
MEMORANDUM

**Subject: Bear River Basin Plan
Key Structures and Diversions
BUTTON FLAT DIVERSION**

Date: August 7, 2000

Diversion Description: The Button Flat diversion structure consists of a 30-inch CMP with a canal gate. The river is diverted using wood boards.



Button Flat headgate structure

Diversion Location: The diversion is located on 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.

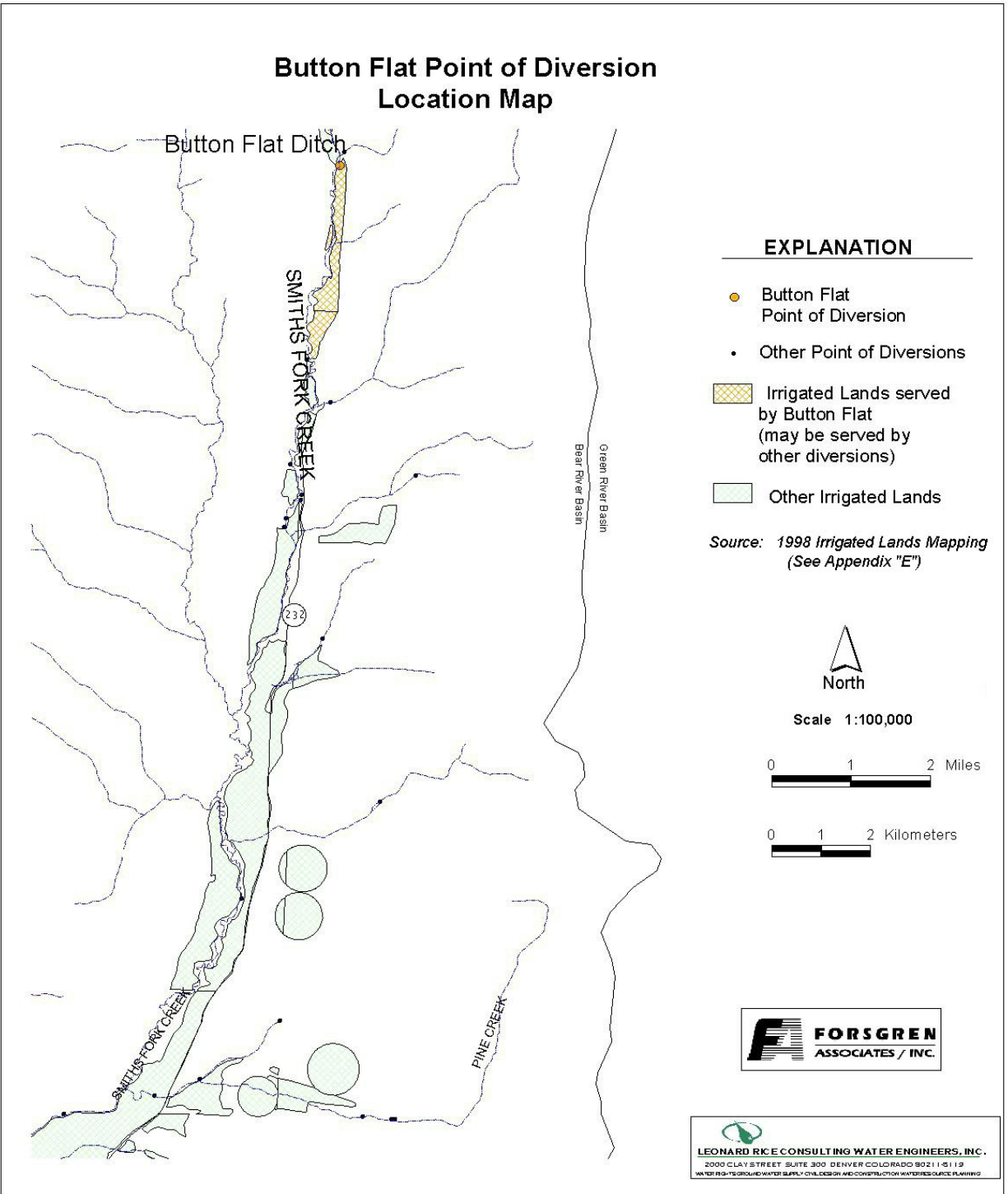
Latitude N 42° 16' 40.4"
Longitude W 110° 52' 05.4"

Conveyance Description: Open channel canal, approximately 10,560 feet in length.¹

Direct Flow Water Rights:²

Priority Date	Permit Number	Permitted Use	Permitted Acres	Flow (CFS)	Cumulative (CFS)	Comments
03-13-1906	7164	Irrigation, Domestic, Storage	160	2.28	2.28	
03-13-1906	7164	Irrigation, Domestic, Storage	185	2.64	4.92	
02-04-1910	2175E	Irrigation, Domestic, Storage	77	1.10	6.02	
05-19-1950	5506E	Irrigation, Storage	56	0.80	6.82	

