

CENTRAL REFUGES BIOLOGIST  
U. S. Fish and Wildlife Service  
P. O. Box 544  
Barnegat, NJ 08005

Refuge Manager .....  
Asst. Mgr. 1 .....  
Asst. Mgr. 2 *DRF* .....  
Bio. Tech. ....  
Secretary .....  
Auto. Mechanic .....  
Maint. Worker .....  
Tractor Oper. ....  
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MEMORANDUM

DATE: April 16, 1988

FROM: Central *Refuges* Biologist, FWS, Barnegat, NJ

SUBJECT: IRQ Annual Water Management Program

TO: Regional Director, FWS-AWR-RF-C, Newton Corner, MA

I've completed my review of the Iroquois National Wildlife Refuge Annual Water Management Program. I see no problems in executing the program as presented.

I do have some overall thoughts and suggestions about water management at Iroquois. Some can be implemented this year and some will probably have to wait, but we need to begin thinking and talking about them.

There were a number of water gauges which were resurveyed and corrected. The historic data on all these water gauges needs to be corrected. When, and I believe when and not if, a water management model is developed for Iroquois; this data will probably be used to develop and validate the model. The data if not corrected now may cause some problems in the future. 1988 is probably a good time to begin inputting the data into the station's computer. The RBase data base system would be the application program of choice. Both current and historic data will be needed for making future management decisions.

The monoculture cattail stands and poor water transport ability may be both potential candidates for a "cookie cutter". My first choice for monoculture cattail management is muskrat management. I am hoping that the monitoring of the muskrat effectiveness is more objective than subjective. If muskrat management fails, the "cookie cutter" I think will have no problems with cattails where the Hackney cutter failed. The "cookie cutter" also should have little trouble cutting the small ditches needed to link the Countyline Ditch with the Seneca Pool and other ditching problems mentioned in the program.

The lack of emergent vegetation in the Oneida Pool, Center Marsh and elsewhere are all candidates for moist soil management. Essentially the management programmed for Oneida Pool is a form *APR 20 1988*

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of moist soil management. It may be worth considering utilizing one area as an experimental moist soil management area on an annual basis. Center marsh may be a good candidate. I believe that ecological succession of the Iroquois marshes are similar to are the Montezuma marshes. Twenty years of stable water at Iroquois and the marshes may resemble the Montezuma marshes of the 1980's. Now may be the time to begin thinking about doing something.

cc: Project Leader, Iroquois NWR

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ANNUAL WATER MANAGEMENT PROGRAM  
IROQUOIS NATIONAL WILDLIFE REFUGE-1988

I. INTRODUCTION

This report summarizes water conditions during the year 1987, for refuge impoundments, and provides water management guidelines for calendar year 1988.

II. WEATHER SUMMARY

For the second consecutive year the winter was relatively mild in 1987, with below average snow accumulations in Dec., Jan., and February.

March was a remarkably warm and sunny month, which provided a good jump on field work for the year. A considerable amount of mowing was completed in March as well as the majority of our burning. February, March, May, June, and October all recorded below normal total precipitation amounts.

Warm and generally sunny conditions prevailed through the summer all contributing to a good field work season.

September provided 7.16 inches of rain and filled many refuge **impoundments prior to fall migration**. By late November most pools were frozen over, but only temporarily. December temperatures opened all impoundments until late in the month when permanent freeze up occurred.

III. IMPOUNDMENTS

Our four major pools, comprising 3400 acres were maintained at management levels which provided adequate water for late migrants and muskrat populations. This practice was initiated in 1986 and has worked well. Maintaining elevated pool levels through the winter, especially in Cayuga and Mohawk has provided increased muskrat activity and better **distribution** of emergent vegetation. With this water management regime, water levels in Oneida Pool, part of the Oak Orchard Creek watershed are monitored closely to ensure that adequate flood storage is maintained in the Creek floodplain. If heavy rains or quick snow melt should occur, Oneida Pool and the floodplain should handle the runoff adequately.

C. Miscellaneous Impoundments - 109 acres: These two impoundments are located at least partially in the flood plain of Oak Orchard Creek, but both have another source of water.

(1) Onondaga Pool - 55 acres: This flooded woodland area consists of three connected small impoundments. It has two sources of water; (a) runoff from high ground south of the refuge and (b) flood waters from Oak Orchard Creek. All three dikes were completed, but no water control structures have been installed. Channels have been cut through two of the dikes to keep stands of Swamp White Oaks from being drowned. Without water control structures, these impoundments rise and fall with the level of Oak Orchard Creek, with the exception of a small area adjacent to the dike of the impoundment, southeast of Quarters #1, that holds some water throughout the year.

(2) Swallow Hollow Marsh - 54 acres: This area is important for wildlife observation by the public and for brood habitat for wood ducks. A self-guided nature trail winds around through the area. The impoundment itself contains a cattail marsh separated by open water from a brush swamp. In the brush swamp, buttonbush is predominant. The dikes of this impoundment have been raised and widened and six, 24" culverts, equipped with flap gates on the outlet side have been installed. In their present condition they do not allow us to maintain water above the level of the bottom of the pipe. We have constructed a pair of iron channel slots for each tube wide enough to accept standard stoplogs and will install these as soon as time permits. This will allow us greater flexibility in water level management in Swallow Hollow. In addition, the existing emergency spillway is not long enough to handle the annual spring runoff and, therefore, will be lengthened and reinforced with concrete or rip-rap as soon as time and funding permits.

D. Uncontrolled Water Areas:

(1) Flood Plain of Oak Orchard Creek East of Highway #63: 1,800 acres this area is largely swamp woodland, but it also includes areas of cattail marsh. It is subjected to flooding each spring and occasionally at other periods during the year. During the flooding stage, it is used by migrating dabbling ducks and later in the season, as breeding pair habitat. The water recedes from most of the area before broods hatch. Beaver activity

is creating semi-permanent water areas adjacent to the creek. Six hundred acres of the area has been set aside as a Natural Area and has been designated as a Natural Landmark. The creek itself furnishes brood habitat, primarily for wood ducks and Canada geese.

