

## UNITED STATES GOVERNMENT

## memorandum

DATE: January 27, 1997

## REPLY TO

ATTN OF: Wildlife Management Biologist, Memphis, TN

SUBJECT: Wheeler NWR 1998 Water Management Plan

TO: Refuge Manager, Wheeler NWR

I have reviewed the subject plan as requested and have a few comments for your consideration. I realize that the **planned** water levels normally vary greatly from what actually occurs but I think the planned levels indicate the water management strategy which is what I have attempted to summarize in the following table:

<u>UNIT</u>	<u>Drawdown Initiated on</u>	<u>Lowest level Date</u>	<u>Flooding Initiated on</u>	<u>Planned Activity</u>
WS 1A	1/15	6/15	9/1	Farming
WS 2	1/15	7/1	9/1	Farming
WS 3	1/15	8/1	9/1	Moist Soil
WS 4	1/15	9/1	9/15	Moist soil/mow
WS 5	1/15	9/1	9/1	Moist soil/mow
WS 1B	3/1	8/1	8/15	Farming
WS 6	1/1	4/1	9/1	Farming
Penny	2/1	8/15	8/15	Farming
Rock H. #1	2/1	6/1	9/1	Farming
Rock H. #2	2/1	6/15	9/1	Farming
Buckeye	2/1	6/1	9/1	Farming
Thorson	2/1	6/1	9/1	Farming

Generally, I think it would be desirable to delay drawdown until toward the end of February and holding some water on into March for late spring migrants should be beneficial. Normally as water levels recede, less food is available since it was probably consumed as you flooded the unit. If possible, increasing water levels through February should make additional food resources available.

In those units where moist soil and mowing is the planned activity (WS 3, 4, & 5) I would suggest that you try to maintain the lowest water level for at least 60 days to allow adequate

**ANNUAL WATER MANAGEMENT PLAN**  
**Wheeler National Wildlife Refuge**  
**1998**

Recommended: HT. Stone Date: 1-6-98  
Project Leader

Prepared by: David Y. Spaul Date: 06 JAN 98  
Wildlife Biologist

Reviewed by: Don H. Du Date: 1/27/98  
WHM Biologist

Approved by: \_\_\_\_\_  
District M



**ANNUAL WATER MANAGEMENT PLAN  
Wheeler National Wildlife Refuge  
1998**

**I. WATER MANAGEMENT UNITS**

**WHITE SPRINGS UNIT (WS)**

In 1997, White Springs was dry enough to allow cleaning of some sub-impoundment ditches. Ditch lines were cleared of woody vegetation by an excavator with a mowing head attachment, giving the unit a more open appearance. Hopefully, this will attract more waterfowl and simplify water management procedures.

WS #1A - This is the main artery in the western section of WS. WS #1A is used to dewater WS #1B, WS #2, WS #3, WS #4, WS #5 and possibly WS #6 late in the season. Water is released through WS #1 water control structure and goes under Highway 31 to the Whiteside Pump Station. Whiteside also dewateres portions of Swan Creek State Management Area.

WS #2 - This is a small area and cannot be dewatered until WS #1A is lowered. Beaver problems/vegetation clogging the water control structure causes intensive management. For example, structures must be opened in the morning and closed in the afternoon to prevent beavers from damming the structure. WS #2 also has an alligator weed problem at lower levels. The west side (WS #2a) is a semi-upland area and can be farmed. The east side is lower and more conducive to moist soil management.

WS #3 - This unit cannot be dewatered until WS #1A is lowered. It is a good, flat unit with good moist soil potential. Unfortunately, alligator weed and hardwood (ash and willow) growth is prolific and hard to control.

WS #4 - This unit is a potentially excellent food producer. It has beaver problems much like WS #2. The dike needs to be raised about two feet along with improved access onto the refuge from Lonesome Pine Road. Willows along the ditch and of lower areas in the unit need to be dozed and windrowed, but it will take a long, hot, dry summer to accomplish this work.

WS #5 - This is a small area near the north end of I-65 Bridge on the west side. It is almost a mirror image of WS #4. The water control structure needs replacing.

WS #1B - This is a large unit west of I-65 and north of the river. This is the origin of the main ditch flowing through White Springs. This unit is large with excessive elevation changes of  $\pm 4$  feet. This gives the opportunity to plant corn, beans, milo, or millet in the higher elevations. Lower areas are used to produce moist soil food plants. As the unit is gradually flooded, it provides a great diversity of food for wintering waterfowl.