Button Flat Point of Diversion Location Map



Associated Storage Rights: None

Irrigation Practices: Land is flood irrigated.³

Estimated Diversion Efficiency:

Calculated Diversion Efficiency = Conveyance Efficiency X Application Efficiency:

Conveyance Efficiency:	65%
Application Efficiency:	<u>55%</u>
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 to irrigate meadow grasses (approx. 20%) and alfalfa & grains (approx. 80% rotated).³

Return Flows: Return flow is primarily captured by Progress Canal and/or other downstream ditches

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

<u>Month</u> <u>(after initial Diversion)</u>	<u>Percent of Return</u>
0	70%
1	20%
2	10%
3	<u>0%</u>
	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**

***BUTTON FLAT
(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	68	2.3	134.9	96	3.1	190.4	60	1.9	119.0	50	1.7	99.2
1971	0	0.0	0.0	56	1.9	111.1	127	4.1	251.9	152	4.9	301.5	83	2.8	164.6
1972	0	0.0	0.0	26	0.9	51.6	179	5.8	355.0	121	3.9	240.0	60	2.0	119.0
1973	132	4.3	261.8	155	5.2	307.4	155	5.0	307.4	200	6.5	396.7	30	1.0	59.5
1974	124	4.0	246.0	180	6.0	357.0	194	6.3	384.8	128	4.1	253.9	66	2.2	130.9
1975	17	0.5	33.7	105	3.5	208.3	156	5.0	309.4	86	2.8	170.6	19	0.6	37.7
1976	124	4.0	246.0	151	5.0	299.5	150	4.8	297.5	159	5.1	315.4	116	3.9	230.1
1977	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
1978	19	0.6	37.7	153	5.1	303.5	134	4.3	265.8	209	6.7	414.5	148	4.9	293.6
1979	0	0.0	0.0	98	3.3	194.4	171	5.5	339.2	137	4.4	271.7	0	0.0	0.0
1980	0	0.0	0.0	68	2.3	134.9	131	4.2	259.8	97	3.1	192.4	62	2.1	123.0
1981	135	4.4	267.8	160	5.3	317.4	118	3.8	234.0	72	2.3	142.8	5	0.2	9.9
1982	46	1.5	91.2	119	4.0	236.0	70	2.3	138.8	115	3.7	228.1	43	1.4	85.3
1983	0	0.0	0.0	65	2.2	128.9	48	1.5	95.2	29	0.9	57.5	13	0.4	25.8
1984	0	0.0	0.0	73	2.4	144.8	22	0.7	43.6	4	0.1	7.9	12	0.4	23.8
1985	67	2.2	132.9	80	2.7	158.7	141	4.5	279.7	63	2.0	125.0	18	0.6	35.7
1986	0	0.0	0.0	232	7.7	460.2	26	0.8	51.6	0	0.0	0.0	0	0.0	0.0
1987	33	1.1	65.5	42	1.4	83.3	18	0.6	35.7	2	0.1	4.0	0	0.0	0.0
1988	13	0.4	25.8	60	2.0	119.0	59	1.9	117.0	15	0.5	29.8	0	0.0	0.0
1989	0	0.0	0.0	58	1.9	115.0	49	1.6	97.2	27	0.9	53.6	0	0.0	0.0
1990	10	0.3	19.8	46	1.5	91.2	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
1991	33	1.1	65.5	139	4.6	275.7	65	2.1	128.9	5	0.2	9.9	0	0.0	0.0
1992	108	3.5	214.2	150	5.0	297.5	155	5.0	307.4	0	0.0	0.0	0	0.0	0.0
1993	30	1.0	59.5	12	0.4	23.8	149	4.8	295.5	72	2.3	142.8	7	0.2	13.9
1994	2	0.1	4.0	130	4.3	257.9	106	3.4	210.2	0	0.0	0.0	0	0.0	0.0
1995	35	1.1	69.4	22	0.7	43.6	151	4.9	299.5	21	0.7	41.7	0	0.0	0.0
1996	34	1.1	67.4	220	7.3	436.4	134	4.3	265.8	79	2.5	156.7	16	0.5	31.7
1997	0	0.0	0.0	0	0.0	0.0	71.8	2.3	142.4	32.4	1.0	64.3	8	0.3	15.9
1998	21.6	0.7	42.8	40.3	1.3	79.9	68.3	2.2	135.5	10.4	0.3	20.6	0	0.0	0.0

AVERAGES

1.1 67.3

3.1 185.2

3.3 201.4

2.1 129.7

0.9 51.7