3

Prepared By: \_\_\_\_\_ Date \_\_\_\_\_  
Assistant Refuge Manager

Submitted By: John Till Date 3/26/88  
Refuge Manager

Reviewed By: \_\_\_\_\_ Date \_\_\_\_\_  
RF-C Field Biologist

Approved By: \_\_\_\_\_ Date \_\_\_\_\_  
RF-C Supervisor

Table 1. Monthly Precipitation and Mean Maximum and Minimum Temperatures  
for the Iroquois NWR in Calendar Year 1987

Month	Precipitation in Inches				Melted <sup>1/</sup> Precipitation		Mean <sup>2/</sup> Temperatures	
	Rain	20 YR. AVG.	Snow	20 YR. AVG.	Total	20 YR. AVG.	Max.	Min.
Jan.	0.83	0.26	18.0	20.1	2.63	2.27	34.8	20.1
Feb.	0.04	0.58	12.3	14.3	1.27	2.01	34.1	12.2
Mar.	2.50	1.81	1.6	9.3	2.66	2.74	47.6	24.8
Apr.	2.84	2.67	11.6	3.2	4.00	2.99	59.3	38.4
May	1.51	2.81			1.51	2.81	71.5	48.3
Jun.	2.56	3.58			2.56	3.58	79.9	56.4
Jul.	4.56	3.38			4.56	3.38	83.6	63.8
Aug.	4.11	4.00			4.11	4.00	79.1	57.6
Sep.	7.16	3.58			7.16	3.58	72.2	53.2
Oct.	1.85	2.83	0	0.2	1.85	2.83	58.1	36.5
Nov.	4.25	2.53	2.5	7.0	4.50	3.24	48.6	34.0
Dec.	1.38	1.56	11.6	13.4	2.54	2.91	38.8	27.8
Total	33.59	29.59	57.6	67.6	39.35	36.34		

<sup>1/</sup> Melted snowfall calculated as follows 1" snow = .1" of melted precipitation.

<sup>2/</sup> Mean temperature not based on full months data due to weekends and federal holidays.



IROQUOIS NWR  
1987 Water Level Management by Month \*

Pool	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
CAYUGA	613.0	613.5		614.0					613.5	614.0		
	613.6	613.7	613.6	614.2	613.8	613.6	613.4	613.3	613.2	613.8	614.0	614.1
SUBIM POUND				614.5					614.5			
		614.8	614.8	615.0	614.7	614.1	613.5	613.5	614.0	614.4	614.6	615.0
MOHAWK	613.6			614.0	614.3				613.5			
	613.7	613.3	613.7	614.2	614.1	613.9	613.6	613.6	613.7	613.7	613.6	613.8
SENECA	611.5			612.8	610.5				611.0			611.5
	611.4	610.7	612.0	613.1	613.0	610.8	610.5	609.8	609.8	609.9	609.9	611.5
ONEIDA			613.8	613.0	612.4				613.0			
	613.8	612.7	613.5	614.8	612.8	612.7	612.5	612.5	613.1	613.5	613.5	614.5
RINGNECK	620.5	621.0							621.0			
	620.6	620.7	620.6	620.6	620.5	620.3	620.2	620.1	620.3	620.3	620.4	621.1
SCHOOL HOUSE	623.0	623.3							623.3			
	622.9	622.5	623.3	623.8	623.2	623.0	622.8	622.8	623.1	623.3	623.4	623.4
CENTER	626.3	626.6							626.6			
	626.2	626.4	626.4	626.6	626.3	626.1	625.9	625.8	624.5	623.9	624.4	625.9
LONG	633.0	633.3							633.3			
	633.4	633.5	633.1	633.2	632.9	632.6	632.2	632.1	632.2	632.6	632.8	632.7
KNOWLES VILLE	Drained								632.3			
									Filling	630.5	632.0	632.5
ONONDAGA	Fluctuates w/Oak Orchard Creek (Rt. 63)											
	613.7	612.4	614.0	614.7	612.8	612.7	612.4	612.4	613.0	613.5	613.6	614.7
SWALLOW HOLLOW	Maintain at full level throughout the year											
GALAXIE	616.6	Fluctuates w/seasonal runoff										

Proposed Level

Approximate Level Achieved

## A. Management Record

Year 1987

PLANNED	ACTUAL
<p><b>A. Water Levels:</b></p> <p>This pool will be managed basically the same as in 1986. The water control construction project on the Countyline dike between Cayuga Pool and Seneca Pool will prevent us from drawing down this pool for burning and rejuvenation in 1987.</p> <p>Winter water levels will be maintained at or about 613.6 to provide adequate habitat for late migrating waterfowl, and muskrats.</p> <p>Spring and summer levels will be retained at between 614.0 and 614.5. The level will be lowered in the fall to approximately 613.6 to accommodate the annual waterfowl hunt. It will be kept at this level through December.</p>	<p>Mohawk was managed essentially as planned for 1987. Winter water levels were maintained at about 613.6 which provided adequate waterfowl migration habitat into freeze up while encouraging immigration of muskrats into this unit. We hope to assess whether any positive habitat changes, primarily creation of additional openings in dense cattail stands scattered throughout this pool are realized, by keeping water levels higher. We hope to stimulate increased over water nesting by waterfowl and other marsh and water birds, and create better brood rearing conditions. Migration and pair habitat will also be positively influenced.</p> <p>Pool levels were elevated and maintained near the 614 to 614.5 level through the early summer. These levels, however, could not be maintained through the summer or early fall as was planned because evaporation often exceeds our ability to maintain levels desired. By August the pool level dropped to 613.6 where it stayed through the fall hunting season. This level (613.6) is ideal for the hunting program as well as for maintaining viable muskrat populations.</p> <p>Purple loosestrife was treated once again in 1987 near hunting stands 19&amp;20.</p> <p>The fall prescribed burning option identified under the "planned" section was put on hold in favor of using elevated water levels to try to stimulate desired vegetation changes in this pool.</p>



## WETLAND MANAGEMENT UNIT: Mohawk Pool

## B. WATER MANAGEMENT RECORD

YEAR 1987

MONTH	MEAN WATER LEVEL	COMMENTS
Jan	613.7	Water level stable, pool 100% iced over.
Feb	613.3	
Mar	613.7	Removed 7 stoplogs on 3/5 to stabilize H <sub>2</sub> O level Replaced 21 stoplogs in mid March.
Apr	614.2	Removed 7 stoplogs late March. Stoplogs were removed early April and replaced late in the month to stabilize spring levels at proposed level 614.0
May	614.1	
Jun	613.9	Evaporation and below ave. rainfall for month are causing pool level to drop.
Jul	613.6	
Aug	613.6	Mohawk level lowered approx. 0.2 in process of filling Cayuga Subimpoundment through struct. "C"
Sep	613.7	Rainfall of 7.16 " recharged pool slightly above desired management level of 613.5
Oct	613.7	Stoplogs were adjusted to stabilize level for waterfowl hunt.
Nov	613.6	Minor adjustment of stoplogs to maintain desired level. 95% Iced over on 11/23
Dec	613.8	100% Frozen over.
TOTALS		

