

ROUTING SLIP

BRANCH OF WILDLIFE REFUGES

DATE: 9/19 1949

MR. SALYER _____
MR. KRUMMES _____
MR. DUMONT _____
MISS BAUM _____

SECTION OF HABITAT IMPROVEMENT:

~~MR. GRIFFITH~~ REG 11-21

~~DR. BURN~~ LOS 10-28

MISS COOK _____

SECTION OF OPERATIONS:

~~MR. BALL~~ _____
~~MR. REGAN~~ _____
DR. MORLEY

SECTION OF LAND MANAGEMENT:

~~MR. HENT~~ _____

~~MR. ACKERKNECHT~~ wa

SECTION OF STRUCTURES:

MR. TAYLOR _____
MR. JOHNSTON _____

STENOGRAPHERS:

NARRATIVE REPORT

REFUGE: HORICON

PERIOD: MAY - AUGUST 1949

HORICON NATIONAL WILDLIFE REFUGE

WAUPUN, WISCONSIN

NARRATIVE REPORT
MAY - AUGUST
1949



UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

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I. GENERAL

A. Weather Conditions

<u>Month</u>	<u>Precipitation</u>	<u>Dep. from Normal</u>	<u>Temperature</u>	
			<u>Max.</u>	<u>Min.</u>
May	1.89	- 1.59	89	33
June	5.58	+ 1.37	90	43
July-Aug.	Data Not Available			

May weather averaged warmer and drier than normal but was quite changeable at times. June was warmer and wetter than normal; being the warmest since June, 1934. July and August produced some hot days and considerable more moisture than last year. The precipitations was well spaced which made for excellent growing conditions.

B. Water Levels

On May 1 the water gauge read 75.84, .06 higher than a year ago. The first of June the reading was 75.86, July 1, 75.76 and August 1, 75.68. The lowest point reached was 75.52 at the end of August. The frequent rainfall plus the holding of the gates of the Horicon Dam of the Wisconsin Conservation Department at elevation 75.00 aided in keeping the water levels up in the refuge. The greatest variation was in July with a fluctuation of .23 hundredths of a foot. The water was 1.22 feet higher at the end of the period than a year ago at the same time.

II. WILDLIFE

The resident waterfowl population, consisting entirely of ducks except for about a half dozen crippled Canada geese that seemed to be getting along very well on the marsh, was about the same as the numbers tallied in 1948. Water and food conditions were excellent at the beginning of the period and remained so throughout the summer.

The nesting of mallards and blacks on the refuge increased, but it appears that the blue-winged teal had not. One brood of lesser scaup was recorded, no broods of red heads noted, although adults were seen on the refuge throughout the period. The Wheeler Ditch area showed an increase in the number of nestings, primarily of blue-wings. There was a decrease of blue-wing territorial males along the marsh road ditches which may have been caused by burning activities of last fall when the cover was removed along the north side of the ditch. One brood of three lesser scaup was noted in the Wheeler Ditch area, the first nesting of these birds

recorded on the refuge. Identification was positive as the young were in the flapper stage and one was run down and caught by Maintenance Man Luehring and Refuge Clerk Bushweiler. No redhead shoveller, green-winged teal or pintail broods were seen on the several trips on the marsh, but it is safe to assume that there was nesting by redheads and pintail as adults of these species were seen several times. No adults of green-winged teal or shoveller, were seen after the main flight had proceeded northward in the spring.

The main concentrations of ducks were on the east side of the Main Ditch south of Schaumburg Ditch. Here is where the highest muskrat populations is with the area of open water nesting spots afforded by rat houses and bogs greater than in any other portion of the refuge. The remainder of the refuge area has denser and more extensive growths of willows, cattails river and round stem bulrush that take up the open water areas preventing growths of desirable aquatics and affording no roosting or nesting sites. The Long Lake Hole extending north from Sommers Ditch along the Main Ditch to the Rock River is a fine feeding area but with few rats working there the roosting and nesting spots are rare. The dense and extensive growth of cattails extend to the willow line and from there to the west conditions are not the best for ducks, even with as much water as we now have present on the marsh.

