Table 7. – Complete chemical analyses of Steinaker Canal water

Conductivity	μ siemens/cm	2.49E+02
pH		7.80E+00
TDS/105C	p/m	1.96E+02
Calcium	p/m	4.08E+01
Magnesium	p/m	8.30E+00
Sodium	p/m	3.91E+00
Potassium	p/m	1.17E+00
Carbonate	p/m	0.00E+00
Bicarbonate	p/m	1.05E+02
Sulfate	p/m	4.75E+01
Chloride	p/m	3.55E+00
Anions & cations	p/m	2.10E+02

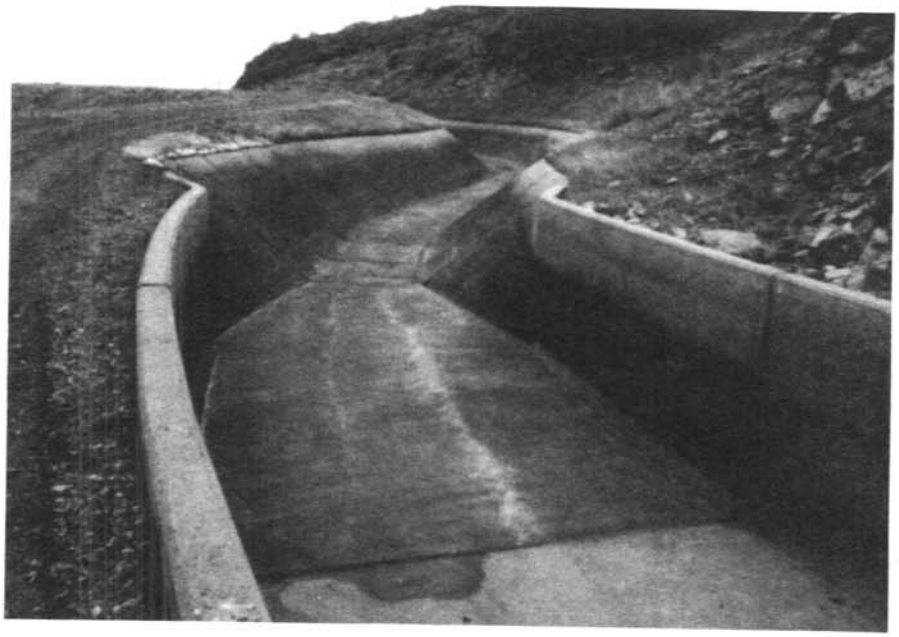


Figure 1. – St. Vrain Canal painted with paint No. 1.

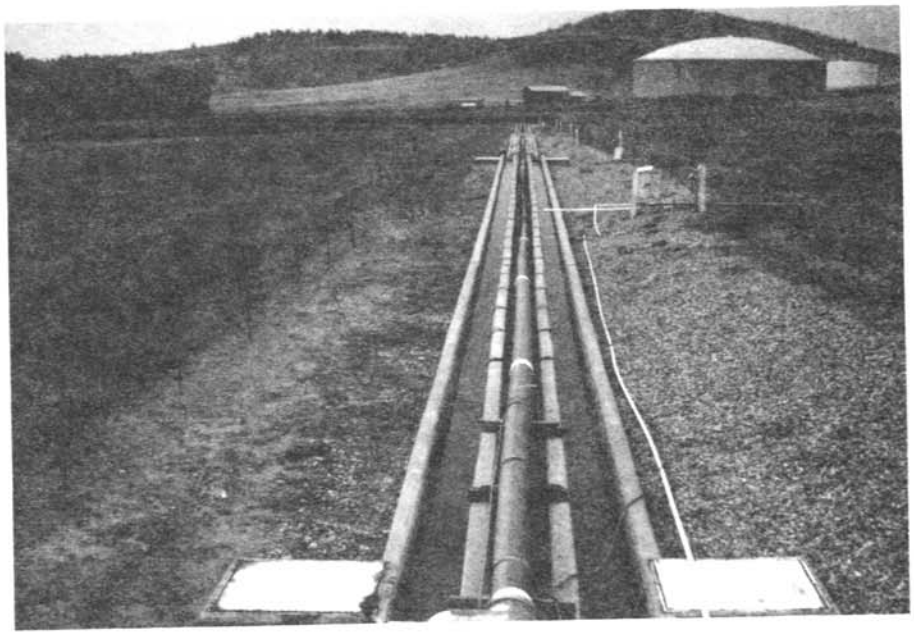


Figure 2. – Aquatic weed test station where preliminary tests were conducted with antifouling paints.

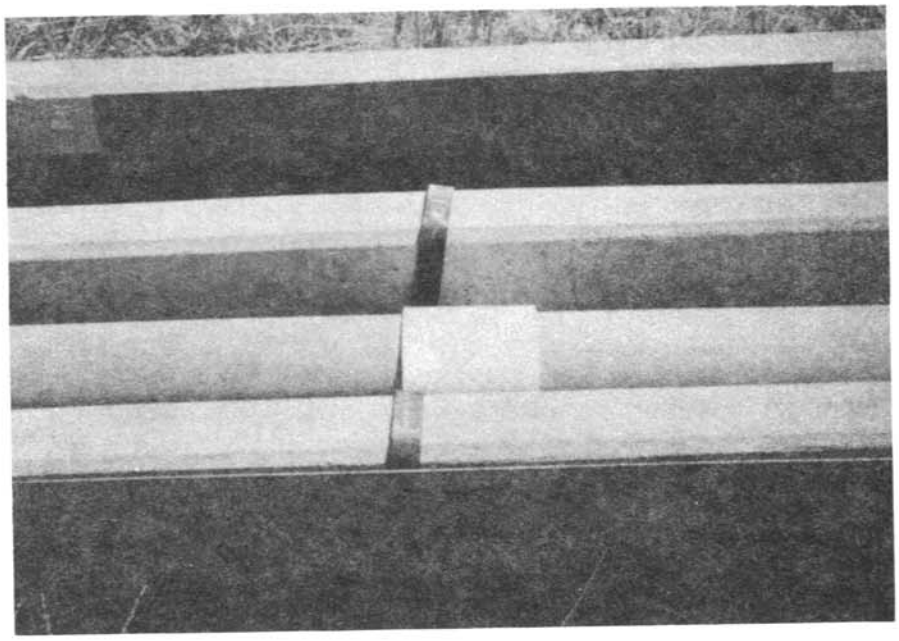


Figure 3. – Paints No. 3 and 4 tested at aquatic weed test station.

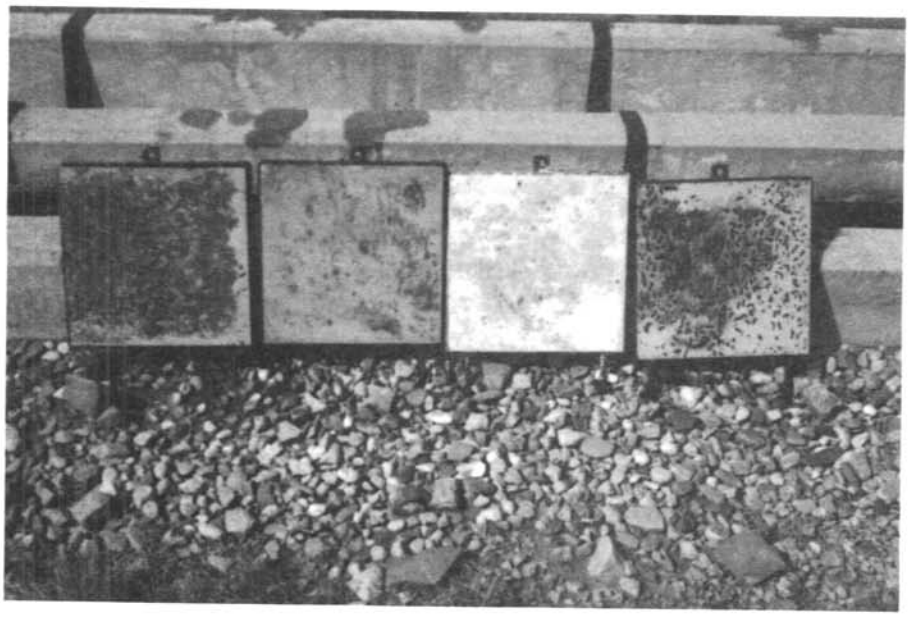


Figure 4. – Check panel and paints No. 5, 7, and 8 tested at aquatic weed test station.

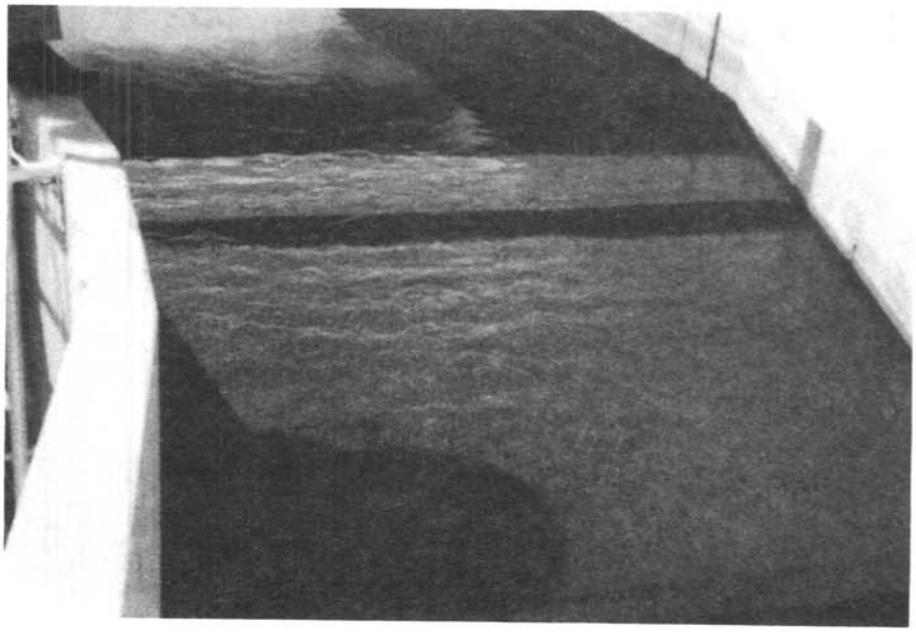


Figure 5. – Paint No. 2 tested at Steinaker Canal, Utah.