REMARKS

WETLAND MANAGEMENT UNIT Mohawk Pool

## A. Management Record

Year 1988

PLANNED	ACTUAL
<p>Mohawk Pool will continue to be managed much as it was in 1987. Spring and summer water management will attempt to provide sustained levels between 614.0 and 614.5. Water levels will be allowed to go below this level during spring flooding to provide storage for runoff. By mid- April, barring any unusual precipitation amounts we should acheive the desired level.</p> <p>Fall and winter levels will be maintained at a minimum of 613.6 to accomodate waterfowl migration and waterfowl hunting. This level will also provide adequate water for continued muskrat activity. The 613.6 level will be maintained through the winter.</p> <p>We will monitor the habitat changes generated by maintaining elevated water levels identified above. If the existing emergent vegetation (mainly cattail) does not show improvement, a drawdown and treatment (herbicides, mechanical disturbance, fire, etc.) program may have to be implemented to improve conditions in this valuable wetland unit.</p> <p>Treatment of purple loosestrife and phragmites will continue.</p>	

## A. Management Record

Year 1987

## PLANNED

A. Water Levels:

In 1987 we plan to hold the Cayuga Pool at between 613.0 - 613.5 throughout the winter to provide habitat for late migrating waterfowl and muskrats through the winter.

Spring levels will be maintained at 614 - 614.3 level for waterfowl migration and in an effort to stress willow and cottonwood seedlings that became established during drawdown periods.

Water levels will be dropped back to 612.9 - 613.0 in mid-May to begin to prepare for the installation of a new water control structure on the Countyline dike.

Beginning in September the water level will be raised to 613.0 to 613.5 for the fall migration and annual waterfowl hunt; it will be kept at this level into and throughout the winter of 1987-88.

## ACTUAL

Water levels were maintained at planned elevations throughout the winter, with a visibly improved response in muskrat activity. Ratios of open water to vegetation were improved in 1987, due to the combined effects of elevated water levels and resultant increased muskrat populations.

Spring water levels started out as desired but a lack of precipitation in both May and June created a deficit which would not be recovered until October. The desire to stress woody vegetation was not realized in 1987.

Installation of the water control structure on Countyline Dike did not require reduction of water levels. Levels remained at 613.2 or higher through the summer. This was a positive situation for brood rearing activities. Brood use of this impoundment is high and improving due to the enhanced interspersions of emergent vegetation.

Heavy rains in September provided necessary recharge to bring water levels up to required management elevations for migrating waterfowl and for the annual waterfowl hunt. Water levels were maintained between 613.5 and 614.0 through December.

## A. Management Record

Year 1987

## PLANNED

## ACTUAL

B. Other Management:

A first priority this spring will be to reset the water gauge at structure A to the proper elevation. Discovered as being off by a foot or more last fall, a resurvey of the bench marks in the area by Realty set a new bench at structure "A" at 614.265' (a nail bm). We will reshoot the bench here and establish it permanently.

An attempt will be made to burn the cattail on the east side of this impoundment in the spring of 1987.

In May, we hope to borrow the underwater vegetation cutter boat from Montezuma NWR to test its worth in managing dense stands of cattail in our impoundments. With water levels at the maximum at this time it should be the best time to test the technique. If successful we will be able to create what we perceived to be an ideal wetland habitat configuration for breeding pairs and broods in the Cayuga pool. It would also pretty much eliminate the need for large applications of herbicides to control dense cattail stands. And if it does prove to be a good management alternative, we will look at purchasing a unit in the near future.

Both of the new spillways need to be increased in elevation by 6 to 8". This will be done during the Spring/Summer of 1987.

The water gauge at Structure A on Cayuga Pool was re-set in 1987. The bench mark was re-established by a survey crew from the R.O. in late 1986. The new reading for full pool will drop from 613.5 to 612.5; the bench mark was off by one foot.

An attempt to burn dense cattail on the eastern portion of the impoundment in late March met with limited success. A good mosaic of burned and unburned areas was created, but the cattail returned in the burned areas just as dense as before, once again limiting use by waterfowl and other wildlife species. This section of Cayuga Pool has a slightly higher contour than much of the rest of the Pool resulting in lower water levels, an ideal situation for dense cattail growth. Opening "potholes" in this section would improve pair and possibly brood rearing habitat. Use of herbicides or mechanical excavation during a drawdown would be required, if elevated water levels are not enough to stimulate increased muskrat activity in the dense vegetation.

The attempt to cut cattail using the aquatic cutting machine borrowed from Montezuma NWR was not successful. The cattail density in the trial area was too much for the machine to handle.

Both spillways which function as emergency flood relief for this impoundment were elevated six to eight inches as planned.

WETLAND MANAGEMENT UNIT: Cayuga Pool

## B. WATER MANAGEMENT RECORD

YEAR 1987

MONTH	MEAN WATER LEVEL	COMMENTS
Jan	613.6	100% Iced over on 1/5/87
Feb	613.7	
Mar	613.6	Set spring level at 614.0 by adding one stoplog at structure "A"
Apr	614.2	
May	613.8	
Jun	613.6	Pool level dropping- rainfall for May/June approx. 2.30 inches below average.
Jul	613.4	
Aug	613.3	Temporarily removed 5 stoplogs to facilitate duck banding along shoreline-replaced mid- Aug.
Sep	613.2	New control structure installed- County Line Dike
Oct	613.8	Cayuga filling through structure "D"- 614.0 desired fall level.
Nov	614.0	
Dec	614.1	2 logs removed from new countyline structure to maintain level of 614.0
TOTALS		

