.0	0.0
1984	555	17.9	1100.8	345	11.5	684.3	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
1985	0	0.0	0.0	56	1.9	111.1	0	0.0	0.0	7	0.2	13.9	0	0.0	0.0
1986	205	6.6	406.6	1225	40.8	2429.8	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
1987	304	9.8	603.0	93	3.1	184.5	94	3.0	186.4	93	3.0	184.5	0	0.0	0.0
1988	233	7.5	462.1	662	22.1	1313.1	527	17.0	1045.3	180	5.8	357.0	0	0.0	0.0
1989	196	6.3	388.8	102	3.4	202.3	37	1.2	73.4	0	0.0	0.0	0	0.0	0.0
1990	162	5.2	321.3	156	5.2	309.4	106	3.4	210.2	106	3.4	210.2	0	0.0	0.0
1991	263	8.5	521.7	270	9.0	535.5	286	9.2	567.3	191	6.2	378.8	0	0.0	0.0
1992	93	3.0	184.5	120	4.0	238.0	96	3.1	190.4	27	0.9	53.6	0	0.0	0.0
1993	196	6.3	388.8	618	20.6	1225.8	112	3.6	222.1	17	0.5	33.7	9	0.3	17.9
1994	263	8.5	521.7	326	10.9	646.6	26	0.8	51.6	0	0.0	0.0	0	0.0	0.0
1995	276	8.9	547.4	629	21.0	1247.6	122	3.9	242.0	32	1.0	63.5	0	0.0	0.0
1996	146	4.7	289.6	536	17.9	1063.1	171	5.5	339.2	58	1.9	115.0	45	1.5	89.3
1997	209.9	6.8	416.3	391.5	13.1	776.5	30.1	1.0	59.7	10.3	0.3	20.4	7.3	0.2	14.5
1998	561.5	18.1	1113.7	494	16.5	979.8	9.6	0.3	19.0	0	0.0	0.0	0	0.0	0.0
AVERAGES		**5.0**	**305.6**		**9.0**	**534.8**		**4.2**	**259.8**		**1.2**	**73.1**		**0.3**	**17.3**