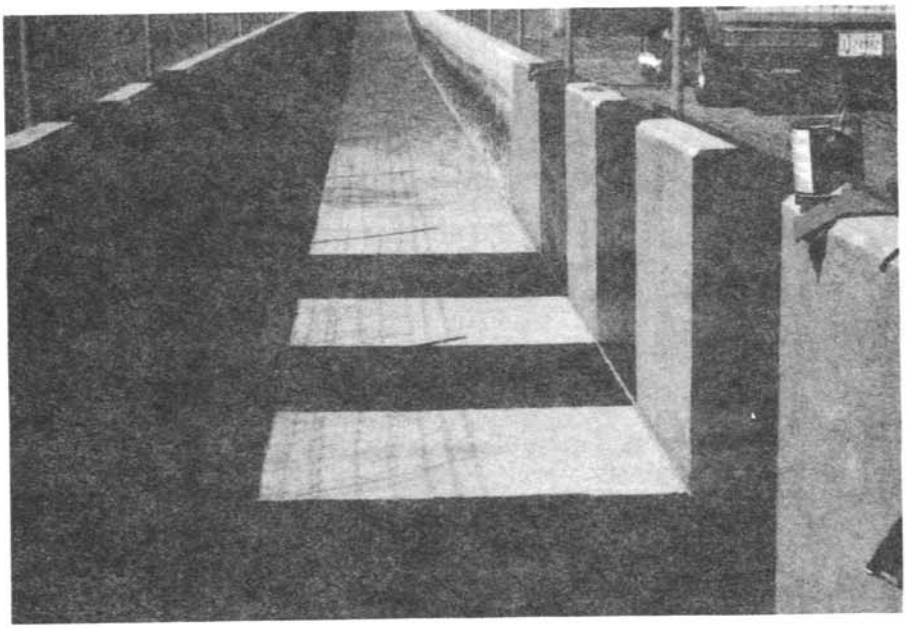


Figure 6. – Paint No. 2 tested at Pilot Chute Canal, Wyoming.

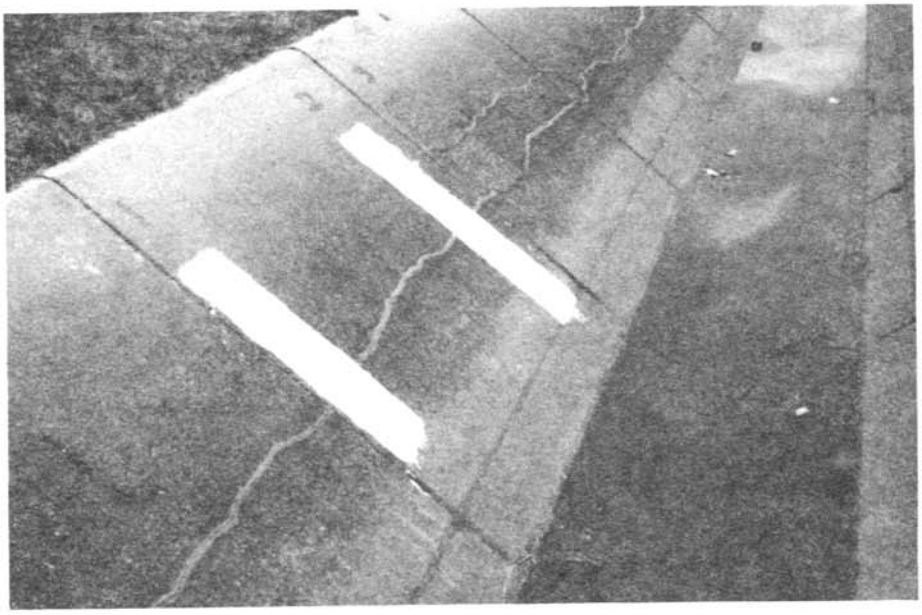


Figure 7. – Paints No. 6, 9, and 2 tested at Charles Hansen Canal.

