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**MEMORANDUM**

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**Subject:**     **Bear River Basin Plan**  
                  **Key Structures and Diversions**  
                  **EMELLE CANAL DIVERSION**

**Date:**         August 7, 2000

**Diversion Description:** The Emelle headgate consists of a concrete headwall with a 74-inch rectangular steel gate. The river is diverted using a rock wall dam.



**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° 11' 30.5"  
Longitude      W 110° 52' 43.8"

**Conveyance Description:** Open channel canal, approximately 21,120 feet in length.<sup>1</sup>

**Direct Flow Water Rights:**<sup>2</sup>

Priority Date	Permit Number	Permitted Use	Permitted Acres	Flow (CFS)	Cumulative (CFS)	Comments
10-02-1901	3486	Irrigation, Storage	120	1.71	1.71	
02-28-1903	998E	Irrigation, Storage	50.50	0.72	2.43	
02-28-1903	998E	Irrigation, Storage	258	3.68	6.11	
02-28-1903	998E	Irrigation, Storage	52	0.74	6.85	
07-07-1905	6810	Irrigation	160	2.28	9.13	
01-24-1907	1745E	Irrigation	112	1.60	10.73	
01-24-1907	1745E	Irrigation	80	1.14	11.87	
12-17-1910	2376E	Irrigation, Storage	53	0.76	12.63	
12.17-1910	2377E	Irrigation, Domestic	155	2.21	14.84	
10-17-1916	3720E	Irrigation	34	0.49	15.33	

**Associated Storage Rights:** None

**Irrigation Practices:** Land is all irrigated using hand lines and wheel side-roll sprinklers.<sup>3</sup>

**Estimated Diversion Efficiency:**

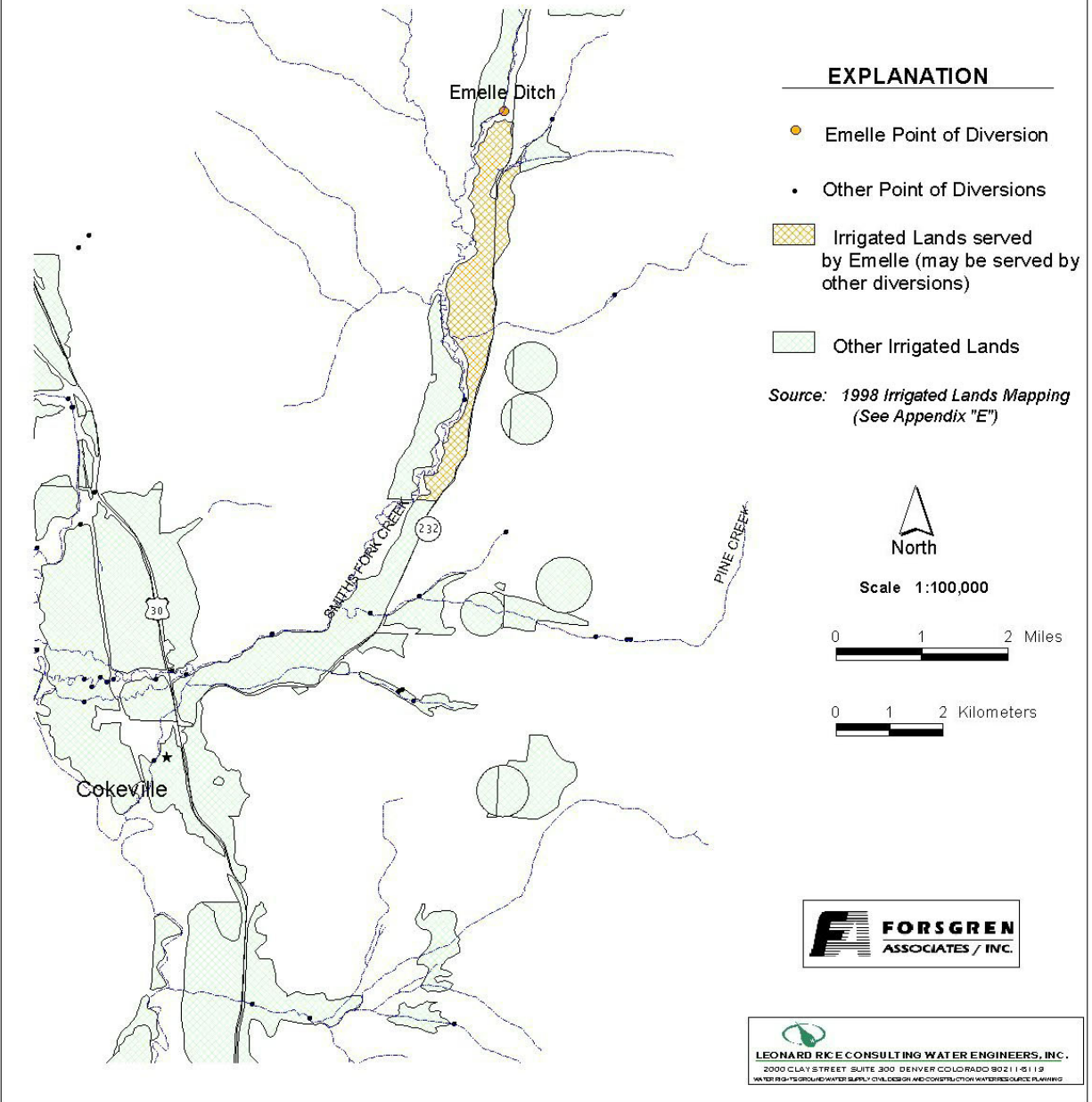
Calculated Diversion Efficiency = Conveyance Efficiency X Application Efficiency:

Conveyance Efficiency:	65%
Application Efficiency:	<u>85%</u>
<b>Overall Diversion Efficiency:</b>	<b>55%</b>

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:** Approximately 85% of the irrigated acreage is alfalfa and grains (mostly oats) rotated. The remaining 15% is meadow grasses. There are usually 2 crops with a 3<sup>rd</sup> crop left for pasture.<sup>3</sup>

## Emelle Point of Diversion Location Map



### EXPLANATION

- Emelle Point of Diversion
- Other Point of Diversions
- Irrigated Lands served by Emelle (may be served by other diversions)
- Other Irrigated Lands

Source: 1998 Irrigated Lands Mapping  
(See Appendix "E")



Scale 1:100,000

0 1 2 Miles

0 1 2 Kilometers



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WATER RIGHTS GROUND WATER SUPPLY CIVIL DESIGN AND CONSTRUCTION WATER RESOURCES PLANNING

**Return Flows:** Return flow is captured by the Cooper Ditch (approx. 50%) and the Covey Canal (approx. 50%).

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**

**EMELLE  
(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	43	1.4	85.3	474	15.8	940.2	314	10.1	622.8	345	11.1	684.3	92	3.1	182.5
1971	0	0.0	0.0	406	13.5	805.3	312	10.1	618.8	19	0.6	37.7	0	0.0	0.0
1972	221	7.1	438.3	558	18.6	1106.8	97	3.1	192.4	0	0.0	0.0	0	0.0	0.0
1973	218	7.0	432.4	557	18.6	1104.8	97	3.1	192.4	0	0.0	0.0	0	0.0	0.0
1974	0	0.0	0.0	943	31.4	1870.4	544	17.5	1079.0	455	14.7	902.5	60	2.0	119.0
1975	0	0.0	0.0	128	4.3	253.9	353	11.4	700.2	555	17.9	1100.8	26	0.9	51.6
1976	0	0.0	0.0	540	18.0	1071.1	529	17.1	1049.3	434	14.0	860.8	14	0.5	27.8
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	0	0.0	0.0	605	20.2	1200.0	704	22.7	1396.4	583	18.8	1156.4	0	0.0	0.0
1979	0	0.0	0.0	651	21.7	1291.2	504	16.3	999.7	470	15.2	932.2	84	2.8	166.6
1980	0	0.0	0.0	296	9.9	587.1	421	13.6	835.0	320	10.3	634.7	26	0.9	51.6
1981	0	0.0	0.0	418	13.9	829.1	432	13.9	856.9	462	14.9	916.4	103	3.4	204.3
1982	0	0.0	0.0	367	12.2	727.9	273	8.8	541.5	432	13.9	856.9	158	5.3	313.4
1983	0	0.0	0.0	158	5.3	313.4	340	11.0	674.4	235	7.6	466.1	0	0.0	0.0
1984	0	0.0	0.0	169	5.6	335.2	356	11.5	706.1	196	6.3	388.8	0	0.0	0.0
1985	36	1.2	71.4	484	16.1	960.0	617	19.9	1223.8	397	12.8	787.4	0	0.0	0.0
1986	0	0.0	0.0	284	9.5	563.3	455	14.7	902.5	311	10.0	616.9	64	2.1	126.9
1987	435	14.0	862.8	398	13.3	789.4	395	12.7	783.5	190	6.1	376.9	24	0.8	47.6
1988	4	0.1	7.9	624	20.8	1237.7	471	15.2	934.2	128	4.1	253.9	0	0.0	0.0
1989	160	5.2	317.4	538	17.9	1067.1	498	16.1	987.8	313	10.1	620.8	0	0.0	0.0
1990	4	0.1	7.9	257	8.6	509.8	260	8.4	515.7	102	3.3	202.3	0	0.0	0.0
1991	0	0.0	0.0	483	16.1	958.0	321	10.4	636.7	162	5.2	321.3	0	0.0	0.0
1992	378	12.2	749.8	434	14.5	860.8	521	16.8	1033.4	31	1.0	61.5	0	0.0	0.0
1993	1	0.0	2.0	333	11.1	660.5	511	16.5	1013.6	283	9.1	561.3	80	2.7	158.7
1994	176	5.7	349.1	503	16.8	997.7	287	9.3	569.3	0	0.0	0.0	0	0.0	0.0
1995	0	0.0	0.0	273	9.1	541.5	522	16.8	1035.4	494	15.9	979.8	14	0.5	27.8
1996	0	0.0	0.0	356	11.9	706.1	454	14.6	900.5	342	11.0	678.3	8	0.3	15.9
1997	0	0.0	0.0	159.3	5.3	316.0	409.4	13.2	812.0	335.3	10.8	665.1	2.1	0.1	4.2
1998	39.6	1.3	78.5	227.8	7.6	451.8	337.2	10.9	668.8	31.1	1.0	61.7	0	0.0	0.0

**AVERAGES**

**1.9    117.3**

**13.4    795.0**

**12.6    775.2**

**8.5    521.5**

**0.9    51.6**