**WS #6** - This unit is primarily used for agricultural production. A small portion of this unit is at a lower elevation. This lower area is a good producer of moist soil foods, but needs discing every three years. WS #6 is dewatered by gravity flow into Limestone Bay in February and March. After March, a Gator pump (portable high capacity/high volume pump) is used to dewater.

### **PENNEY BOTTOMS**

We are managing this primarily as a farm unit with a 50 acre moist soil component. This area is drained gravity flow in mid-March. A Gator pump is then used to maintain the low water level. Ideally, we plant corn on the field portions of the unit and produce natural foods in the dewatered slough-bed.

### **ROCKHOUSE #1 and #2**

This is a farmed unit where the lowest portions of the fields can be planted later in the year to millet or left alone if natural foods are good. We do not want to plant these areas to harvestable crops because they will flood or be too wet to harvest in the fall. Rockhouse #2 is managed in conjunction with Rockhouse #1. The difference being that Rockhouse #2 is at a higher elevation than Rockhouse #1.

### **BUCKEYE**

Two springs in the north end of the unit can be used to keep it wet. Keeping the unit dry is a challenge. Rockhouse 1 has to be lower than Buckeye to dewater this area. Open areas can be planted to beans or milo, but not corn. The unit has dense mats of alligator weed and knot grass (Paspalum). It needs either spraying with arsenal or disking and planting in milo, millet or buckwheat.

### **THORSON ARM**

This is a long, narrow impoundment east of Buckeye separated by a shallow canal. The north side was used for several years as alligator weed/Arsenal test plots. The south side has also been treated with Arsenal, but mowing late in the year seems to be the most efficient way to manage.

### **BLACKWELL SWAMP**

Basically, we will continue to manage at full pool until after the spring rush of fishermen. Then we will slowly draw down approximately two feet to expose the gently sloping banks producing moist soil food plants. Then in early fall, bring water levels back up to the full pool level.

## **CRABTREE SLOUGH**

This unit provides excellent waterfowl habitat with an abundance milfoil. We attempt to maintain a constant water level.

## **2. PUMP STATIONS**

### **Whiteside Pump Station**

We have to share the pumping capacity with Swan Creek State Management Area. Pumps normally run from May 1 through September 1.

State Contacts: Steve Bryant & Dudley White 353-2634

TVA Contact : Randy McCann 582-3416

Shared cost: May 1-September 1 (State-20%, TVA-50%, FWS-30%)  
September 1-May 1 (State-40%, FWS-60%)

### **Rockhouse Pump Station**

We get full benefit of this pump. Pumps normally run from May 1 through Sept 1. Randy McCann is the contact.

Shared cost: May 1-September 1 (TVA-50%, FWS-50%)  
September 1-May 1 (FWS-100%)

Total annual cost for us to run both pumps is \$12-\$15,000. The good news is, we pay TVA annually for the pumping, but through Randy, we can spend the same amount of TVA money and put it back into our management and maintenance of the dike and impoundments. We have bought gravel, rip-rap, rented trucks, contracted for a mowing crew to remove hardwood growth, bought tubing for gator pump, repaired tractors, and dozers, etc.

### **NOTE:**

This year White Springs #1A and # 6 will be opened 01 February, 1998. Rockhouse 1 and 2 will also be opened the same date. We will attempt to draw down to the lowest level possible in most units. Wet springs and summers coupled with beaver problems have hindered maintenance efforts within the units. Hopefully, with an early drawdown we will be able to remove woody vegetation, clean ditches, and plant some areas to control undesirable plant growth. After impoundments are reconditioned we will be able to manage for moist soil plant production more effectively. //