COPPER RESIDUE WATER ANALYSIS

ST. VRAIN CANAL BELOW TREATED AREA

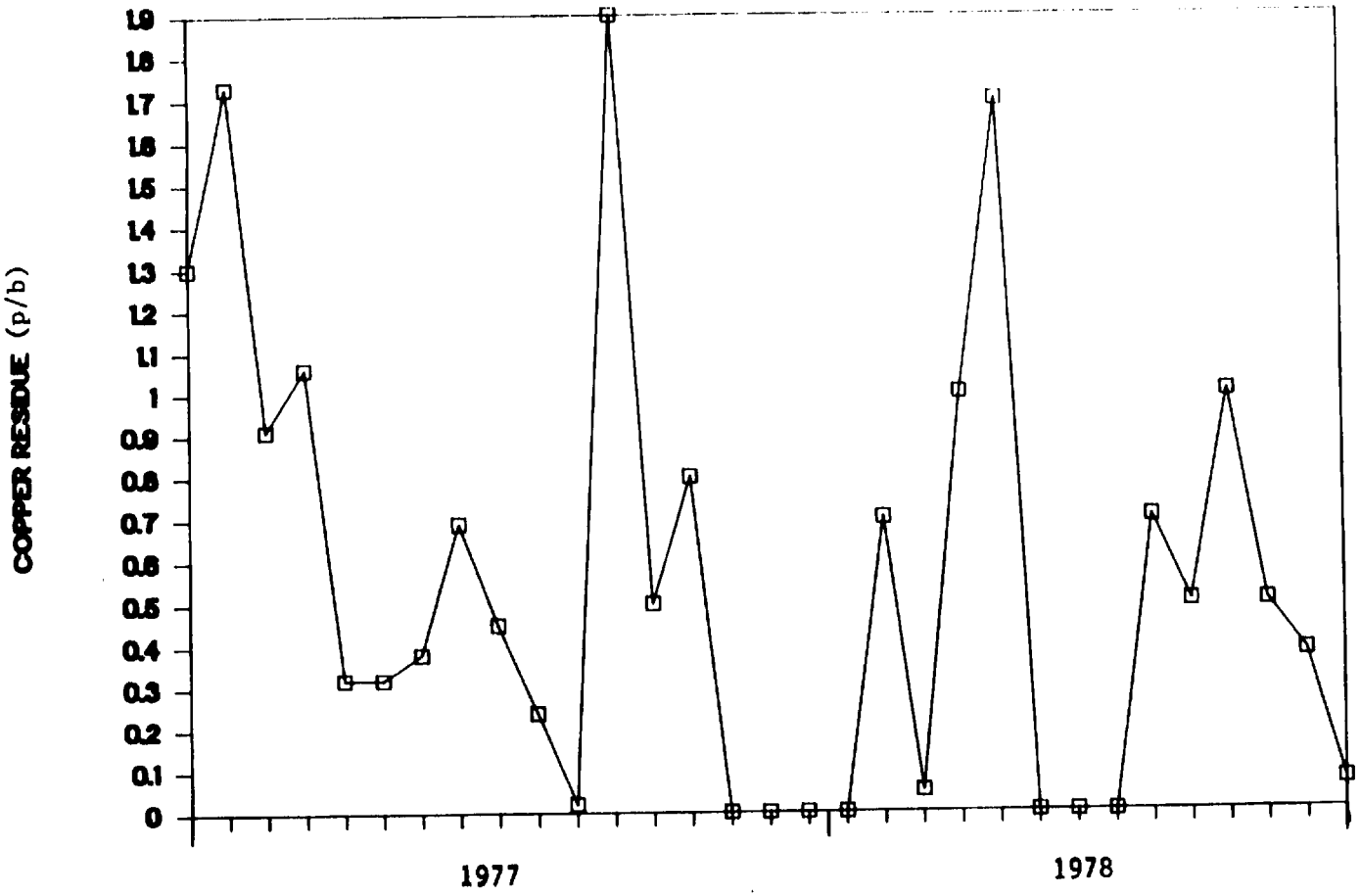


FIGURE 8

COPPER RESIDUE WATER ANALYSIS

STEINAKER CANAL BELOW TREATED AREA

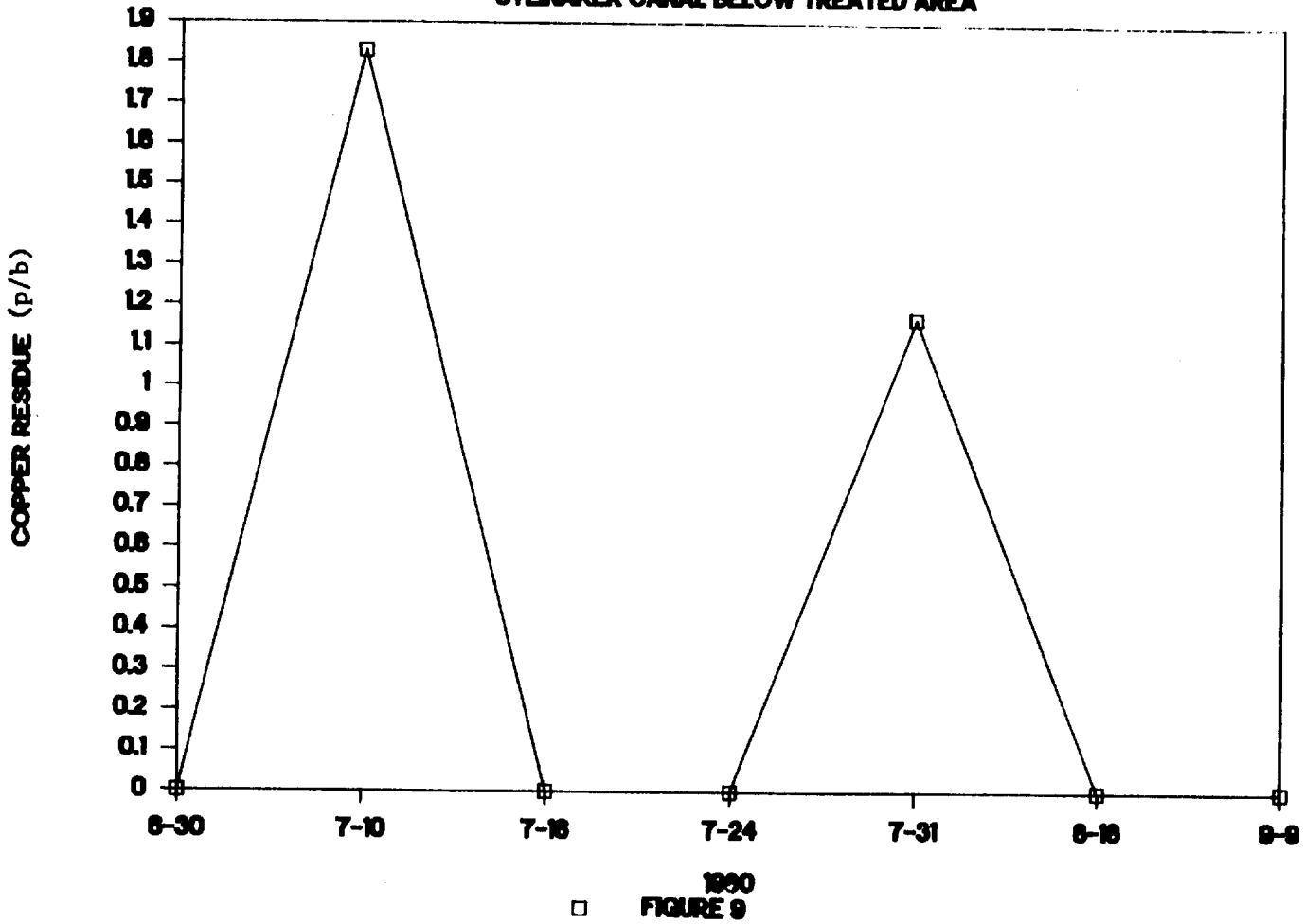


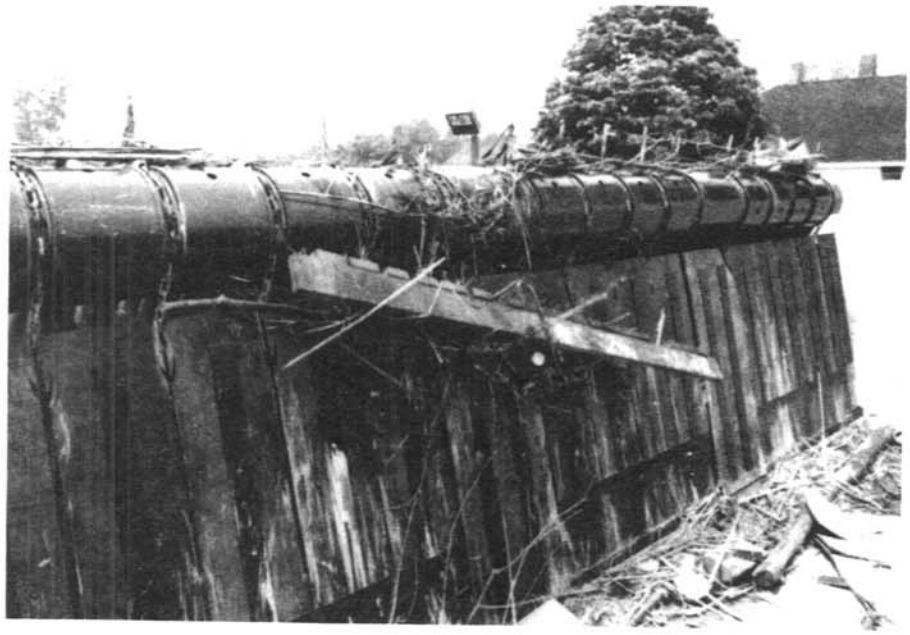
FIGURE 9

TRASHRACKS TESTED BY MAJOR STORM[8]

By James A. Koski[9]

For 10 years the Saginaw County Drain Commission has needed a reliable way to remove debris and trash from drainage water. In the past, if we had a substantial rain storm someone would be sent out, often at night or on weekends, to make sure trash was not clogging the bar screens and impeding flow to our pumps. The only way we were able to remove the trash from the screens was by scraping or with long pitchfork-type rakes. Either way, we had to have personnel there 24 hours a day while the storm water was flowing because the bar screens required constant maintenance.

Need, they say, spawns invention. Working closely with the Duperon Corporation, located in Saginaw, we used one of our pump station intakes to install what has become the prototype of the Duperon Trashrack. Although the first one worked exceptionally well, there were a few alterations that had to be made. That first rack is still in service today and requires virtually no maintenance. We took what we learned from the first rack and installed two more, for a total of three.



Debris carried by storm flows is lifted clear of bar screens at one of Saginaw's pumping stations. If overloaded, fingers trip automatically.

[8] Reprinted with permission from the Editor from the April 1987 issue of Public Works.
[9] James A. Koski is the Drain Commissioner for Saginaw County, Saginaw, Michigan.

Positioned upstream of the pump, the trashrack consists of a recirculating conveyor, one end of which is submerged. The conveyor, which is equipped with lifters that self-trip in case of overload, is angled and as it rotates it lifts debris from the storm water. A stripper system automatically relieves the lifters of debris before they re-enter the water. The unit features self-lubricating bearings, completely automatic operation, and low horsepower motors and gear reducers to provide slow movement (about 7 feet per minute).

Lifting capacity and unit height are custom designed for each application. The standard unit width is 8 feet and the standard number of lifters per unit is eight ranks of five lifters. A standard 32-foot-high unit weighs 9,600 pounds.

We elected not to run the racks automatically. Instead, we have installed controls that turn on the rack when the head on the inlet side of the bar screen is higher than the pump side. Our controls activate an automatic telephone calling machine that calls the person on call to make sure that all the pumps and other equipment are working properly.

Last September, we were hit with what has been described as the storm of record: we received from 9 to 13 inches of rain over the entire watershed of the Saginaw River in 24 hours. We were able to run our pump stations at full capacity throughout the storm and experienced no problems.

SPOTLIGHT ON MERRITT DAM

Ainsworth Unit, Nebraska

"It is a region destined by the barrenness of its soil,
the inhospitable character of its climate, and
by other physical disadvantages to be the
abode of perpetual desolution."

With these words, Major Stephen Long characterized the lands between the Missouri River and the Rocky Mountains as virtually uninhabitable. Long traveled through the region in 1819 on his way to establish a Government post at the mouth of the Yellowstone River. He would have been astonished to learn that eventually the area would become part of America's farm belt. The reversal of the region from desert to productive farmland was due to the labor and tenacity of American settlers — and to irrigation.

The area Long explored included the Niobrara River Basin. The basin was first settled by cattlemen from Texas who drove large herds of longhorns into the Sandhills Region. Large numbers of settlers did not enter the region until the 1800's — after the passage of the Homestead Act of 1862 and the Timber Claim Act of 1873 made free land available.

Most of the new settlers were farmers, each seeking to cultivate the 160 acres which the law allowed. Settlers enjoyed moderate prosperity for a few years; but in 1893, a 3-year drought set in. Farmland and grazing land lay parched under the hot sun and harsh, dry winds. Conditions became so bad that in 1 year, 18,000 covered wagons ferried back across the Missouri River out of Nebraska.

Settlement increased again after passage of the Kinkaid Act of 1904, which permitted settlers to homestead 650 acres instead of the 160 acres permitted in the original act of 1862. Despite droughts in the 1890's and other dry spells, the area continued to grow and reached its population peak by 1930, only to suffer another severe drought and resulting population decline throughout that decade.

Farmers by this time were well aware of the hazards of dryland farming in the region. It was obvious that farming would remain an uncertain way to make a living until a dependable water supply was developed.

Irrigation projects were attempted as early as the 1890's, but all failed because individuals or small groups of farmers were unable to finance construction and maintenance costs.

Finally in 1946, the people of the Niobrara River Basin appealed to the Federal Government for assistance in investigating the potential of a water resources program. The Bureau of Reclamation began a comprehensive investigation of the land and water resources of the Niobrara River Basin that same year.

The Bureau's report, published in 1953, recommended development of four units in the basin as a part of the Missouri River Basin Program. One of the four, Ainsworth, received strong support, and was placed in line for early construction.

Congress authorized the Ainsworth Unit as an integral part of the Missouri River Basin Program in 1954. The Ainsworth Irrigation District was organized in 1953, and entered into a repayment contract with the Government in 1956. All necessary water rights were obtained by 1962.

Construction of Merritt Dam, the principal unit feature, began in 1961 and was completed in January 1964. Storage of water in Merritt Reservoir began the following month. The concrete-lined Ainsworth Canal was completed in 1965, and the first stored water was delivered for irrigation on July 1. The entire distribution system was completed during June 1966.

Project Description

The Ainsworth Unit is located in Cherry, Brown, and Rock Counties in northcentral Nebraska. It is multipurpose and provides for irrigation, recreation, and fish and wildlife habitat enhancement. The water supply comes from the Snake River and is stored in Merritt Reservoir for controlled releases into the Ainsworth Canal. The Ainsworth Canal and its lateral system deliver irrigation water to the project area — more than 34,000 acres.

Merritt Dam is 14 miles upstream from the confluence of the Snake and Niobrara Rivers and about 26 miles southwest of the town of Valentine. The zoned earthfill dam rises 121 feet above the streambed, with a crest length of 3,222 feet, crest width of 30 feet, and crest elevation of 2956.0 feet. Total capacity of Merritt Reservoir is 74,486 acre-feet. (An acre-foot of water is 325,851 gallons, or enough to cover an acre of land to a depth of 1 foot.)

Merritt Dam was the first Reclamation dam to use soil cement instead of rock riprap to protect its embankment. Riprap was not used because there was no suitable rock in the area, and using soil cement was cheaper than importing riprap.

The morning-glory-type ungated spillway, along with surcharge storage, protects the dam from damage by floods. A branched outlet works allows diversion of water to either the Ainsworth Canal or for controlling releases to the Snake River through the spillway stilling basin.

The Ainsworth Canal originates at Merritt Dam outlet works and extends eastward through the Nebraska sandhills to the project lands. It is concrete lined for its entire length of 52.5 miles to minimize water losses through seepage into the region's sandy soils. An extensive lateral system delivers water to project lands.

Since ground water is important to the area, irrigation waste water is not allowed simply to drain off. In parts of the project, ponding areas are provided where water can be held to seep into the ground. Savings in cost result from use of ponds instead of conventional drains.

Irrigation

The Ainsworth Unit provides irrigation water for more than 34,000 acres of Nebraska croplands in Brown and Rock Counties. The growing season of the area is ample, and project lands are highly productive. Gross crop value for lands irrigated by the Ainsworth Unit was more than $10 million in 1981 alone. Cumulative gross crop value since the project began operation reached nearly $90 million by 1980.

Principal irrigated crops are corn, sorghum, beans, and alfalfa. The feed grains are used locally for raising livestock.

Diversified and sustained production results from irrigation, stabilizing the economy of the entire area and helping to meet food requirements for an increasing national population.

Recreation

An all-weather road provides easy access to Merritt Reservoir, as well as to the picturesque Snake River Falls. Opportunities for boating, water skiing, camping, and picnicking are plentiful during the warm summer months.

Picnic and sanitary facilities, parking areas, and boat ramps have been constructed at the reservoir to make outdoor recreation more accessible. Thousands of trees have been planted near the reservoir.