REMARKS

## A. Management Record

Year 1988

PLANNED	ACTUAL
<p>Water level management in 1988 will parallel that instituted in 1987. Winter levels will be maintained at 612.0 to 612.5. These are the newly established levels for 1988. Spring and summer levels will be maintained at 613.0 to 613.5, once again to provide migration, and brood rearing habitat. This level will also encourage muskrat activity directed at continuing management efforts to improve the ratio of open water to vegetated areas in Cayuga Pool.</p> <p>Water levels will again be reduced to the 612.0 to 612.5 level for fall migration and for the annual waterfowl hunt.</p> <p>The water control structure installed on the Countyline Dike will be utilized to remove water from Cayuga during the fall water reduction. A determination as to how much water can effectively be removed and how fast, into Seneca Pool, will need to be observed. This will be discussed in more detail in the Seneca water mgmt. unit.</p>	



## WETLAND MANAGEMENT UNIT

## Seneca Pool

## A. Management Record

Year

1987

## PLANNED

## ACTUAL

A. Water Levels: In 1987 water levels will be managed as in 1986. The pool will be used during the early spring flood period to store and circumvent flood waters entering through the Mohawk Pool. Levels during this period will be allowed to fluctuate when flood waters begin to drop the stop logs will be set at level 612.8 in structure F, for the nesting season. Drawdown will begin in mid-May to relieve stress on green timber growth and by the first week in June we plan on reaching a level of 610.5 for the remainder of the summer. The water level will be raised to 611.0 in September to accommodate fall migration; it will be maintained at about this level until ice-up to provide access to our wood duck boxes in the winter.

B. Other Management:

Several nest basket structures for mallards and black ducks will be placed during the winter months of 1987.

Water levels were managed generally as planned in 1987. The early breaking spring combined with relatively little snowpack provided a gradual build up of water in Seneca Pool from Mohawk. Water level readings of 613.0 were maintained until mid-May when the seasonal drawdown began. Planned summer water levels of 610.5 were attained by mid-June.

Water levels were elevated slightly to 611.0 in December to facilitate travel to wood duck boxes over the ice.

The large ditch in Seneca Pool constructed as a result of building Countyline Dike, may present a water management problem. Water levels in this ditch seem relatively unaffected by the water level management in Seneca Pool. Removal of stoplogs from structure F to remove water for the summer growing season do not significantly reduce levels in this ditch. Our ability to move water into, and especially out of Cayuga Pool, via the new water control structure may be affected. It may be difficult to move large volumes of water from Cayuga to Seneca Pool with the level usually present in the ditch. The almost level contour of Seneca Pool combined with the thick aquatic vegetation in what was apparently the old natural exit channel from the ditch, makes water movement a slow process. Construction of a small ditch linking the "Countyline Ditch" to existing drainage ditches, through structure F may be a possibility, but will be expensive to excavate. Monitoring water movement through the new water control structure (structure U) will be a priority in 1988.

WETLAND MANAGEMENT UNIT: Seneca Pool

B. WATER MANAGEMENT RECORD

YEAR 1987

MONTH	MEAN WATER LEVEL	COMMENTS
Jan	611.4	Removed 6 stoplogs to maintain a winter level below 611.5. 100% ice cover 1/5/87
Feb	610.7	
Mar	612.0	Initiation of spring flooding, 15 stoplogs installed 3/13/87
Apr	613.1	Stoplogs were adjusted to maintain level of approx. 613.0
May	613.0	Summer drawdown began 5/21 with removal of 8 stoplogs.
Jun	610.8	Summer management level achieved in early June.
Jul	610.5	
Aug	609.8	
Sep	609.8	
Oct	609.9	
Nov	609.9	95% Ice covered 11/23.
Dec	611.5	Stoplogs replaced to 611.5 level on 12/18 to facilitate wood duck box check.
TOTALS		

REMARKS

WETLAND MANAGEMENT UNIT Seneca Pool

## A. Management Record

Year 1988

## PLANNED

## ACTUAL

Water levels will again be maintained generally as they were in 1987. Seneca will be used as a floodwater storage unit in the spring to receive excess water through Mohawk Pool. After spring flooding threats recede, stoplogs will be set at 612.8 in structure F for the spring migration and nesting season.

We have experienced a considerable increase in abandonment of wood duck clutches in Seneca Pool possibly due to removal of water during the peak of hatching of this species in mid-May.

Likewise, mallard nesting use of this pool is highest when water levels are higher. The many old tree stumps and earthen hummocks provide nesting for mallards and possibly black ducks. Removal of water in mid-May seemed to accelerate predation of these nests as they became more accessible to raccoons and other predators. We will attempt to maintain the 612.8 water elevation to the end of May rather than mid-May as is currently done. In no way will green timber growth be stressed beyond its ability to fully recover within the current year.

Summer levels of 610.8 will be maintained to ensure maintenance of green timber growth, while providing adequate water in the ditches for wood duck and other waterfowl broods.

## A. Management Record

Year 1987

PLANNED	ACTUAL
<p><b>A. Water Levels:</b> No major changes for water level management in Oneida are planned for 1987. After the spring floods, stoplogs will be added to hold the pool at about 613.8. At this level, the marshes will be flooded, but the area of live flooded timber will be reduced. Starting about mid-May, stoplogs will be removed to gradually lower the water level to 612.4 by June 1st. The level will be allowed to fluctuate during the summer and gradually raised in the fall to level 613.5 for fall migratory waterfowl and to facilitate our waterfowl hunt. After the end of the hunt, boards will be removed to prepare for next spring's floods, gradually lowering the pool to the 612.4 level. Water levels will then fluctuate throughout the season.</p> <p>These goals can be accomplished if precipitation does not vary too much from normal limits. Excess precipitation could cause water levels to exceed planned levels and a very dry summer could require us to drain the impoundment entirely in order to maintain a flow on Oak Orchard Creek downstream from the refuge.</p> <p><b>B. Other Management:</b> There is about a 20 to 30 acre area of this impoundment just west of the creek across from hunt stand #39, that consists of dense cattail and burreed. We hope to burn this section of marsh during the fall of 1987 or the spring of 1988, to reduce the dead standing vegetation and to open up area to provide greater waterfowl access. The potential to improve this site for migrating waterfowl is excellent.</p>	<p>Oneida Pool was managed essentially as prescribed. The lack of snowfall, and consequently runoff, allowed Oneida to drop below proposed levels in February and early March. Levels, however recovered for the spring migration due to above average precip. in April.</p> <p>Water levels remained at proposed levels throughout the summer (612.8 to 612.5) following stoplog removal at the end of April.</p> <p>Water levels were elevated to 613.5 in the fall for returning migrants and remained between 613.5 and 614.5 until freeze up. Stoplogs were removed in Jan. 1988 in anticipation of spring flood level waters.</p> <p>Oneida Pool will fluctuate with Oak Orchard Creek. Abnormal precipitation amounts at almost any time of year will cause a fluctuation in water levels either above or below proposed levels. Severe changes in normal precipitation amounts could result in major changes in water level management in Oneida and possibly other impoundments.</p>