ANNUAL WATER MANAGEMENT PLAN  
Wheeler National Wildlife Refuge  
1998

Unit: White Springs #1A

Acres: 355

<u>Survey Period</u>	<u>1997 Actual Level</u>	<u>1998 Proposed Level</u>
Jan. 1	555.45	554.50
Jan. 15	556.20	555.00
Feb. 1	556.10	554.50
Feb. 15	554.70 <i>down</i>	554.00 <i>down</i>
Mar. 1	555.75	553.50
Mar. 15	555.20	553.00
Apr. 1	554.60	552.50
Apr. 15	554.20	552.00
May 1	554.60	552.00
May 15	552.00	551.00
Jun. 1	553.36	550.00
Jun. 15	550.20	550.00 <i>low (ag)</i>
Jul. 1	550.10 ✓	550.00
Jul. 15	\$\$\$.\$\$	550.00
Aug. 1	\$\$\$.\$\$	550.00
Aug. 15	\$\$\$.\$\$	550.00
Sep. 1	\$\$\$.\$\$	550.00
Sep. 15	\$\$\$.\$\$	551.00 <i>up</i>
Oct. 1	551.35	551.50
Oct. 15	551.90	552.00
Nov. 1	553.85	552.50
Nov. 15	553.80	553.00
Dec. 1	553.00	553.50
Dec. 15	552.75	554.00

\$\$\$ = Below Gauge

1997

White Springs #1A is divided into three subsections (a, b, and c) due to orientation and elevation. White Springs (WS) #1Aa (a fast drying semi-upland area) was disced in late August and produced no moist soil plant food. WS #1Ab, a lower sub-impoundment, was mowed in August and yielded little or no moist soil food. WS #1Ac, a sloping area, was not manipulated. Encroaching maple and ash on field edges and abundant cocklebur made the field less than desirable. Waterfowl use was moderate throughout the season. Mallards, black ducks, wigeon, and gadwall were the most prevalent species.

Normal/  
Late  
Aug disking  
mowing.  
DHO

1998

White Springs #1 is planned for an early drawdown. WS #1Aa will be double disced early, to remove woody growth, and planted. WS #1Ab will disced and planted to milo or millet. WS #1Ac is planned to be farmed. The field edges will be cut back with the tree cutter and larger trees will be removed by a dozer.

Good  
DHO

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1998

Unit: White Springs #2

Acres: 85

<u>Survey Period</u>	<u>1997 Actual Level</u>	<u>1998 Proposed Level</u>
Jan. 1	555.45	554.50
Jan. 15	556.20	555.00
Feb. 1	556.10	554.50
Feb. 15	554.70	554.00
Mar. 1	555.75	553.50
Mar. 15	555.20	553.00
Apr. 1	554.60	552.50
Apr. 15	554.25	552.50
May 1	554.30	552.00
May 15	553.20	551.50
Jun. 1	553.40	551.00
Jun. 15	550.00	550.50
Jul. 1	551.10	550.00
Jul. 15	550.40	550.00
Aug. 1	549.60	550.00
Aug. 15	549.00	550.00
Sep. 1	\$\$\$.\$\$	550.00
Sep. 15	\$\$\$.\$\$	551.00
Oct. 1	550.30	551.50
Oct. 15	550.70	552.00
Nov. 1	553.20	552.50
Nov. 15	553.25	553.00
Dec. 1	553.40	553.50
Dec. 15	553.60	554.00

\$\$\$ = Below Gauge



1997

White Springs #2 is divided into two sub-units (a & b). White Springs (WS) #2a was sprayed with Arsenal near the ditch. Alligator weed was dominant throughout the sub-impoundment and concentrated in the low lying areas. Broom sedge was distributed on the ridge area along with asters. In low areas, sprangletop and frog fruit were present. In WS #2b, the eastern end was mowed. The center portion was sprayed with arsenal. The northwest leg was equally distributed with alligator weed, wild millet, willow, aster and cocklebur. Mallards, black ducks, wigeons, and gadwall were found here in relatively heavy concentrations late in the season. ✓

1998

White Springs (WS) #2a will be planted via cooperative farmers. The low areas near the ditch will be sprayed with Arsenal to control alligator weed. WS #2b will be mown early and sprayed for alligator weed control near the ditch. Slash piles will be burned. Water levels will be kept at an optimal level to allow for mechanical manipulation and some moist soil plant production. *Good*  
*DH*