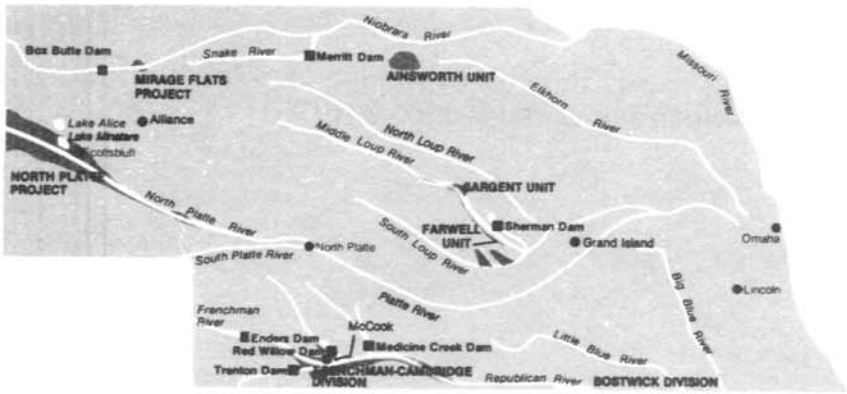
More than 130,000 visitors come to the reservoir each year.

Fish and Wildlife

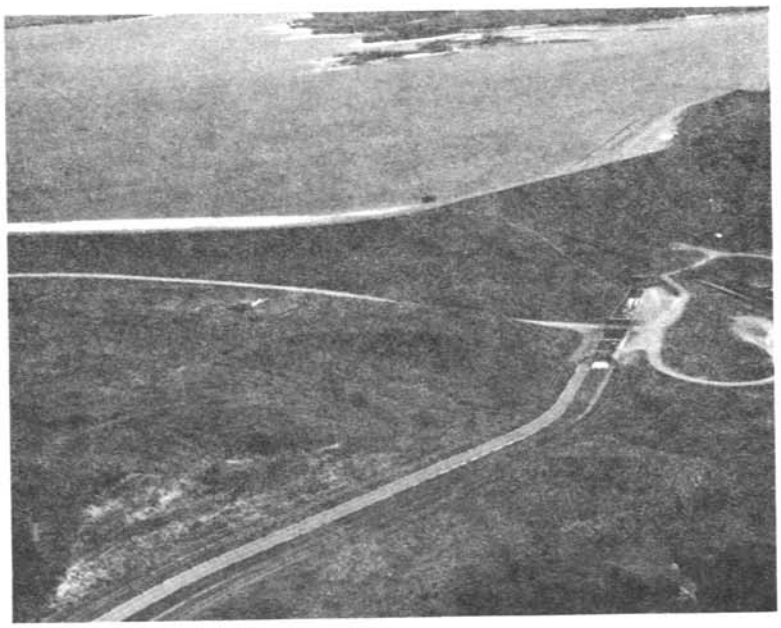
Fishing is a popular activity at Merritt Reservoir. Walleye, large-mouth and white bass, catfish, crappie, yellow perch, and blue gill abound in the reservoir. Stiles built along fences provide easy access to the river.

Improvement of upland game bird habitat has increased the number of game birds in the area, and the reservoir surface area attracts great numbers of waterfowl. Deer also inhabit the area.

The Nebraska Game and Parks Commission administers recreation and fish and wildlife aspects of the Merritt Reservoir.



Merritt Dam. Aerial view looking northeast. 5/27/64



Aerial view, downstream face of Merritt Dam, showing river outlet works. 9/6/77

CASE STUDY

GRASSY LAKE DAM — DEFLECTION AND SEVERE CRACKING OF CHUTE WALLS

Project:	Minidoka
State:	Wyoming
Type:	Zoned earthfill
Completed:	1939
Function(s):	Irrigation, storage, power
Crest length:	1,170 feet
Hydraulic height:	109 feet
Active capacity:	15,200 acre-feet
Surface area:	310 acres

Design characteristics: The concrete side channel spillway is located in a cut section at the left abutment and discharges through a box culvert under the crest of the dam and into a chute and stilling basin downstream. The damsite is at elevation 7218.0 feet in northwest Wyoming and is subjected to severe freezes.

Evidence: The top of the spillway chute walls deflected inward up to 2 feet resulting in extensive cracking of the structure.

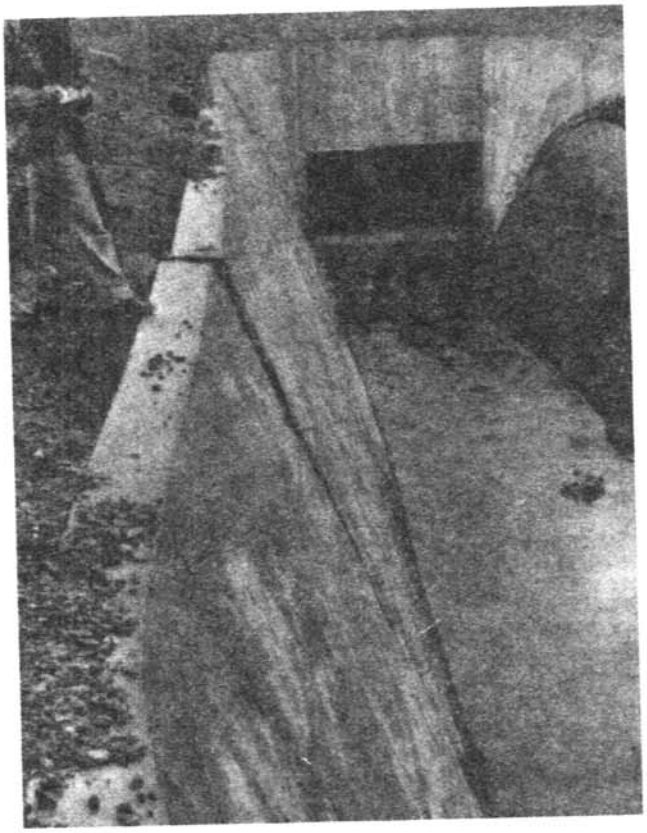
Incident: Freeze-thaw cycles of the saturated backfill adjacent to the spillway walls during the winter months forced them to deflect inward and cause severe cracking of the structure. The problem was considered severe and failure of the spillway was anticipated.

Causes: The deflection of the walls and severe cracking of the walls and floor have been attributed to ice thrusting of the saturated backfill material. The original pipe drains that were laid in gravel envelopes did not adequately drain water from the saturated backfill behind the walls.

Remedy: As a temporary measure, concrete and, later, wood struts were placed between the walls to inhibit further movement. At the same time, repairs were made to the concrete, weep holes were added, and the height of the backfill was lowered to reduce the load on the walls.

After a thorough investigation, permanent repairs were made that consisted of new sidewalls placed inside the old walls and the addition of a cover slab to form a closed rectangular conduit. The conduit was then covered with 3 to 4 feet of backfill to provide insulation from freezing of any moisture behind the walls, and to provide drainage away from the structure. Weather doors were installed at the inlet and at the downstream end of the stilling basin to prevent freezing winds from entering the structure. Since the above modifications were completed, the problems of deflection and cracking have not reappeared.

Conclusion: Appropriate drainage and the height of free draining backfill are important factors in the design of free standing walls.



Grassy Lake Dam.
Spillway inlet
structure.

10/12/56

Grassy Lake Dam. – Spillway bridge and backfill, showing lack of vegetative cover on backfill. Note weather door partially closed on outlet structure. 9/20/77

GPO 855-282

WATER SYSTEMS OPERATION AND MAINTENANCE COST INDEX

Trends of operation and maintenance (O&M) costs are known to differ in general from those of construction costs.

Therefore, the trends of water systems project O&M costs are not properly measured by existing popular construction cost indices. O&M costs experienced on Bureau of Reclamation irrigation projects have been used to develop an index which measures the trends of these costs.

Development of O&M Cost Index

The method for calculating the Bureau-wide O&M Cost Index was revised in 1986. Prior to 1986, the index was developed from O&M costs per irrigated acre on a number of selected projects which did not exceed set variances for acres and costs during a 3-year period.

Under the new system, all Reclamation projects receiving full or supplemental water service for which operation, maintenance, and replacement (OM&R) costs and irrigated acres reported in the annual Crop Production and Water Utiliaztion Report are used to compute the index. Both Bureau and water user costs are included. Also, the base year has been changed from 1956 to "1977" (1976-78 average cost per acre).

Index numbers for the years 1970 through 1986 are presented in Table 1. This index should be used where there is need to update O&M costs when it is appropriate to do so by use of an index.

Figure 1 compares graphically the Bureau of Reclamation O&M Cost Index with the Engineering News Record Construction Cost Index and Reclamation's Composite Construction Cost Index.

Regional indices also have been calculated and are presented in Table 2. Table 3 provides a breakdown of 1986 cost data by individual district.

Use of O&M Cost Index

The three basic uses of the O&M cost Index are:

1. To adjust to a common year price level annual O&M costs experienced during a given year.
2. To adjust to the current price level values obtained from O&M cost estimating guides.
3. To adjust to the current price level an O&M cost estimates based on some past price level. This would be appropriate where the earlier estimate is adequately prepared for the proposed use provided the intervening local area wage rate trends are not abnormal. The following example illustrates use of the cost index for adjusting Reclamation's OM&R cost estimates:

   Given: An estimate prepared in 1980 to be adjusted to 1987 costs. Estimates of annual provisions for major replacement and electrical energy costs should be adjusted by using current construction costs and energy rates, respectively.

O&M costs, exclusive of major replacement and energy costs, should be indexed as follows:

Date of Estimate	O&M Cost Index
1980	Use 1979[1] = 113
1987	Use 1986[2] = 197

Ratio of indices $\frac{197}{113} = 1.74$

The 1980 subtotal for personnel, equipment, materials, supplies, administration, and general expenses $35,000.

The 1987 subtotal for personnel, equipment, materials, supplies, administration, and general expenses $35,000 x 1.74 = $60,900.

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[1] 1979 index is based on same O&M cost experience as used in 1980 O&M estimate.
[2] 1987 O&M estimate would be based on 1986 cost experience, on which the 1986 index is also based.