WETLAND MANAGEMENT UNIT: Oneida Pool

## B. WATER MANAGEMENT RECORD

YEAR 1987

MONTH	MEAN WATER LEVEL	COMMENTS
Jan	613.8	Removed 14 logs 1/5 for Winter drawdown Creek partially open most of month.
Feb	612.7	Pool completely frozen over.
Mar	613.5	Replaced 56 stoplogs in late March to maintain planned spring level of 613.8
Apr	614.8	Removed 16 stoplogs to alleviate spring flooding guage at Rt. 63 read 616.5 on April 7th.
May	612.8	Removed 10 stoplogs to acheive proposed summer level of approx. 612.5
Jun	612.7	
Jul	612.5	
Aug	612.5	
Sep	613.1	7.16 inches of precipitation in Sept. quickly restored level to 614.0 by late in the month.
Oct	613.5	Stoplog adjustments were made to retain a level of 613.5 for the waterfowl hunt.
Nov	613.5	A total of 20 stoplogs were removed through the month to accomodate fall runoff.
Dec	614.5	
TOTALS		

REMARKS

WETLAND MANAGEMENT UNIT Oneida Pool

## A. Management Record

Year 1988

## PLANNED

## ACTUAL

Through the spring of 1988 water levels will remain at 613.0 or below. Levels will only be allowed to exceed this elevation if additional water is needed in Mohawk, Seneca, or Cayuga Pools to reach their proposed spring and summer levels. The 613.0 level is a deviation from the normal of 613.8, and will be initiated for two habitat management reasons;

1) Spring runoff should provide sufficient water for Mohawk and Cayuga Pools to be managed at proposed levels.

These levels are improving marsh habitat in both pools, but limits their capacity to mitigate the impacts of flooding should this situation occur in late spring or early summer. The reduced levels in Oneida will provide the necessary storage to ensure that refuge and public facilities are not adversely affected should water levels rise.

2) Many areas of Oneida Pool are devoid of emergent vegetation necessary to sustain waterfowl broods and other marsh and water birds. Reducing water levels will help to stimulate emergent growth and will possibly allow us to burn a dense cattail and burreed section which exists on the east end of the impoundment. Opening up this section by elimininating some of the dead matted material will improve this area for migrant and locally nesting birds.

Water levels will be elevated in the fall to 613.5 for migrating waterfowl, and will remain at this level through the winter.



WETLAND MANAGEMENT UNIT Cayuga Pool Sub-Impoundment

A. Management Record

Year 1987

PLANNED

A. Water levels: Plans are to flood the sub-impoundment with between 6 to 8" of water for the spring migration; this will equate to a reading of about 614.5 on the gauge.

Water levels will remain at this mark until about mid-June when a drawdown will be initiated. The water level will then be reduced to ditch top level. The drawdown will have to be coordinated with the State as the water will outlet through their structure located on the opposite side of Route 77. This years drawdown will give us the opportunity to see if drainage is adequate or whether or not additional lateral ditches will need to be constructed.

Water will put on again in the fall to approximately the same level as the spring to accommodate migrating waterfowl and the annual waterfowl hunt.

Other Management:

Once the internal portions have dried enough to allow equipment access we will install a culvert in the main ditch to provide for point of entry of the Feeder Dike.

Remaining spoil piles will be leveled and we plan to disc approximately 10 acres and plant it to Japanese Millet in July. The feeder dike and the North dike will be seeded to a mix of Kentucky Fescue 31 (25 lb/ac), Peennial Rye grass (10 lb/ac), and Redtop (4 lb/ac) in late March or early April.

Several artifical duck nest basket structures will be placed here in an effort to attract breeding mallards and black ducks.

ACTUAL

Water level management proceeded basically as planned in 1987. The sub-impoundment was allowed to fill to the 614.5 to 615.0 mark through the spring. This level provides adequate resting and feeding habitat for waterfowl.

In June, the sub-impoundment level was reduced to 613.5. An attempt to drain the unit to allow installation of a culvert and access into the unit from the Feeder Road dike did not materialize. Apparently, a better ditching system needs to be installed and the existing ditches, both inside and outside the unit need cleaning. Removal and addition of water is not reliable, currently.

Japanese Millet was sown on exposed soils near the perimeter of the unit, but failed to germinate well, due to the hard, uncultivated seedbed available. The North Dike and Feeder Rd. Dike slopes were seeded with a grass mixture, but did not grow well due to minimal precipitation in May and June.

Artificial duck nesting baskets were placed in the unit in March. A total of four baskets were situated on the west and north portions of the sub-impoundment. No nesting occurred in these baskets in 1987.

The water gauge on the sub-impoundment was re-established in the same manner as Cayuga Pool. Full pool readings will change from 614.1 to 613.1.

WETLAND MANAGEMENT UNIT: Cayuga Subimpoundment

## B. WATER MANAGEMENT RECORD

YEAR 1987

MONTH	MEAN WATER LEVEL	COMMENTS
Jan		
Feb	614.8	
Mar	614.8	100% Open water on 3/23/87
Apr	615.0	Pool level near capacity- filled by spring melt and precipitation.
May	614.7	
Jun	614.1	A drawdown was initiated in Mid- June to allow finish grading of unit interior. Drawdown was not effective, only millet seeding was accomplished.
Jul	613.5	
Aug	613.5	Refilling through structure "C" was conducted through the last week in Aug. and a level of 614.0 achieved.
Sep	614.0	
Oct	614.4	
Nov	614.6	
Dec	615.0	
TOTALS		

REMARKS

WETLAND MANAGEMENT UNIT Cayuga Sub-impoundment

A. Management Record

Year 1988

PLANNED	ACTUAL
<p>Once again we will maintain water levels at the 613.0 to 613.5 reading to provide migration habitat for ducks and geese in the spring and early summer.</p> <p>Beginning in June, we will attempt again to remove enough water to facilitate placement of a culvert and access from the Feeder Road. If access can be gained into the unit, an attempt to work existing spoil piles into nesting islands will be made.</p> <p>Water levels will again be returned to the 613.0 to 613.5 level for fall migration.</p> <p>Sections of the west dike separating Cayuga Pool from the sub-impoundment need rehabilitation. Those sections in need of work will be widened and elevated as required during the reduced water levels in the summer.</p>	

## A. Management Record

Year 1987

## PLANNED

**A. Water Levels:** Water levels in this pool will be maintained at between 620.5 and 621.0 throughout the winter. Stoplogs will be removed as necessary during the winter months to keep water flowing, preventing freeze-up of the structure.