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Unit: White Springs #3

Acres: 75

<u>Survey Period</u>	<u>1997 Actual Level</u>	<u>1998 Proposed Level</u>
Jan. 1	555.38	554.50
Jan. 15	556.10	555.00
Feb. 1	556.10	554.50
Feb. 15	554.88	554.00
Mar. 1	555.75	553.50
Mar. 15	555.20	553.00
Apr. 1	554.90	553.00
Apr. 15	554.65	553.00
May 1	554.70	553.00
May 15	554.55	552.50
Jun. 1	553.36	552.00
Jun. 15	550.20	551.50
Jul. 1	551.22	551.00
Jul. 15	551.05	550.50
Aug. 1	550.56	550.00
Aug. 15	550.52	550.00
Sep. 1	550.50	550.00
Sep. 15	550.38	550.50
Oct. 1	551.38	551.00
Oct. 15	551.90	551.50
Nov. 1	553.60	552.00
Nov. 15	553.78	553.50
Dec. 1	553.50	554.00
Dec. 15	553.25	554.50

## 1997

In WS #3 the middle portion (approximately 3/4 of the total acreage) was sprayed with Arsenal to control alligator weed. The ditch was cleaned and woody growth was removed with the mowing excavator throughout the entire unit. The eastern end is the highest elevation in the unit. It produced aster, trumpet creeper, green ash, and some button bush and alligator weed. The western end is the lowest elevation in the unit. It produced a magnificent stand of wild millet with interspersions of Cyperus. Waterfowl used this unit sporadically throughout the season, but more intensely toward the end. White Springs #3 was used mainly by mallards, black ducks, wigeon, and gadwall. Pintail and shovelers were present late in the season. Small numbers of canvasback were also seen in December.

## 1998

White Springs #3 will be managed as a moist soil unit. There will be no mechanical manipulation. Slash piles will be burned.

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Unit: White Springs #4

Acres: 75

<u>Survey Period</u>	<u>1997 Actual Level</u>	<u>1998 Proposed Level</u>
Jan. 1	555.40	554.50
Jan. 15	556.10	555.00
Feb. 1	556.10	554.50
Feb. 15	554.70 <i>&gt; down</i>	554.00
Mar. 1	555.75	553.50
Mar. 15	555.20	553.50
Apr. 1	554.70	553.50
Apr. 15	554.30	553.50
May 1	554.60	553.50
May 15	553.90	553.50
Jun. 1	554.50	553.50
Jun. 15	553.00	553.00
Jul. 1	553.10	552.50
Jul. 15	550.40 <i>✓ Low</i>	552.00
Aug. 1	550.82	551.50
Aug. 15	552.00 <i>&gt; up ?</i>	551.00
Sep. 1	\$\$\$.\$\$	550.50 <i>✓ Low (moose/ms)</i>
Sep. 15	550.75	551.00 <i>&gt; up</i>
Oct. 1	551.50 <i>&gt; up</i>	551.50
Oct. 15	552.28	552.00
Nov. 1	553.80	552.50
Nov. 15	553.88	553.00
Dec. 1	553.58	553.50
Dec. 15	553.70	554.00

\$\$\$ = Below Gauge

1997

White Springs #4 produced an abundance of smartweed. The smartweed was interspersed with heavy concentrations of willow, marsh mallow, asters, and button bush. There is still a zone of willow and large slash piles along the ditch bank. WS #4 was moderately used by waterfowl. Mallards, pintail, gadwall, and wigeon were the main users.

1997

White Springs #4 will be mown early to release desirable moist soil plants and set back woody vegetation. Large willows will be cleared by heavy equipment. Slash piles will be burned.

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Unit: White Springs #5

Acres: 45

<u>Survey Period</u>	<u>1997 Actual Level</u>	<u>1998 Proposed Level</u>
Jan. 1	555.40	554.50
Jan. 15	556.10	555.00
Feb. 1	556.10	554.50
Feb. 15	554.70	554.00
Mar. 1	555.75	553.50
Mar. 15	555.20	553.50
Apr. 1	555.50	553.50
Apr. 15	554.30	553.50
May 1	554.60	553.50
May 15	554.55	553.50
Jun. 1	554.85	553.50
Jun. 15	554.90	553.00
Jul. 1	553.40	552.50
Jul. 15	553.18	552.00
Aug. 1	552.80	551.50
Aug. 15	552.70	551.00
Sep. 1	552.60	550.50
Sep. 15	549.84	551.00
Oct. 1	554.00	551.50
Oct. 15	554.10	552.00
Nov. 1	554.50	552.50
Nov. 15	554.50	553.00
Dec. 1	554.45	553.50
Dec. 15	554.50	554.00

down

down

low

up

low (max/ms)  
up

1997

White Springs #5 had an abundance of smartweed and wild millet. Alligator weed formed a fairly constant ground cover throughout the unit. Button bush was scattered in the higher elevations but concentrated in lower elevations. Trumpet creeper and willow were also uniformly present in the unit. Waterfowl usage was moderate throughout the season. White Springs #5 was used almost exclusively by mallards.