On the north end of the refuge conditions are not good for waterfowl as there the land is much higher, with water only in the ditches. One ditch is no more, that along the Dodge-Fond du Lac County line having been filled in by the relocated State Trunk Highway 49. This did not remove much valuable water area as it was a very shallow ditch and quite narrow to the east of Connor Ditch. A six foot culvert under the road in the Main Ditch equalizes the water north and south of the road, but some water is accumulating along the north side of the road between the Main and Connors Ditches. This area is pock marked with peat burnouts and these holes are filling with water and should make an area of about 100 acres of good waterfowl and muskrat habitat in a few years.

The numbers of ducks remaining about the same on the refuge this period as compared to 1948 showed an increase in the numbers of mallards and blacks, the blue-winged teal about the same and a small drop in wood ducks, coots and gallinules. Not enough time could be spent on duck brood counts as we would have liked, and for this reason less broods were seen. Though there were less broods seen the average per brood was 7.6 compared to 7.2 in 1948.

For coots ten broods were seen compared to 13 last year with an average of 5.2 young per brood as against 6.6 in 1948. Florida gallunile broods were not much in evidence this year, but adults were seen, and it is assumed that they had a production similar to that of last year. Four pied-billed grebe broods were seen averaging 3.5 young per brood.

Rails appeared to be about the same as in years past, but with not many observations made of them. A few Virginia rails were seen walking along the grass line on the peat been pushed up on the construction work, but no king rails were seen or reported. Shore birds, too, were scarce again as seemed to be the case with the upland plover.

There appeared to be a small increase in the numbers of mourning doves, especially in the southeast corner of the refuge, where 33 of them were counted in a distance of two miles early in July.

Only one Wilson snipe was reported and that one on August 29, indicating that their numbers on the refuge are not great.

2. Food and Cover

Sago pondweed again is the dominant aquatic on the refuge, with most of the plants seeding abundantly. In some of the ditches especially the Main Ditch north of the Marsh Road, and in Connors Ditch the sago covered the entire water surface and was fruiting heavily. In most of the open water areas sago predominated with abundant coontail, flatstem pondweed and some Ranunculus. In the ditches south of the marsh road except for the Main Ditch coontail is predominant with patches of sago as second in abundance.

The bulrushes, river and roundstem species seeded heavily again this year so that there should be ample supplies of this type of food for the ducks. In low spots wild millet is doing well and smartweed grows luxuriantly on old muskrat houses and on muck or peat that has been exposed by the constructions operations on Wheeler Ditch. The peat dug out of the Wheeler Ditch by the dragline was piled on the upstream side of the dike fill, and within a week after being placed there the smartweed was appearing and soon covered the spoil banks. The peat must be loaded with smartweed seeds and remained viable for a good many years.

As noted above, the muskrats have been doing much to open new holes and clear several acres of cattails in the.

southeast corner of the refuge. No trapping was done last year, so that the rats were able to build up their numbers and start opening some of the large solid cattail stands. This was especially noticeable in the area between Townline and Wheeler Ditches south to the Stateline where we had our heaviest concentration of muskrats.

The higher water levels attained this summer has had some little effect on the willows, as some areas of willows are full of browned leaves, and so not look quite as healthy as they once did. Along the ditch banks it is quite noticeable that the steady height above 75.50 has had an effect on them, and will undoubtedly have further effect if the elevations can be maintained.

Ducks have again been noticed flying into harvested grain fields in the evenings especially blacks and mallards. With the fine growing season that existed this summer it appears that a large amount of supplemental feed will be available for the migrant ducks and geese.