Ringneck dike is scheduled for major rehab work during the summer, consequently it will be necessary to lower the level below the toe of the dike so that fill can be added and graded and then rip-rap placed to prevent future erosion. Therefore, the impoundment will be drawn-down between 618.5 to 619.0 a month or so prior to work beginning. The actual start of drawdown will depend upon when the contract is awarded and the date to begin work is agreed upon.

Once the work is completed water levels will be returned to about 621.0 for the fall migration. The level will be lowered to where it meets the large size rip-rap for the winter. It is felt that ice was one of the major causes of the dike eroding in the past, so an attempt will be made to keep it away from the more easily eroded soil areas of the dike during the winter months. Time and experience will enable us to predict the optimum level for winter management.

## ACTUAL

Water levels in the winter of 1987 were maintained near the proposed elevation of 620.5 to 621.0. These levels were consistent through mid-June when a gradual drawdown was initiated in anticipation of a July start up of dike rehabilitation.

The June partial drawdown did not negatively affect brood use of the pool, but instead seemed to make invertebrates more easily available.

Dike rehabilitation began in July and was completed in early September. The east facing slope of the dike was re-shaped, and protected with "filter fabric" covered by rip-rap.

There appears to be some discrepancy between the water gauge located on the east end of Ringneck Pool and the water control structure on the west end of the pool. As many as 5 stoplogs were removed prior to the beginning of dike rehabilitation. Recorded changes in the water elevation dropped only 4 inches over the period of stoplog removal with average precipitation amounts.

Water is apparently being stopped or backed up by vegetation or other factors to reflect such a discrepancy in this 172-acre pool. We will continue to monitor and evaluate the differences to determine where the problem exists.

Even with water from Center Marsh to assist with inundation of Ringneck Pool, it took three months to establish the required 621.0 elevation. This elevation brought the water up onto the rip-rap where erosion from waves and ice would not be a problem.

## A. Management Record

Year 1987

## PLANNED

Other Management: In conjunction with the dike rehab work, we had planned to rehab the existing nesting islands as well. This work will depend upon the cost of doing the dike work, as we intend on purchasing a new bulldozer with the remainder and complete the island work by force account. Assuming that we so get the new dozer, we probably would not be able to do the island work until next summer anyway.

Aside from this, we plan to burn the dike in the spring of 1987 along with a 10 acre field bordering on the south.

Other associated habitat work will include brushing upland fields surrounding this impoundment to retard brush until these fields can be planted with a more permanent grass cover for nesting ducks.

## ACTUAL

Nesting islands were not rennovated this year. Funds appropriated for the dike rehab. work did provide enough money for acquisition of a new dozer delivered in November. Nesting island rehab will have to wait for another year.

The west dike was burned in the spring and did provide some control of brush. The adjacent field was also burned with moderate control of invading brush species.

Mowing of a number of upland fields was initiated early in the spring in an attempt to retard growth of brush species. Mowing will assist in keeping brush manageable until cultivation and seeding to dense nesting cover can be implemented.

Five mallard nesting structures were placed in Ringneck Pool in late winter 1987. No nesting was observed this year.

WETLAND MANAGEMENT UNIT: Ringneck Pool

B. WATER MANAGEMENT RECORD

YEAR 1987

MONTH	MEAN WATER LEVEL	COMMENTS
Jan	620.6	
Feb	620.7	
Mar	620.6	3/16- 100% Ice covered 3/23- 100% Open Water
Apr	620.6	Spring level set at 620.5
May	620.5	
Jun	620.3	Pool level set at 620.2 to permit dike rehabilitation.
Jul	620.2	Level set at 620.0 for dike work.
Aug	620.1	
Sep	620.3	In early Sept. 3 stoplogs were replaced to begin refilling.
Oct	620.3	Refilling continues- very slow- leak suspected
Nov	620.4	Level finally building
Dec	621.1	Winter mngt. level of 621.0 reached.
TOTALS		

REMARKS



WETLAND MANAGEMENT UNIT Ringneck Pool

A. Management Record

Year 1988

PLANNED	ACTUAL
<p>Water levels will be maintained at the 621.0 to 622.0 level throughout the year to ensure that no erosion or undermining of the newly placed fill material or rip-rap occurs.</p> <p>Upland units around Ringneck Pool will continue to be worked in preparation for future grassland re-establishment.</p>	

## A. Management Record

Year 1987

## PLANNED

**A. Water levels:** The Knowlesville Marsh will remain drained throughout the winter, spring and summer of 1987, to facilitate management activities within the marsh and the adjacent uplands. When work is completed at the end of the summer, the stoplogs will be replaced and the impoundment allowed to be recharged to 632.3 in the fall and winter.

**B. Other Management:** Depending upon the degree of kill that resulted from last years Roundup spraying it maybe necessary to mechanically open up the cattail stand. The southern end of this marsh is especially high and we plan to create several small potholes using a bulldozer. The spoil from this operation will be removed from the marsh and spread on the adjoining upland.

Upland work will include the application of lime to all fields except #5 and 6 (which were planted to Blackwell switchgrass in 1986) disking and planting to grass and legume mixtures. The following grass types are planned to be seeded: field #1 - tall wheat grass and alfalfa; Field #2 - Blackwell switchgrass and green needlegrass; Field #3 - managed for existing native grasses; Field #4 - same as 3; Field #7 - reed canary grass and sweet clover; and field #8 - tall wheat grass, intermediate wheat grass, alfalfa and sweet clover. Except for the switchgrass mix, all fields will be sown in early August.

A new porcelain water gauge will be installed during the summer. Finally, in the fall, we may try another prescribed burn with objective of reducing the heavy duff layer of cattail.

## ACTUAL

Knowlesville Marsh remained in drained state through the winter, spring and summer of 1987. Some stoplogs were replaced in the water control structure in mid-August, to begin a gradual inundation of the unit. Knowlesville Marsh reached full pool level, 633.0, in November and remained at or above this level through the end of the year.