Table 1. -

Bureau of Reclamation

WATER SYSTEMS OPERATION AND MAINTENANCE COST INDEX

1977* = 100

Year	Index
1970	66
1971	68
1972	71
1973	74
1974	78
1975	84
1976	92
1977	100
1978	106
1979	113
1980	128
1981	144
1982	153
1983	164
1984	165
1985	181
1986	197

* 1976-78 average ($13.32 per irrigated acre)

Table 2.-

Average O&M Cost Per Irrigated Acre by Region, 1986

Region	$ Per Acre	Reporting Entities
Pacific Northwest	21.56	108
Mid-Pacific	30.82	121
Lower Colorado	80.12	11
Upper Colorado	9.37	50
Southwest	40.41	19
Missouri Basin	10.13	90
Bureau-wide	26.24	399

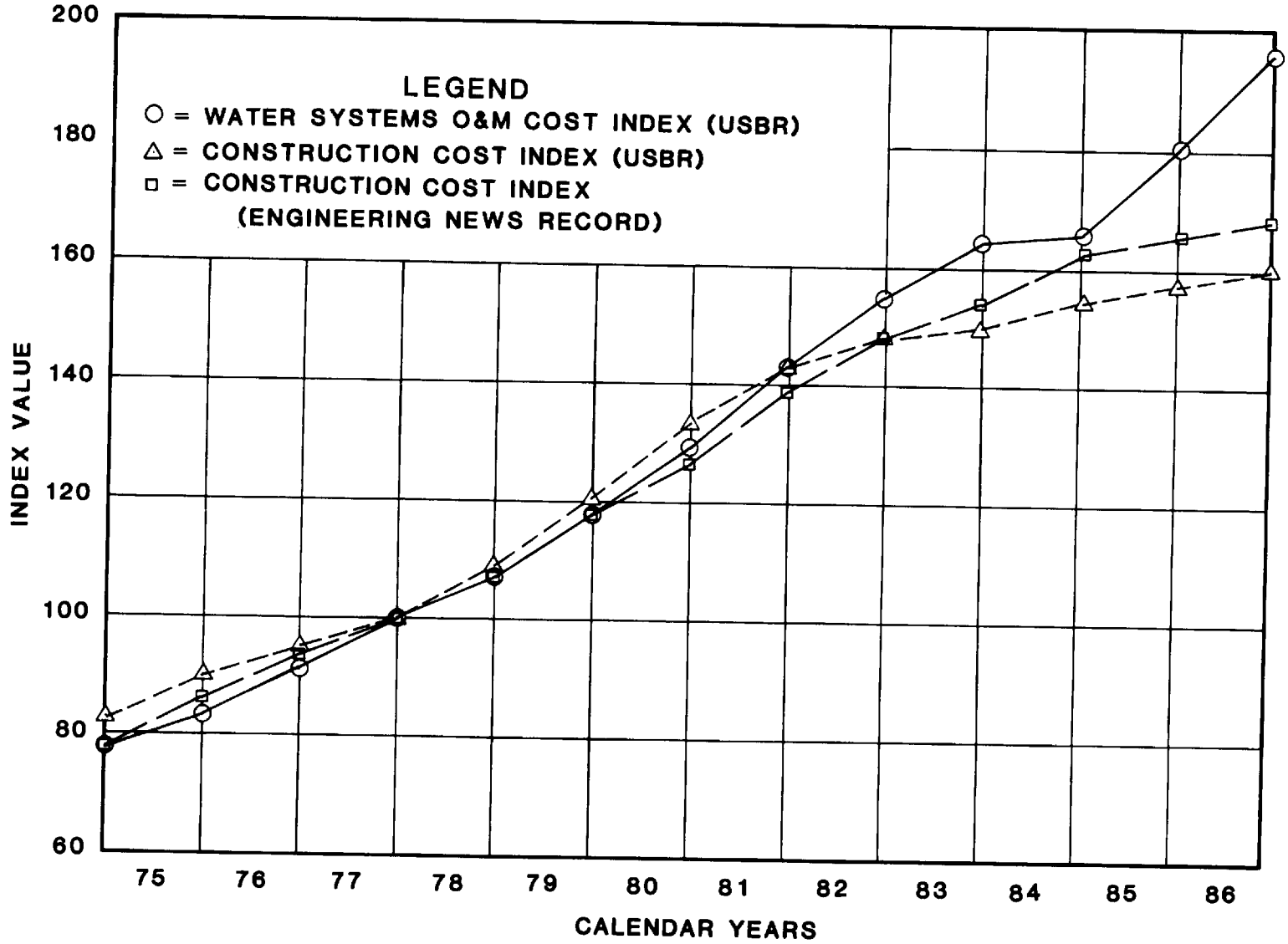

FIGURE 1 - WATER SYSTEMS OPERATION AND MAINTENANCE COST INDEX COMPARISON
1977 = 100

Table 3. -

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

AGRICULTURE OPERATION AND MAINTENANCE COSTS AND GROSS CROP VALUES PER IRRIGATED ACRE - 1986

REGION, PROJECT	SUPPLY	IRRIGATED ACRES	GROSS CROP VALUE PER IRRIGATED ACRES	AGRICULTURAL O&M COST PER IRRIGATED ACRE ($) BUREAU	WATER USER	TOTAL
PACIFIC NORTHWEST REGION						
ARNOLD	F	976	122.78		28.81	28.81
AVONDALE	F	235	165.78		256.94	256.94
BAKER						
LOWER POWDER RIVER I D	S	7,145	203.48		3.53	3.53
BAKER VALLEY I D	S	17,470	175.89		14.02	14.02
BITTER ROOT	F	15,533	134.37		10.49	10.49
BOISE, OR-ID						
ARROWROCK DIVISION						
BIG BEND I D	F	1,423	354.46	1.13	24.46	25.59
BOISE-KUNA I D	F	40,091	376.94	1.09	24.47	25.56
NAMPA - MERIDIAN I D	F	26,796	467.41	1.10	24.47	25.57
NEW YORK I D	F	8,853	283.89	1.07	24.47	25.54
SETTLERS I D	F	455	319.31	2.31	24.40	26.71
SP-WN ACT CONTR						
BALLENTYNE D C	S	600	325.17	.07	8.83	8.90
BOISE VALLEY IDC	S	1,500	216.23	.06	6.33	6.39
CAPITOL VIEW I D	S	345	292.97	.13	8.99	9.12
FARMERS CO-OP D C	S	14,580	419.44	.02	20.71	20.73
FARMERS UNION D C	S	7,421	345.39	.21	20.48	20.69
NAMPA - MERIDIAN I D	S	23,135	404.30	.04	25.97	26.01
NEW DRY CREEK D C	S	2,051	287.17	.07	11.17	11.24
PIONEER DITCH C	S	1,220	335.69	.24	13.20	13.44
PIONEER I D	S	29,245	512.33	.27	18.34	18.61
RIVERSIDE I D	S	9,111	490.58		18.88	18.88
SETTLERS I D	S	8,872	324.11	.05	20.63	20.68
SO BOISE MUTUAL I C	S	260	115.69	.18	17.31	17.49
WILDER I D	F	48,638	740.69	1.06	24.47	25.53
PAYETTE DIVISION						
BLACK CANYON I D NO 1	F	6,251	830.91		21.09	21.09
BLACK CANYON I D NO 2	F	42,887	415.53	1.15	23.77	24.92
SP-WN ACT CONTR						
EMMETT I D	S	20,180	470.35	4.42	8.41	12.83
FARMERS CO-OP I C	S	15,085	388.88	.08	13.85	13.93
LOWER PAYETTE D C	S	11,844	390.57	.11	13.00	13.11
BURNT RIVER	S	15,070	178.67		2.09	2.09
CHIEF JOSEPH DAM						
CHELAN DIVISION						
LAKE CHELAN RECL DIST	F	5,915	2,974.30		59.70	59.70
FOSTER CREEK DIVISION						
BREWSTER FLAT I D	F	2,303	2,510.21		54.00	54.00
BRIDGEPORT BAR I D	F	425	1,903.07		31.19	31.19
GREATER WENATCHEE DIVISION	F	6,071	4,257.31		66.63	66.63
OKANOGAN-SIMILKAMEEN						
OROVILLE-TONASKET I D	F	8,893	2,445.33		79.43	79.43
WHITESTONE COULEE UNIT	S	2,625	1,562.39		31.99	31.99
COLUMBIA BASIN						
EAST COLUMBIA BASIN I D	F	119,679	586.58	4.49	27.73	32.22
QUINCY-COLUMBIA BASIN I D	F	208,162	640.61	4.07	22.07	26.14
SOUTH COLUMBIA BASIN I D	F	187,616	739.61	3.27	22.62	25.89
CROOKED RIVER	F	17,502	310.72		17.45	17.45
DALTON GARDENS	F	9	40.00		66.67	66.67
DESCHUTES						
/1 CENTRAL OREGON I D	F	43,730	196.53		24.88	24.88
CROOK COUNTY IMP D NO 1	S	2,275	349.09		18.08	18.08
NORTH UNIT I D	F	42,117	889.50		28.45	28.45
FRENCHTOWN	F	3,850	240.57		7.53	7.53
/1 KING HILL I D	F	7,886	468.26		109.35	109.35
LITTLE WOOD RIVER	S	7,259	177.38		1.14	1.14
MANN CREEK						
MANN CREEK I D	S	3,597	347.92		2.56	2.56
MONROE CREEK I D	S	830	205.66		6.74	6.74
MICHAUD FLATS	F	9,338	365.54	.47	36.13	36.60
MINIDOKA-PALISADES						
A-B IRRIGATION DISTRICT	F	68,823	440.25	.14	31.84	31.98
AMERICAN FALLS RES D NO 2	B	76,547	158.85	.44	26.96	27.40
BURLEY I D	F	40,124	453.90	.99	23.70	24.69
FREMONT-MADISON I D	S	99,400	296.47	.50	1.35	1.85
MINIDOKA I D	F	60,621	473.91	.72	17.94	18.66
SP-WARREN ACT CONTR						
ABOVE AMERICAN FALLS	S	328,400	393.60	.27	6.46	6.73
BELOW AMERICAN FALLS	S	348,143	398.50	.28	6.42	6.70
MISSOULA VALLEY	F	150	143.83		18.67	18.67
OKANOGAN	F	3,883	1,198.89		66.31	66.31
OWYHEE, OR-ID						
NORTH DIVISION						
ADVANCEMENT I D	F	219	690.66		22.97	22.97
BENCH I D	F	2,161	956.95		21.01	21.01
CRYSTAL I D	F	1,166	2,947.55		21.49	21.49
ONTARIO-NYSSA I D	F	5,456	1,163.60		20.93	20.93
OWYHEE IRRIGATION DIST	F	43,382	439.97		22.44	22.44
PAYETTE-OREGON SLOPE I D	F	4,465	1,305.31		20.52	20.52
SLIDE IRRIGATION DIST	F	1,090	917.04		20.55	20.55
OWYHEE DITCH COMPANY	S	12,500	1,038.74		20.00	20.00
SOUTH DIVISION						
GEM I D	F	31,009	422.20		25.69	25.69
RIDGEVIEW I D	F	5,857	431.48		23.54	23.54

