

Regional Director (RW), Denver, Colorado

March 27, 1981

Refuge Manager, Benton Lake Wildlife Refuge  
Black Eagle, Montana

## Annual Water Management Plan

### I. 1980 Water Use

The Lake Creek watershed produced very little runoff this year. We received approximately 500 acre feet in May and June from local rain storms. Two pumps at Muddy Creek were operated August 1 to 31 producing an estimated 2000 acre feet to help maintain water levels in Units II, III and VI. Unit I was partially refilled in late August. Approximately 60 acre feet was delivered to the Burgamier ranch.

The Unit IV watershed produced more runoff than Lake Creek watershed. We received an estimated 600 acre feet. This caused a one month increase in Crisafulli pump operations to dewater Unit IV but also decreased Muddy Creek pumping requirements. Water level management objectives as projected in the 1980 Plan were reached. The exception being that Unit IV was not reflooded in the fall. Siltation in borrow areas and a lower central basin in Unit IV constitute botulism hazards. Corrective work is scheduled for 1981.

### II. 1981 Water Management Plan

#### A. Objectives

Spring: Maximize breeding pair habitat  
Flood protection

Early  
Summer: Provide waterfowl brood habitat  
Provide shorebird nesting habitat  
Minimize botulism loss potential (dewater VI)

Late  
Summer: Maintain brood habitat  
Maintain shorebird habitat  
Minimize botulism losses

Fall: Fall migrational habitat (reflooded)  
Provide water in hunt areas  
Preparation for next spring breeding habitat

#### B. Pool Management

Table 1 illustrates planned water management objectives in

terms of acre feet for 1980:

Unit	03/30	05/30	07/30	09/30	11/30
I	400	500	200	600	550
II	300	500	500	500	500
III	1840	2300	3600	2600	2000
IV	40	20	0	450	800
V	1000	1600	2600	1600	1500
VI	1300	300	0	600	600
	4880	5220	6900	6350	5950

Crisafulli dewatering of Unit VI will begin on May 1 and be completed by June 15 barring major equipment breakdowns. This water (estimated 1000 AF) will be used to elevate Unit V water levels and partially replace evaporative losses in Unit III.

Efforts to obtain the new 20 hp electrical pumps by June 1 failed due to delays in processing. Projected delivery dates are now August or September.

Water supplies and flows in Muddy Creek are predicted to be well below average - snow pack is running about 50% of normal. We therefore plan to initiate pumping about April 22nd in an attempt to build a margin against expected water shortages later in the summer. Total water pumped will depend on availability of supply, funding status, and whether Unit IV and VI basins are ready to be reflooded this fall. Two new pumpsites will be constructed this summer by refuge personnel.

### C. Tentative Pumping Plan and Cost Projections

#### 1. Crisafulli Pump

Month	Acre Feet	Hours	Fuel (Gal.)	Costs*
May	860	720	2900	\$3045
June	430	360	1440	1512
1½ months	1290	1080	4340	\$4557

\*Fuel cost @ \$1.05/gallon - doesn't cover labor, oil, grease or repair costs

2. Muddy Creek Pump System

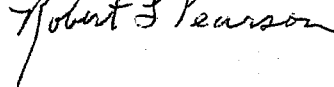
Month	AF	KWH	Est. Dollars
May	1000	182,500	3,400
June	2000	375,000	6,730
July	2000	375,000	6,730
August	1000	182,500	3,400
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	6000	1,115,000	20,260

D. External Factors

May and June rains could produce runoff into Benton Lake causing reduced pumping costs. Runoff from the Unit IV watershed could delay work in that basin, thus again delaying planned reflooding in the fall. Continued shortage of snowpack in the Sun River watershed could have adverse effects on Muddy Creek supplies.

Water management work sheets detailing water volumes, distribution and surface acres by unit and month are attached to refuge and engineering copies of this plan.

Robert L. Pearson



Attachments