Management conducted in this marsh during the 16 months it was drained yielded some visible results in 1987. Dense cattail areas crushed by the Fordson tractor, and then sprayed with a 1½% Roundup solution, did remain relatively free of re-invasion of cattail. Instead, smartweed and other waterfowl foods dominated these openings.

Like Long Marsh, the ditch which supplies water to Knowlesville was cleaned. Once again a request from the local township road commissioner prompted the ditch clean out to assist them with renovation of Roberts Road.

Prior to re-flooding, five potholes were constructed on the south end of Knowlesville Marsh. The potholes will hopefully provide pair habitat in this unit which is still densely vegetated on the shallow south end.

Grassland units adjacent to Knowlesville Marsh were prepared for seeding in 1987. Lime was applied to all units which were going to be seeded. Due however, to lack of adequate farming equipment and to commitments such as the mallard nesting study, seeding was not accomplished as planned in 1987. Disking, which was contracted out, was not performed until late in the summer and the decision was made to delay seeding until 1988, to ensure adequate moisture and seedbed conditions.

A new water gauge was installed in November. Gauge readings will reflect a 6inch increase above the old gauge readings. No fall burning was conducted, openings created by mechanical and herbicide application were sufficient for this unit.

WETLAND MANAGEMENT UNIT: Knowlesville Marsh

B. WATER MANAGEMENT RECORD

YEAR 1987

MONTH	MEAN WATER LEVEL	COMMENTS
Jan	Drained	
Feb	Drained	
Mar	Drained	
Apr	Drained	
May	Drained	
Jun	Drained	
Jul	Drained	
Aug	Drained	Replaced 8 stoplogs 8/14 to begin refill following marsh rehab.
Sep		Filling slowly- still below guage
Oct	630.5	Filling continues
Nov	632.0	
Dec	632.5	2 stoplogs were removed to prevent winter back flooding
TOTALS		

REMARKS

WETLAND MANAGEMENT UNIT Knowlesville Marsh

A. Management Record

Year 1988

PLANNED

ACTUAL

Water levels in 1988 will be maintained at the 632.0+ level through March. Beginning in April, water levels will be gradually reduced to 631.0 to allow groundwater from adjacent fields to drain into the unit. Water levels will be brought up to the 632.0 to 633.0 level by October or November for the fall migration.

Reduced water levels will hopefully provide adequate groundwater movement from adjacent fields to permit cultivating and seeding equipment into these fields in May. All fields will be seeded as identified in the Grassland Mgmt. Plan with the possible exception of field no.1, which may remain in existing natural grass cover. A decision will be made on mgmt. of field no.1 when cultivation and seeding begin in 1988

## A. Management Record

Year 1987

PLANNED	ACTUAL
<p><b>A. Water levels:</b> This marsh will be maintained at full pool level (623.3), throughout the enter year. Fluctuations will occur due to precipitation and evaporation but no effort will be made to remove stoplogs.</p> <p><b>B. Other Management:</b> A prescribed burn will be conducted on the dike to reduce litter and to retard woody growth in the spring.</p> <p>The south shoreline is showing considerable regrowth of willow which was mowed in 1985; this will be treated with roundup in the summer.</p> <p>Several small clumps of phragmites will be treated with Roundup.</p> <p>Two new mallard nesting baskets will be installed and monitored through the breeding season.</p>	<p>Water levels were maintained at full pool, 623.3, throughout the entire year. Full pool levels in 1987 have stimulated muskrat activity necessary to open up emergent growth in this unit. Two successive years of drawdown, 1985 &amp; 1986, resulted in good response of cattail, burreed and other emergent growth. Openings created in the vegetation by muskrat activity will improve pair and brood rearing potential.</p> <p>A prescribed burn was conducted on the School house Marsh dike which succeeded in stressing some of the woody growth.</p> <p>No chemical treatment of pest plant or woody vegetation occurred in 1987.</p>

WETLAND MANAGEMENT UNIT: Iroquois (Schoolhouse Marsh)

B. WATER MANAGEMENT RECORD

YEAR 1987

MONTH	MEAN WATER LEVEL	COMMENTS
Jan	622.9	1/5- 100% Ice Covered
Feb	622.5	Stoplogs adjusted periodically to maintain flow and prevent ice up of structure
Mar	623.3	Spring mngt. level set at 623.3
Apr	623.8	
May	623.2	
Jun	623.0	Marsh level falling due to lack of runoff
Jul	622.8	
Aug	622.8	Dense vegetation covers most of marsh except for deep water along dike.
Sep	623.1	Heavy fall rain refilled marsh. (7.16 inches)
Oct	623.3	
Nov	623.4	
Dec	623.4	
TOTALS		

REMARKS



WETLAND MANAGEMENT UNIT Schoolhouse Marsh

A. Management Record

Year 1988

PLANNED	ACTUAL
<p>Water levels will again be maintained at full pool level (623.3) for the entire year. We hope to continue to improve the ratio of open water to vegetation in this impoundment for pair and brood use.</p> <p>Two inverted cone artificial nesting structures were replaced in February 1988, with nest basket designs which will hopefully provide better overhead cover and hold nest material more securely.</p> <p>The refuge will attempt to control Phragmites in this unit in 1988. We will also cut and/or chemically treat invading brush along the unit shoreline.</p> <p>Time permitting, mowing and/or discing of adjacent grassland units will be completed in 1988. Existing grass/forb associations do not provide adequate nesting cover, some are being invaded by shrubs.</p>	

## A. Management Record

Year 1987

## PLANNED

**A. Water levels:** In 1987, we will maintain a full pool (633.0-633.3) throughout the entire year in this impoundment. Hopefully this will stress the woody vegetation that germinated during the last 2 years of partial drawdown, which is becoming dominant in some sections and eliminating more desirable wetland plant species.

**B. Other Management:** If time allows, we will begin to clear sections of the shoreline of willow trees and heavy brush as planned in 1986. We will also attempt to mow adjacent fields, which show considerable brush encroachment, to encourage grasses.

/ We will also attempt to install a new water gauge.

## ACTUAL

Water levels were maintained at full pool elevation (633.0) to (633.5) through the winter. A gradual reduction in these levels occurred through the summer due to evaporation.