AGRICULTURE OPERATION AND MAINTENANCE COSTS AND GROSS CROP VALUES PER IRRIGATED ACRE - 1986

REGION, PROJECT	SUPPLY	IRRIGATED ACRES	GROSS CROP VALUE PER IRRIGATED ACRES	AGRICULTURAL O&M COST PER IRRIGATED ACRE ($) BUREAU	WATER USER	TOTAL
RATHDRUM PRAIRIE						
EAST GREENACRES I D	F	4,080	167.90		36.19	36.19
HAYDEN LAKE I D	F	850	215.39		77.31	77.31
POST FALLS I D	F	1,934	164.79		44.92	44.92
ROGUE RIVER BASIN						
TALENT DIVISION						
MEDFORD I D	S	7,296	1,997.53	.82	41.12	41.94
ROGUE RIVER VALLEY I D	S	6,202	720.75	.61	34.87	35.48
TALENT I D	S	12,235	881.48	2.76	35.90	38.66
/1 SALMON RIVER CANAL C	S	27,353	231.37		9.76	9.76
SPOKANE VALLEY	F	4,260	272.49		61.67	61.67
THE DALLES	F	5,329	2,644.99		35.47	35.47
TUALATIN	F	14,204	1,539.14	1.54	25.11	26.65
UMATILLA						
EAST DIVISION						
HERMISTON I D	F	7,800	200.03		26.28	26.28
SOUTH DIVISION						
STANFIELD I D	S	5,477	296.08	1.38	31.86	33.24
WESTLAND I D	S	6,293	202.34	1.41	42.91	44.32
WEST DIVISION						
WEST EXTENSION I D	F	5,500	184.69		45.17	45.17
VALE	F	33,118	244.14		18.69	18.69
WAPINITIA	S	2,018	255.75		13.28	13.28
/1 WENATCHEE HEIGHTS RECL D	F	739	1,363.96		83.48	83.48
YAKIMA						
KENNEWICK DIVISION	F	8,764	1,120.73	8.13	106.20	114.33
KITTITAS DIVISION	F	51,728	177.85	3.06	16.95	20.01
ROZA DIVISION	F	65,340	1,664.90	3.51	45.45	48.96
SUNNYSIDE DIVISION						
BENTON I D	F	2,869	895.30	.93	48.45	49.38
GRANDVIEW I D	F	3,209	819.29	.90	45.59	46.49
GRANGER I D	F	1,193	808.24	.98	64.73	65.71
OUTLOOK I D	F	3,662	768.92	.92	47.24	48.16
PROSSER I D	F	1,824.	875.42	.86	59.94	60.80
SNIPES MOUNTAIN I D	F	1,146	777.95	.98	42.40	43.38
SUNNYSIDE VALLEY I D	F	52,808	796.17	10.75	44.30	55.05
SP-WN ACT CONTR						
BROADWAY I D	S	14	5,000.00	.71	28.57	29.28
CASCADE I D	S	10,671	204.75	.43	23.34	23.77
MOXEE	S	306	1,484.38	.47	20.92	21.39
NACHES-SELAH I D	S	9,300	1,799.51	.45	34.09	34.54
SELAH-MOXEE I D	S	6,165	1,614.42	.43	30.98	31.41
SMALL WARREN ACT CONTR	S	80	359.81	.48	30.00	30.48
TERRACE HEIGHTS I D	S	270	892.72	.66	32.59	33.25
UNION GAP I D	S	3,100	2,578.65	.47	32.26	32.73
WEST SIDE I C	S	5,800	253.12	.50	30.17	30.67
YAKIMA VALLEY C C	S	2,430	1,815.87	.44	29.05	29.49
TIETON DIVISION						
YAKIMA-TIETON I D	F	25,525	2,030.16	1.58	42.42	44.00
WAPATO DIVISION	S	110,610	962.51	2.48	27.12	29.60
MID-PACIFIC REGION						
/1 BROWNS VALLEY I D	S	6,825	229.17		45.41	45.41
CACHUMA						
CENTRAL VALLEY						
AMERICAN RIVER DIV						
FOLSOM UNIT						
SAN JUAN SUBURBAN W D	S	2,173	516.72	5.07		5.07
SLY PARK UNIT						
EL DORADO I D	S	5,732	1,218.17	.41	20.93	21.34
DELTA DIVISION						
CONTRA COSTA CANAL						
CONTRA COSTA W D	S	1,348	577.75	1.13	61.59	62.72
DELTA-MENDOTA						
/2 BANTA-CARBONA I D	S	16,266	944.55	10.26	36.44	46.70
/3 BROADVIEW W D	S	8,169	1,047.25	18.86	98.31	117.17
CENTINELLA W D	F	662	764.23	21.37		21.37
DAVIS WATER DISTRICT	F	1,345	1,039.97	24.08	4.08	28.16
DEL PUERTO W D	F	3,507	1,068.91	23.08	5.87	28.95
EAGLE FIELD W D	S	1,356	1,040.05	21.60	10.28	31.88
FOOTHILL WATER DIST	F	3,243	874.35	23.86	3.74	27.60
FRESNO SLOUGH W D	F	1,139	639.56	13.43	26.06	39.49
HOSPITAL W D	F	9,829	936.64	19.71	3.29	23.00
HUGHES, MELVIN D	S	35	553.71	12.97		12.97
JAMES IRRIGATION DIST	S	20,289	731.52	7.16	23.59	30.75
KERN CANON W D	F	2,380	919.08	16.83	5.67	22.50
MERCY SPRINGS W D	F	1,017	598.35	58.01		58.01
MUSTANG WATER DIST	S	3,953	845.49	21.50	3.19	24.69
ORESTIMBA W D	F	5,012	1,069.31	21.96	3.70	25.66
ORO LOMA W D	S	1,002	565.50	28.97	24.62	53.59
PACHECO W D	S	1,197	884.69	19.72	62.23	81.95
PANOCHE W D	S	18,845	902.89	14.37	41.19	55.56
PATTERSON W D	S	7,395	1,089.78	12.16		12.16
PLAIN VIEW W D	F	4,925	804.01	20.37	20.18	40.55
QUINTO W D	S	2,261	592.98	22.84	4.49	27.33
ROMERO W D	S	1,108	589.70	21.88	1.35	23.23

AGRICULTURE OPERATION AND MAINTENANCE COSTS AND GROSS CROP VALUES PER IRRIGATED ACRE - 1986

REGION, PROJECT	SUPPLY	IRRIGATED ACRES	GROSS CROP VALUE PER IRRIGATED ACRES	AGRICULTURAL O&M COST PER IRRIGATED ACRE ($) BUREAU	WATER USER	TOTAL
SALADO W D	F	2,846	1,165.72	23.67	1.29	24.96
SAN LUIS W D	S	6,564	983.73	23.79	44.14	67.93
SUNFLOWER W D	F	4,053	1,059.05	23.32	3.16	26.48
THE WEST SIDE I D	S	7,477	725.38	7.03	9.62	16.65
TRACTION RANCH-CASPER	S	2,110	617.13	11.77		11.77
TRANQUILLITY I D	S	8,350	624.37	9.16	65.47	74.63
WEST STANISLAUS I D	S	21,536	1,207.43	15.81	39.24	55.05
WIDREN W D	S	765	608.08	15.98	5.90	21.88
FRIANT DIV						
FRIANT-KERN CANAL						
/3 ARVIN-EDISON WSD	S	93,453	2,043.59	10.30	42.64	52.94
DELANO-EARLIMART I D	S	49,576	1,211.70	18.67	7.92	26.59
EXETER I D	S	11,677	4,804.84	11.00	15.84	26.84
FRESNO I D	S	162,202	1,461.81	1.35		1.35
/3 GARFIELD W D	S	1,523	1,737.18	13.08	14.04	27.12
GREEN VALLEY W D	S	379	752.64	.64	17.86	18.50
HILLS VALLEY I D	S	2,022	2,706.06	.21	19.64	19.85
INTERNATIONAL W D	S	681	5,664.91	12.39	58.98	71.37
IVANHOE I D	S	9,772	5,806.36	8.17	17.52	25.69
KERN-TULARE W D	S	16,615	3,525.03	7.74	41.09	48.83
/3 LEWIS CREEK W D	S	1,075	1,392.66	9.50	11.24	20.74
LINDMORE I D	S	23,592	3,250.97	12.38	16.98	29.36
LINDSAY-STRATHMORE I D	S	12,707	5,330.69	14.93	31.17	46.10
LOWER TULE RIVER I D	S	74,538	759.88	10.63	18.65	29.28
ORANGE COVE I D	S	23,415	5,585.08	11.69	8.15	19.84
PIXLEY W D	S	47,330	689.70	.25	14.74	14.99
PORTERVILLE I D	S	13,801	912.63	12.27		12.27
RAG GULCH W D	S	5,138	2,185.98	17.19	149.19	166.38
/3 SAUCELITO I D	S	17,789	1,361.37	13.67	16.39	30.06
SHAFTER-WASCO I D	S	30,710	3,106.89	13.44	21.63	35.07
SO SAN JOAQUIN MUD	S	48,054	1,518.23	16.13	33.94	50.07
STONE CORRAL I D	S	5,568	4,273.43	14.69	22.61	37.30
TEA POT DOME W D	S	3,040	6,479.34	21.74	63.65	85.39
/3 TERRA BELLA I D	S	10,252	5,890.52	21.17	24.50	45.67
TRI-VALLEY W D	S	638	2,101.18	.29	20.63	20.92
TULARE I D	S	58,706	739.29	8.96	15.42	24.38
MADERA CANAL						
/3 CHOWCHILLA W D	S	52,530	702.57	15.79	14.37	30.16
MADERA I D	S	96,709	1,410.70	11.00	10.60	21.60
SACRAMENTO RIVER DIV						
CORNING CANAL						
CORNING W D	S	5,785	316.19	26.81	37.64	64.45
ELDER CREEK W D	F	1,057	311.69	23.38	5.94	29.32
/3 PROBERTA W D	F	1,900	272.63	15.71	6.52	22.23
THOMES CREEK W D	S	1,140	472.00	41.08		41.08
TEHAMA-COLUSA						
COLUSA COUNTY W D	S	23,963	1,124.72	10.41	4.12	14.53
CORTINA W D	F	453	458.52	14.68	1.68	16.36
DAVIS W D	S	883	827.10	26.84	12.66	39.50
DUNNIGAN W D	S	4,650	830.58	14.66	16.05	30.71
FOUR-M W D	F	715	426.56	13.12	2.65	15.77
GLENN VALLEY W D	F	223	364.47	15.77		15.77
GLIDE WATER DIST	F	4,026	456.92	11.90	12.63	24.53
HOLTHOUSE W D	F	461	659.54	18.93	1.91	20.84
/3 KANAWHA W D	F	11,861	419.94	16.66	22.75	39.41
KIRKWOOD W D	F	153	271.90	15.60		15.60
LA GRANDE W D	F	1,045	466.09	27.51	14.08	41.59
MYERS-MARSH MAC	S	205	535.34	14.31		14.31
ORLAND-ARTOIS W D	S	19,494	603.20	20.63	32.22	52.85
RICHFIELD W D	S	60	90.70	10.20		10.20
TEHAMA W D	F	122	395.82	6.34		6.34
/3 WESTSIDE W D	S	9,533	775.62	16.48	43.51	59.99
SHASTA DIVISION						
SHASTA DAM UNIT						
ANDERSON-COTTONWOOD ID	S	19,194	405.10	.99	23.59	24.58
COLUSA I C	S	105	1,150.49	2.94		2.94
/3 FEATHER W D	S	7,012	1,286.39	4.75	32.57	37.32
/2 GLENN-COLUSA I D	S	98,200	530.42	3.24	3.43	6.67
MAXWELL I D	S	3,380	439.18	2.80	66.16	68.96
MERIDIAN FARMS W C	S	5,787	811.20	4.12		4.12
MISCELLANEOUS CONTR	S	52,400	642.67	1.32		1.32
NATOMAS CENTRAL MWD	S	19,767	479.39	2.11		2.11
PELGER MUTUAL W C	S	2,173	528.83	1.54		1.54
PLEASANT GROVE-VERONA	S	4,867	333.53	.97		.97
PRINCETON-CODORA-GLENN	S	6,291	490.64	4.52	16.45	20.97
PROVIDENT I D	S	9,965	434.50	.95	3.97	4.92
RECL DIST NO 108	S	29,920	648.70	.95	42.73	43.68
RECL DIST NO 1004	S	11,692	456.53	2.43	9.67	12.10
ROBERTS DITCH I C	S	1,270	557.97	.45		.45
SARTAIN MUTUAL W C	S	639	506.29	1.78		1.78
SUTTER MUTUAL W C	S	28,681	959.99	5.87		5.87
SWINFORD TRACT I C	S	184	1,179.35	.24		.24
TISDALE I&D C	S	1,869	632.31	2.40		2.40
TRINITY RIVER DIV						
CLEAR CREEK SOUTH UNIT						
CLEAR CREEK CSD	F	3,046	322.12	8.67	40.44	49.11
COW CREEK UNIT						
BELLA VISTA W D	S	2,838	602.02	20.99	89.23	110.22