1998

White Springs #5 will be mowed early in the season. Larger woody vegetation near the ditch will be dozed. This should release desirable moist soil plants.

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Unit: White Springs #1B

Acres: 600

<u>Survey Period</u>	<u>1997 Actual Level</u>	<u>1998 Proposed Level</u>
Jan. 1	555.38	553.50
Jan. 15	556.10	554.00
Feb. 1	556.10	554.00
Feb. 15	554.66 } down	554.00
Mar. 1	555.75	554.00
Mar. 15	555.25	553.50 } down
Apr. 1	554.38	553.50
Apr. 15	554.08	553.50
May 1	554.60	553.00
May 15	552.50	552.50
Jun. 1	552.60	552.00
Jun. 15	551.30	551.50
Jul. 1	550.82	551.00
Jul. 15	550.18	550.50
Aug. 1	550.35	550.00 ✓ low (sig)
Aug. 15	550.00	550.00
Sep. 1	\$\$\$.\$\$	550.50 } up
Sep. 15	549.90 ✓ Low	551.00
Oct. 1	551.30	551.50
Oct. 15	551.86	552.00
Nov. 1	553.74 } up	552.50
Nov. 15	553.85	553.00
Dec. 1	553.04	553.00
Dec. 15	552.75	553.50



## 1997

White Springs (WS) #1B is divided into four sub-impoundments (a, b, c, & d). Divisions are determined by differing elevations within the impoundment. WS #1Ba was disced on the southeastern quarter of the impoundment and planted to millet in late August. Millet production was poor. The middle half was disced about the same time the other area was planted and produced a mat of alligator weed covered by trumpet creeper. The northwestern quarter was too wet for mechanical manipulation and produced moist soil plants. Alligator weed was most dominant with cocklebur and spots of wild millet as an overstory. Sedges were a noteworthy component. Ammania was scattered throughout the sub-impoundment. WS #1Bb was planted to millet that was taken over by Sesbainia and trumpet creeper. The west end was a carpet of alligator weed. WS #1Bc was mowed on the southern end. Throughout the rest of the sub-impoundment alligator weed formed a mat. Willow and spots of knotgrass covered the mat of alligator weed. Balloon vine was draped across the entire sub-impoundment. Smartweed was a noteworthy component, but could not compete with the other species. This was a high waterfowl use unit. Mallards and black ducks used this area regularly. Wigeon and gadwall were seen late in the season. Ring-necks and pintail also favored this unit.

## 1998

White Springs (WS) #1Ba will be planted to soybeans or a legume. WS-#1Bb will be farmed by the cooperative farmer. WS #1Bc will be heavily disced and planted to milo in late June. WS #1Bd will be disced and planted by the cooperative farmer.

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Unit: White Springs #6

Acres: 300

<u>Survey Period</u>	<u>1997 Actual Level</u>	<u>1998 Proposed Level</u>
Jan. 1	555.40	555.00
Jan. 15	556.00	554.50
		<i>down</i>
Feb. 1	556.10	554.00
Feb. 15	553.10	553.00
		<i>down</i>
Mar. 1	555.75	552.00
Mar. 15	555.00	551.00
Apr. 1	553.50	550.00
Apr. 15	554.10	550.00
		<i>✓ Low (Ag)</i>
May 1	554.20	550.00
May 15	553.00	550.00
Jun. 1	553.50	550.00
Jun. 15	553.80	550.00
Jul. 1	553.80	550.00
Jul. 15	552.88	550.00
		<i>✓ low</i>
Aug. 1	554.00	550.00
Aug. 15	554.00	550.00
Sep. 1	554.10	551.00
Sep. 15	553.95	551.50
		<i>up</i>
Oct. 1	554.00	552.00
Oct. 15	554.10	552.50
		<i>up</i>
Nov. 1	554.50	553.00
Nov. 15	554.50	553.50
Dec. 1	554.45	554.00
Dec. 15	554.50	554.50

1997

White Springs #6 was in agricultural production in 1997. Areas around the Key Hole were cleared by an excavator with a mowing head attachment. This "opened" the area in hopes that it would increase waterfowl use. This was a low waterfowl use unit. It will probably be next year before we see good results on the clearing.