Water levels were reduced significantly in July and August to facilitate cleaning of the ditches which supply the impoundment with water. The ditch maintenance was completed to ensure that the water did not accumulate in or around newly installed culverts and road shoulders on Roberts Road. The township requested that the ditches be cleaned to protect the re-surfaced road, culverts, and road shoulders from standing water. Concerns were expressed over the potential impacts of damage due to ground expansion and contraction or other frost action if water were allowed to accumulate.

Brood use of willow and other emergents has been steady through 1987. The drawdown in July, to 632.2, allowed for continued expansion of willow in this unit, a situation which will need to be monitored to ensure that other emergents are not eliminated.

A local Boy Scout troop cleared approx. 100 yards of heavy shoreline tree and brush growth from the interface between the impoundment and the adjacent switchgrass field. We hope removal of the woody vegetation will encourage more waterfowl nesting use of the switchgrass field.

Water levels gradually returned to normal full pool elevation of 633.0 by late December.

WETLAND MANAGEMENT UNIT: Long Marsh

## B. WATER MANAGEMENT RECORD

YEAR 1987

MONTH	MEAN WATER LEVEL	COMMENTS
Jan	633.4	
Feb	633.5	Periodic adjustment of stoplogs to prevent ice- up of structure.
Mar	633.1	
Apr	633.2	
May	632.9	
Jun	632.6	
Jul	632.2	Set pool level at 632.0 to permit cleaning of inlet ditch.
Aug	632.1	Stoplogs were replaced in mid July to allow refilling as runoff permits
Sep	632.2	
Oct	632.6	
Nov	632.8	
Dec	632.7	3 stoplogs removed to prevent back flooding during the winter
TOTALS		

REMARKS

WETLAND MANAGEMENT UNIT Long Marsh

## A. Management Record

Year 1988

PLANNED	ACTUAL
<p>Water levels will be maintained at full pool level (633.0) throughout the entire year. We will attempt to stress the encroachment of woody vegetation, especially willow, enough to curb its expansion at the expense of other emergents. Maintaining a full pool will help to achieve this end.</p> <p>Many fields on both the north and south sides of Long Marsh were disced in October 1987 in an attempt to stimulate grass and legume response in 1988. These fields were cropped from 1982-1986 and allowed to grow into naturally occurring grasses and forbs in 1987. Three fields developed adequate grass/legume cover and were not disced, all others were worked in an attempt to stimulate better growth in 1988. Disced fields will be closely monitored in 1988 for desired response.</p> <p>In 1988 we will also attempt to continue reclaiming some of the shoreline along Long Marsh. The acquisition of a Hydro-axe type of mowing machine may accelerate this shoreline reclamation process. Only portions of the shoreline will be mowed, the remainder will remain vegetated. Those areas adjacent to, or nearest to, grassland units will be cut. Herbicides may be used to control resprouting of woody growth.</p>	

## A. Management Record

Year 1987

PLANNED	ACTUAL
<p data-bbox="89 371 556 485"><b>A. Water Levels:</b> In 1987, we plan to hold the Center Marsh at full pool level for the entire year (626.3-.6).</p> <p data-bbox="89 523 608 828">Ringneck Pool which is schedule for major rehab work on the dike this year will be drawdown to accommodate this work. By maintaining a full pool in Center Marsh, we will be able to recharge Ringneck when the work is done and at the same time provide ample brood habitat at Center Marsh for the summer while Ringneck is down.</p> <p data-bbox="89 856 556 952">As in the past, stoplogs will be manipulated in the winter to keep the structure relatively ice free.</p>	<p data-bbox="667 409 1357 523">Water levels in Center Marsh were maintained as planned in 1987. Little fluctuation occurred until evaporation began to exact its influence in June.</p> <p data-bbox="667 523 1402 761">A sharp drop in the pool level (625.8 to 624.5) occurred in September. The drop is due to inundation of Ringneck Marsh with water from Center Marsh. Heavy rains, (7 inches) in September greatly assisted in bringing Ringneck Marsh up to management levels after dike construction without further impacts on Center Marsh water levels.</p>

WETLAND MANAGEMENT UNIT:

Center Marsh

## B. WATER MANAGEMENT RECORD

YEAR 1987

MONTH	MEAN WATER LEVEL	COMMENTS
Jan	626.2	
Feb	626.4	
626.4 Mar	626.4	
Apr	626.6	
May	626.3	
Jun	626.1	Pool level falling due to lack of runoff
Jul	625.9	
Aug	625.8	
Sep	624.5	9 stoplogs removed to refill Ringneck Marsh
Oct	623.9	
Nov	624.4	
Dec	625.9	
TOTALS		

REMARKS

WETLAND MANAGEMENT UNIT Center Marsh

## A. Management Record

Year 1988

## PLANNED

## ACTUAL

In an effort to expand brood rearing habitat in association with grassland restoration, a drawdown of Center Marsh will be conducted in 1988. Much of Center Marsh is devoid of vegetation. A gradual drawdown beginning in April will hopefully result in conditions which are favorable throughout the pool for germination of emergent marsh vegetation such as cattail, burreed, and smartweed. Some woody growth, especially willow, will also expand. Should the opportunity avail itself, some openings will be mowed in existing dense willow growth on the north and east end of the pool. The gradual drawdown will be implemented to provide shorebirds and early waterfowl broods with shallow water for foraging. Ringneck will remain at full pool levels of 621.0 or higher through the year. Center and Ringneck Marshes offer good opportunities for expanding grassland restoration when Knowlesville and Long Marshes are completed.

Providing good brood rearing habitat may attract nesting birds to the existing upland habitat available, and will certainly expand interest onceplanted grasslands are established.

Time permitting, mallard nest basket structures and wood duck boxes will be placed in the unit during draw-down.



WETLAND MANAGEMENT UNIT Galaxie Marsh

A. Management Record

Year 1985-86-87

PLANNED	ACTUAL
A. <u>Water Levels</u> : This small 10-acre marsh will be managed at level 616.6 ± as it is allowed to fluctuate with seasonal run off and evaporation.	A. <u>Water Levels</u> : Managed as planned.
A. <u>Water Levels</u> : Water levels will be maintained as in 1985.	A. <u>Water Levels</u> : Managed as planned
=====	=====
A. <u>Water Levels</u> : Same as above for 1987	A. <u>Water Levels</u> : Managed as planned.
A. <u>Water Levels</u> : Same as above for 1988.	