AGRICULTURE OPERATION AND MAINTENANCE COSTS AND GROSS CROP VALUES PER IRRIGATED ACRE - 1986

REGION, PROJECT	SUPPLY	IRRIGATED ACRES	GROSS CROP VALUE PER IRRIGATED ACRES	AGRICULTURAL O&M COST PER IRRIGATED ACRE ($) BUREAU	WATER USER	TOTAL
W SAN JOAQUIN DIV						
SAN LUIS CANAL						
PACHECO W D	S	2,303	891.18	24.08	62.79	86.87
PANOCHE W D	S	14,570	901.69	27.93	41.86	69.79
/3 SAN LUIS W D	S	30,211	1,186.01	30.53	43.69	74.22
WESTLANDS W D	S	513,389	1,216.42	22.67	17.67	40.34
COE PROJ(INTGR)						
BUCHANAN UNIT						
/3 LA BRANZA W D	S	11,866	637.51	1.65		1.65
COE PROJ(NON-INTGR)						
NEW HOGAN						
STOCKTON-EAST W D	F	11,295	1,465.09		29.74	29.74
/1 GEORGETOWN DIVIDE PUD	S	1,754	598.97		115.66	115.66
/1 JACKSON VALLEY I D	S	1,891	593.05		70.77	70.77
KLAMATH, OR-CA						
CALIFORNIA LANDS	F	68,942	575.94	.77		.77
OREGON LANDS	F	124,835	294.12	.77		.77
/1 MOLOKAI	F	4,415	1,723.18		138.77	138.77
/1 NEVADA I D	S	14,741	798.28		127.23	127.23
/1 PLEASANT VALLEY CY W D	S	10,638	7,181.67		84.21	84.21
/1 REDWOOD VALLEY CY W D	S	4,116	1,146.80		15.87	15.87
SOLANO						
MAINE PRAIRIE W D	S	6,816	534.00	3.24	19.87	23.11
/3 SOLANO I D	S	45,353	858.94	3.24	68.50	71.74
VENTURA RIVER	B	3,703	2,674.86		265.06	265.06
LOWER COLORADO REGION						
BOULDER CANYON, CA-AZ-NV						
ALL-AMERICAN CANAL						
COACHELLA DIVISION	F	58,943	4,000.55		55.18	55.18
IMPERIAL DIVISION	F	458,993	1,065.33		65.13	65.13
GILA						
WELLTON-MOHAWK DIVISION	F	59,170	1,000.09		68.32	68.32
YUMA MESA DIVISION						
MESA UNIT	F	16,909	794.43		84.57	84.57
NORTH GILA VALLEY UNIT	F	5,793	4,737.15		23.26	23.26
SOUTH GILA VALLEY UNIT	F	9,655	3,420.62		31.88	31.88
SALT RIVER						
SALT RIVER VALLEY WUA	F	53,046	1,293.76		277.25	277.25
YUMA, CA-AZ						
RESERVATION DIV						
BARD UNIT	F	6,335	3,523.03		40.49	40.49
INDIAN UNIT	F	5,081	1,631.24		43.89	43.89
VALLEY DIVISION, AZ	F	46,195	2,700.71		72.74	72.74
YUMA AUXILIARY	F	2,511	450.25		113.56	113.56
UPPER COLORADO REGION						
BOSTWICK PARK	S	4,324	110.13		13.77	13.77
CENTRAL UTAH						
BONNEVILLE UNIT						
JENSEN UNIT	S	3,880	231.72		2.74	2.74
VERNAL UNIT	S	13,013	173.43		3.43	3.43
COLLBRAN	S	20,245	92.94	1.28	2.89	4.17
EDEN	F	16,160	75.61		6.75	6.75
COTTONWOOD CREEK CONS I C	S	4,807	196.94		5.38	5.38
HUNTINGTON-CLEVELAND I C	S	12,616	106.65		6.63	6.63
FLORIDA	S	14,522	112.95		5.87	5.87
/2 FRUITGROWERS DAM	S	2,300	164.61		11.41	11.41
GRAND VALLEY						
GARFIELD GRAVITY DIV	F	19,490	262.80		23.45	23.45
ORCHARD MESA DIVISION	F	5,473	852.91		106.60	106.60
HAMMOND	F	3,554	336.80		33.76	33.76
HYRUM	S	6,394	335.24		16.89	16.89
LYMAN	S	37,193	65.49		.86	.86
/1 MALAD VALLEY I C	S	5,600	133.34		5.74	5.74
MANCOS	S	11,080	94.07		9.73	9.73
MIDVIEW EXCHANGE	S	5,609	101.60		9.72	9.72
MOON LAKE WUA	S	72,728	112.44		.17	.17
NAVAJO UNIT, CRSP	F	189	10.00		14.60	14.60
NEWTON	S	2,591	245.19		7.15	7.15
OGDEN RIVER						
/1 WEBER-BOX ELDER C D, PROJ1	S	365	843.22		17.82	17.82
/1 WEBER-BOX ELDER C D, PROJ2	S	825	588.93		26.62	26.62
OTHER PROJECT LANDS	S	13,392	655.62		3.46	3.46
PAONIA	S	10,640	155.33		15.23	15.23
PINE RIVER						
PINE RIVER, CO	S	32,175	111.38		6.71	6.71
PINE RIVER INDIAN I P	S	13,115	58.62		4.74	4.74
PROVO RIVER	S	36,209	366.71		4.45	4.45
SANPETE						
EPHRAIM DIVISION	S	6,730	128.54		3.82	3.82
SPRING CITY DIVISION	S	6,800	225.15		2.15	2.15
SCOFIELD	S	15,385	252.56		.72	.72
/1 SETTLEMENT CANYON I C	S	835	409.77		113.58	113.58