1998

White Springs #6 will be in agricultural production in 1998.

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Unit: Penney Bottoms

Acres: 100

<u>Survey Period</u>	<u>1997 Actual Level</u>	<u>1998 Proposed Level</u>
Jan. 1	555.50	555.50
Jan. 15	***.**	555.50
Feb. 1	***.**	554.50
Feb. 15	554.70	554.00 } down
Mar. 1	***.**	553.50
Mar. 15	555.10	553.00 ✓ low (47)
Apr. 1	552.60	553.00
Apr. 15	553.80	553.00
May 1	553.80	553.00
May 15	553.10	553.00
Jun. 1	554.60	553.00
Jun. 15	553.50	553.00
Jul. 1	555.20	553.00
Jul. 15	552.80	553.00
Aug. 1	553.00	553.00
Aug. 15	!!!.!!!	553.00
Sep. 1	!!!.!!!	554.00 } up
Sep. 15	!!!.!!!	554.00
Oct. 1	!!!.!!!	554.00
Oct. 15	!!!.!!!	554.50
Nov. 1	!!!.!!!	554.00
Nov. 15	!!!.!!!	554.50
Dec. 1	!!!.!!!	554.50
Dec. 15	!!!.!!!	555.00

\*\*\* = Over Gauge

!!! = Gauge Down

## 1997

Penney Bottoms Unit was a moderate producer of waterfowl food. Knotgrass was the most prevalent species. It covered the fringes of the impoundment and was spotty on the interior. Wild millet, sedges, and smartweed were abundant throughout the unit with Ludwigia moderately interspersed. The Phragmites, found in 1996 at the eastern and western margins of the impoundment, was sprayed with Rodeo herbicide in June. In October, no Phragmites was found. Waterfowl use dropped dramatically in 1997. Penny Bottoms was historically the premier unit of Wheeler. In 1997, it got low waterfowl use, primarily by mallards.

## 1998

Penney Bottoms will be dewatered early. The unit will be disced and farmed if possible. Spraying to control knotgrass would be a last resort type manipulation. Mowing late in the season (August-September) is an option if we have a wet spring. Other areas will be mown to control willow encroachment.

ANNUAL WATER MANAGEMENT PLAN  
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Unit: Rockhouse #1

Acres: 325

<u>Survey Period</u>	<u>1997 Actual Level</u>	<u>1998 Proposed Level</u>
Jan. 1	554.50	554.50
Jan. 15	556.00	554.50
Feb. 1	556.20	554.00
Feb. 15	555.50	553.50 > down
Mar. 1	557.00	553.00
Mar. 15	556.30	552.00
Apr. 1	554.40	551.50
Apr. 15	554.37	551.50
May 1	554.97	551.50
May 15	554.76	551.00
Jun. 1	553.00	550.00 ✓ low (ag)
Jun. 15	551.92	550.00
Jul. 1	552.50	550.00
Jul. 15	551.40	550.00
Aug. 1	549.22 ✓ low	550.00
Aug. 15	549.25	550.00
Sep. 1	549.70	550.00
Sep. 15	552.46	551.00 > up
Oct. 1	553.46	551.50
Oct. 15	553.78 > up	552.00
Nov. 1	555.22	552.50
Nov. 15	553.34	553.00
Dec. 1	553.25	553.50
Dec. 15	553.94	554.00

1997

Rockhouse #1 was in agricultural production in 1997. This was a moderate/high use unit for waterfowl. Mallards, wigeon, gadwall, and black ducks favored this unit.

1997

Rockhouse #1 will be in agricultural production in 1998.