AGRICULTURE OPERATION AND MAINTENANCE COSTS AND GROSS CROP VALUES PER IRRIGATED ACRE - 1986

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SILT	S	5,494	153.21		15.48	15.48
SMITH FORK	S	8,912	107.18	6.62	1.55	8.17
/1 ST. JOHN IRRIGATING C	S	5,840	124.80	2.94	1.97	4.91
STRAWBERRY VALLEY						
HIGHLINE DIVISION	F	15,895	321.88		12.42	12.42
SPANISH FORK DIVISION	S	16,927	237.48		9.78	9.78
SPRINGVILLE-MAPLETON DIV	S	7,925	304.95		15.14	15.14
UNCOMPAHGRE						
UNCOMPAHGRE CLASS 1-3	F	60,406	386.18		20.60	20.60
UNCOMPAHGRE, RELEASED	F	3,044	377.87		17.36	17.36
WEBER BASIN						
/1 BOUNTIFUL WATER SUBCON D	S	456	1,200.61		82.32	82.32
/1 CENTERVILLE-DEUEL CRK I D	S	401	6,543.23		113.26	113.26
/1 FARMINGTON AREA PRESS. I D	S	2,379	350.92		24.07	24.07
/1 HAIGHTS CREEK I C	S	1,783	371.82		53.39	53.39
/1 KAYS CREEK I C	S	324	483.25		10.16	10.16
/1 SOUTH DAVIS CY WID	S	246	1,605.79		330.93	330.93
OTHER PROJECT LANDS	S	19,120	634.12		14.60	14.60
WEBER RIVER						
/1 HOOPER IRRIGATION COMPANY	S	10,435	325.93		8.60	8.60
/1 ROY WATER CONSERV SUBD	S	1,355	378.43		243.07	243.07
/1 SOUTH WEBER WID	S	557	145.39		52.06	52.06
OTHER PROJECT LANDS	S	81,233	356.81		1.37	1.37
SOUTHWEST REGION						
/1 ADAMS GARDENS I D	F	6,159	488.38		40.51	40.51
BALMORHEA	S	3,004	301.49		33.76	33.76
/1 BROWNSVILLE IDD	F	14,980	406.50		31.49	31.49
CARLSBAD	F	23,219	292.30	1.15	29.67	30.82
/1 DONNA I D	F	30,807	623.18		29.50	29.50
FORT SUMNER	F	6,235	163.43		17.96	17.96
/1 HARLINGEN I D	F	32,922	365.48		21.79	21.79
/1 HIDALGO CY WID NO 5	F	5,507	411.78		25.74	25.74
LOWER RIO GRANDE REHAB						
LA FERIA DIVISION	F	27,500	326.80		11.37	11.37
MERCEDES DIVISION	F	54,091	449.43		22.58	22.58
MIDDLE RIO GRANDE	F	58,081	314.38	10.10	114.12	124.22
RIO GRANDE						
RIO GRANDE, NM						
ELEPHANT BUTTE I D	F	77,606	1,344.20	3.23	34.93	38.16
RIO GRANDE, TX						
EL PASO CY WID NO 1	F	45,606	705.85	2.65	41.54	44.19
HUDSPETH CY NO 1	S	15,379	550.01		33.35	33.35
SAN JUAN-CHAMA	F	2,118	218.85	12.25	34.79	47.04
/1 SANTA MARIA I D	F	3,699	460.34		16.73	16.73
TUCUMCARI	F	28,321	113.12		25.34	25.34
VERMEJO	F	5,943	97.24		39.53	39.53
W C AUSTIN	F	36,089	273.73		14.31	14.31
WASHITA BASIN						
MISSOURI BASIN REGION						
BUFFALO RAPIDS						
/2 IRRIGATION DISTRICT NO 1	F	11,715	428.26		24.10	24.10
/2 IRRIGATION DISTRICT NO 2	F	8,574	381.03		24.01	24.01
BUFORD-TRENTON	F	7,306	449.24		29.31	29.31
/1 CENTRAL NEBRASKA PP&ID	S	39,351	179.40	.21	5.15	5.36
COLORADO-BIG THOMPSON	S	628,588	353.51	1.07	2.17	3.24
/1 COONEY DAM REHAB	S	17,750	272.56	.39		.39
HUNTLEY	F	24,865	302.20		23.85	23.85
INTAKE	F	765	242.98		9.96	9.96
KENDRICK	F	20,132	85.63	.50	4.34	4.84
LOWER YELLOWSTONE						
DISTRICT NO 1, MT	F	25,698	379.42		26.36	26.36
DISTRICT NO 2, ND	F	16,101	677.39		21.95	21.95
MILK RIVER						
CHINOOK DIVISION	F	34,699	79.36	.73	7.81	8.54
DODSON PUMPING UNIT	F	723	52.82	.91	6.00	6.91
FORT BELKNAP INDIAN RESV	F	4,861	20.79	1.09	6.00	7.09
GLASGOW DIVISION	F	13,933	55.79	.90	16.12	17.02
MALTA DIVISION	F	35,774	37.42	.78	12.95	13.73
PRIVATE PUMPERS PERMANENT	F	10,413	94.74	2.70	7.58	10.28
MIRAGE FLATS	F	10,175	235.96		10.21	10.21
NORTH PLATTE						
NEBRASKA LANDS						
GERING-FT LARAMIE I D	F	52,615	475.64	1.89	13.71	15.60
NORTHPORT I D	F	14,882	271.08	1.98	8.92	10.90
PATHFINDER I D	F	97,539	389.56	1.90	12.98	14.88
SP-WARREN ACT CONTR						
BEERLINE ICC	S	880	77.86	.93	17.73	18.66
BROWNS CREEK I D	S	5,589	231.61	1.82	7.20	9.02
CENTRAL I D	S	1,450	412.50	1.40	12.73	14.13
CHIMNEY ROCK I D	S	5,196	134.18	1.05	6.38	7.43
FARMERS I D	S	59,891	585.98	1.04	15.58	16.62
GERING I D	S	11,724	508.27	1.39	10.66	12.05
WYOMING LANDS						
GOSHEN I D	F	51,117	268.76	1.87	3.47	5.34
SP-WARREN ACT CONTR						
HILL I D	S	3,567	228.85	1.41	10.78	12.19

AGRICULTURE OPERATION AND MAINTENANCE COSTS AND GROSS CROP VALUES PER IRRIGATED ACRE - 1986

REGION, PROJECT	SUPPLY	IRRIGATED ACRES	GROSS CROP VALUE PER IRRIGATED ACRES	AGRICULTURAL O&M COST PER IRRIGATED ACRE ($) BUREAU	WATER USER	TOTAL
LINGLE WUA	S	11,425	271.21	1.59	6.33	7.92
ROCK RANCH D C	S	910	394.92	1.76	19.60	21.36
WYOMING NON-DIST LANDS	F	1,710	320.04	1.01	6.91	7.92
/1 NORTH POUDRE I C	S	30,589	290.87		1.63	1.63
PICK-SLOAN MBP						
BELLE FOURCHE UNIT						
BIGHORN BASIN DIV	F	53,825	182.31	.08	8.34	8.42
HANOVER-BLUFF UNIT						
HIGHLAND-HANOVER I D	F	5,392	336.84	1.28	13.82	15.10
UPPER BLUFF I D	F	1,268	314.61	1.19	19.94	21.13
OWL CREEK UNIT						
LUCERNE PUMP	S	3,480	179.43	.21	4.61	4.82
MIDDLE & UPPER	S	8,470	69.90	.21	6.16	6.37
BOSTWICK DIV						
KANSAS-BOSTWICK I D	F	32,085	218.71	1.47	19.50	20.97
NEBRASKA-BOSTWICK I D	F	20,216	208.33	1.22	16.73	17.95
BOYSEN DIVISION						
BOYSEN UNIT						
BIG HORN CANAL ASSOC	S	22,004	277.82	.02	6.53	6.55
HANOVER I D	S	12,750	327.60	.01		.01
LECLAIR I D	S	8,941	162.31	.02		.02
RIVERTON VALLEY I D	S	6,520	151.45	.03	21.57	21.60
WORLAND AREA	S	1,710	340.30	.03		.03
CHEYENNE DIVISION						
ANGOSTURA UNIT	F	10,557	143.76	3.91	10.25	14.16
RAPID VALLEY UNIT	S	7,713	108.90		.39	.39
FRENCHMAN-CAMBRIDGE						
FRENCHMAN-CAMBRIDGE I D	F	41,798	232.47	1.57	21.69	23.26
FRENCHMAN VALLEY I D	S	8,364	199.23	3.77	9.96	13.73
H&RW IRRIGATION DIST	F	10,909	122.67	1.25	10.67	11.92
GRAND DIV						
SHADEHILL UNIT	F	717	90.27	22.72	2.59	25.31
HEART DIVISION						
DICKINSON UNIT	F	353	86.70	1.13		1.13
HEART BUTTE						
LOWER HEART I C	F	3,730	200.53	1.23	.40	1.63
INDIVIDUAL PUMPERS	F	999	192.51	1.57		1.57
W HEART RIVER I D	F	1,359	109.45	2.79	.51	3.30
HELENA-GREAT FALLS DIV						
HELENA VALLEY UNIT						
HELENA VALLEY I D	F	13,867	114.53	.79	11.71	12.50
JAMES DIV						
KANASKA DIV						
ALMENA UNIT	F	4,535	245.90	1.57	7.37	8.94
MARIAS DIV						
LOWER MARIAS UNIT	F	2,131	238.23	.50		.50
MIDDLE LOUP DIV						
FARWELL UNIT	F	42,251	175.04	.86	19.69	20.55
SARGENT UNIT	F	11,359	159.68	.45	20.05	20.50
NO DAKOTA PUMPING DIV						
FORT CLARK UNIT	F	534	82.52		13.18	13.18
OREGON TRAIL DIV						
GLENDO UNIT-NE						
BRIDGEPORT I D	S	13,322	202.49	.29	4.37	4.66
ENTERPRISE I D	S	7,362	297.95	.11	5.09	5.20
/1 MITCHELL I D	S	11,181	328.10	.30	18.86	19.16
GLENDO UNIT-WY						
BURBANK DITCH C	S	306	178.72	.18	11.36	11.54
LUCERNE CANAL&POWER C	S	3,261	231.46	.21	17.14	17.35
NEW GRATTON DITCH C	S	1,200	343.66	.12	4.39	4.51
TORRINGTON I D	S	2,137	210.31	.13	8.11	8.24
SANDHILLS DIV						
AINSWORTH UNIT	F	29,228	210.39		11.75	11.75
SMOKY HILL DIV						
SOLOMON DIV						
KIRWIN UNIT	F	7,489	187.69	1.74	19.10	20.84
WEBSTER UNIT	F	4,069	235.51	2.53	32.22	34.75
THREE FORKS DIV						
CROW CREEK PUMP UNIT	F	4,892	229.51	.16	13.10	13.26
EAST BENCH UNIT	B	26,128	141.08	3.02	10.98	14.00
WIND DIVISION						
RIVERTON UNIT	F	57,101	156.21	1.15	13.82	14.97
YELLOWSTONE DIV						
SAVAGE UNIT	F	1,927	402.77		21.61	21.61
SHOSHONE						
ELK WATER USERS ASSOC	S	3,555	285.36		2.08	2.08
FRANNIE DIVISION						
MONTANA LANDS	F	76	117.45	.34	9.59	9.93
WYOMING LANDS	F	12,824	138.93	.34	12.81	13.15
GARLAND DIVISION	F	31,504	299.87	.34	22.01	22.35
HEART MOUNTAIN DIVISION	F	28,381	249.06	.38	17.18	17.56
LOVELL I D	S	9,411	262.39	.46	6.78	7.24
WILLWOOD DIVISION	F	10,276	356.96	.33	30.04	30.37

AGRICULTURE OPERATION AND MAINTENANCE COSTS AND GROSS CROP VALUES PER IRRIGATED ACRE - 1986

REGION, PROJECT	SUPPLY	IRRIGATED ACRES	GROSS CROP VALUE PER IRRIGATED ACRES	AGRICULTURAL O&M COST PER IRRIGATED ACRE ($)		
				BUREAU	WATER USER	TOTAL
SUN RIVER						
FORT SHAW DIVISION	F	8,661	74.80		13.65	13.65
GREENFIELDS DIVISION	F	73,518	118.27		15.83	15.83
TRINIDAD	S	18,505	153.24		3.40	3.40
/1 WATER SUPPLY&STORAGE C	S	37,425	248.97		8.91	8.91
/1 WEST BENCH I D	S	5,527	120.88		.39	.39
/1 WHITNEY I D	S	7,139	100.13		6.00	6.00

1/ PROJECT CONSTRUCTED OR REHABILITATED UNDER THE SMALL RECLAMATION PROJECTS ACT OF 1956, P.L. 84-984.
2/ THIS LEGAL ENTITY HAS A SMALL RECLAMATION PROJECTS LOAN IN ADDITION TO A SERVICE REPAYMENT CONTRACT.
3/ PROJECT CONSTRUCTED UNDER THE DISTRIBUTION SYSTEM LOANS ACT OF 1955, P.L. 84-130.
A/ ESTIMATED
B/ INCLUDES TRANSPORTATION LOSSES
C/ INCLUDES OPERATIONAL SPILLS

SUPPLY CODE
F - FULL WATER SUPPLY
S - SUPPLEMENTAL WATER SUPPLY
B - BOTH FULL & SUPPLEMENTAL