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Unit: Rockhouse #2

Acres: 150

<u>Survey Period</u>	<u>1997 Actual Level</u>	<u>1998 Proposed Level</u>
Jan. 1	554.50	554.50
Jan. 15	555.00	554.50
Feb. 1	556.20	554.00
Feb. 15	555.50	553.50 } <i>down</i>
Mar. 1	557.00	553.00
Mar. 15	556.30	552.50
Apr. 1	554.45	552.00
Apr. 15	554.30	552.00
May 1	554.97	552.00
May 15	555.70	551.50
Jun. 1	554.00	551.00
Jun. 15	553.25	550.00 ✓ <i>low (ag)</i>
Jul. 1	555.70	550.00
Jul. 15	552.80	550.00
Aug. 1	550.00	550.00
Aug. 15	550.00	550.00
Sep. 1	550.08	550.00
Sep. 15	552.40	551.00 } <i>up</i>
Oct. 1	553.10	551.50
Oct. 15	553.36	552.00
Nov. 1	554.48	552.50
Nov. 15	554.20	553.00
Dec. 1	553.55	553.50
Dec. 15	553.80	554.00



1997

Rockhouse #2 was in agricultural production in 1997. It got moderate use by mallards and black ducks.

1998

Rockhouse #2 will be in agricultural production in 1998.

ANNUAL WATER MANAGEMENT PLAN  
Wheeler National Wildlife Refuge  
1998

Unit: Buckeye

Acres: 160

<u>Survey Period</u>	<u>1997 Actual Level</u>	<u>1998 Proposed Level</u>
Jan. 1	554.30	554.50
Jan. 15	555.90	554.50
Feb. 1	556.10	554.00
Feb. 15	555.60	553.50 > down
Mar. 1	557.00	553.00
Mar. 15	556.30	552.50
Apr. 1	555.50	552.00
Apr. 15	554.30	551.50
May 1	554.97	551.00
May 15	555.25	550.50
Jun. 1	554.00	550.00 ✓ low (ag?)
Jun. 15	552.40	550.00
Jul. 1	553.40	550.00
Jul. 15	551.41	550.00
Aug. 1	550.00	550.00
Aug. 15	549.50	550.00
Sep. 1	549.70	550.00
Sep. 15	552.50	551.00 > up
Oct. 1	553.54	551.50
Oct. 15	553.78	552.00
Nov. 1	555.28	552.50
Nov. 15	553.50	553.00
Dec. 1	553.20	553.50
Dec. 15	554.00	554.00

### 1997

The Buckeye Unit was managed as a moist soil unit. Ludwigia, knot grass, bermuda grass, and alligator weed were the top four plant species surveyed. Only a small percentage of "good" plants (i.e., smartweed) was found. The mat formed by undesirable species made it almost impossible for the production of desirable species. Willows and button bush formed a thick overstory in spots. Waterfowl use was poor and very sporadic.

### 1998

Buckeye will be heavily disced and then planted. Hopefully, a cooperative farmer will take this unit in 1998. However, with the thick cover of grasses it seems unlikely. Chemical soil sterilization is an option, but not a preference.

ANNUAL WATER MANAGEMENT PLAN  
Wheeler National Wildlife Refuge  
1998

Unit: Thorson Arm

Acres: 135

<u>Survey Period</u>	<u>1997 Actual Level</u>	<u>1998 Proposed Level</u>
Jan. 1	554.20	554.50
Jan. 15	555.60	554.50
Feb. 1	555.80	554.00
Feb. 15	555.60	553.50 > down
Mar. 1	557.00	553.00
Mar. 15	556.30	552.50
Apr. 1	555.00	552.00
Apr. 15	554.30	551.50
May 1	554.97	551.00
May 15	555.70	550.50
Jun. 1	554.00	550.00 ✓ low (eq)
Jun. 15	552.90	550.00
Jul. 1	553.70	550.00
Jul. 15	552.90	550.00
Aug. 1	551.20	550.00
Aug. 15	551.20	550.00
Sep. 1	550.50	550.00
Sep. 15	552.30	551.00 > up
Oct. 1	553.38	551.50
Oct. 15	553.60	552.00
Nov. 1	555.10	552.50
Nov. 15	553.50	553.00
Dec. 1	553.30	553.50
Dec. 15	553.70	554.00

1997

A drainage ditch divides the Thorson Arm Unit. The north side was planted in September to milo and millet. The planting was too late for any seed production and plants only attained about 10 inches in height. The south side was mowed in August. Overall, the unit produced an excellent stand of alligator weed, Ludwigia, and knotgrass. Smart weed was a noteworthy component. However, it just could not compete with the other species. Cocklebur was scattered throughout the south side of the unit. Waterfowl use was low throughout the season. Mallards and black ducks and were the most common species found.

1998

Thorsen Arm will be farmed by cooperative farmers. Corn may be grown there and harvested in strips.