The wild rice that was sown last fall did germinate and grow well in the various places, but at the end of the season it did not amount to much due to the muskrats. As soon as the rice had attained a growth of two to three feet above the water the muskrats started working on it, cutting it off and feeding on it. The carp do not seem to damage it much, it is the muskrats that make it difficult to obtain a stand. The rice was planted in areas where the muskrats were fewest in number, but one animal can do quite a bit of damage to a small stand. The rice is not desperately needed as food, but it would be fine to have a sizeable stand started.

B. Upland Game Birds

1. Population and Behaviour

Ring-necked pheasants have again shown an increase on the refuge, a favorable nesting season being the main reason. During the period when the hens were on the nest there was little rainfall or cold weather that would affect the success. The largest numbers are seen around the refuge farms and along the Marsh road where the situation is a little bit higher than most of the marsh. Very few pheasants are seen out in the marsh proper during this period as the water levels are too high for them. A few are seen out on some of the higher ditch banks, but not in any great

numbers.

Hungarian Partridge appear in slightly greater numbers, with few being seen on the refuge proper. They are seen around the periphery of the refuge on farmlands where there is sufficient food and cover. The increase must be general throughout Dodge and Fond du Lac counties as an open season has been established for them for 1949.

2. Food and Cover

The upland game birds will fare well this fall and had very favorable food supplies during the period. Growths of wild roses, Crataegus, wild grapes, elderberry, woodbine and other fruit producers are heavy. In fact, fruit of all kinds are in plentiful supply, and should go far in maintaining healthy populations through the winter months.

C. Big Game Animals

1. Population and Behaviour

Though there have been few reports of deer fawns this summer as compared to 1948 it is believed that the increase in numbers will be a normal number. One reason for fewer reports is that there are fewer permittees living on the refuge now, and not being there early in morning and late evenings when the deer are most easily seen. There have been many tracks of deer of all sizes seen on freshly worked lands, but no damage attributable to deer has been reported. The Wisconsin Conservation Department has established a bow and arrow season for deer in all counties of the state from September 24 to November 7, which of course includes the lands of Dodge and Fond-du Lac Counties outside of the refuge.

D. Fur Animals, Predators, Rodents and Other Mammals

The higher water levels have been favorable for muskrat habitat, and the welfare of the animals. There has been no discernible movement of muskrats from the marsh, nor have any been noted dead on the roads surrounding the refuge. Ditches and potholes that were bone dry last summer at this time now have ample water in them and what with good growths of all vegetation the muskrats should be in excellent condition to come through the winter.

A close survey of the refuge, looking into the distribution and abundance of the muskrats in August showed that muskrats are still relatively small in numbers north of Sommers Ditch, west of the Main Ditch and north of Clubhouse Ditch, east of the Main Ditch. These are the areas which suffered the most during the dry spells and the rat population has not had a chance to build up to normal numbers. From the evidence secured on this survey it is planned to recommend a muskrat trapping season on the refuge, excepting the areas as listed above. In the areas south of those enumerated above the muskrat population is high and should be trapped before their numbers become too great and losses occur through disease or other factors of overcrowding.

In all the travels made on the marsh during the summer, very few mink were seen. This is not unusual as they are for the most part rather secretive, and do not show themselves much. Skunk and raccoon appear to be the same in number as last year, several skunk having been run over by cars on the marsh road.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development

On May 9, construction activities on the Horicon Dike commenced with all of the equipment on the job. The lands north of the Wheeler Ditch were placed under Government ownership in January, so work was started at the east end of Wheeler Ditch with the dragline digging the core trench in the ditch and the tournapulls following along and putting in the dike section. The dragline completed core trench operations and then moved to the extreme east end of the dike location and built the dike from the high land to the borrow pit where we are taking fill with the tournapulls. Operations this year have been hampered occasionally by heavy rains, something that did not bother us much last year. Toward the end of August we had three of the scrapers go down at varying intervals with pinion gear trouble and brake bands wearing out. Thus during August we had at least one, and for a week, two of the machines torn down for repair. The TD-18 tractor which is our poorest piece of equipment has been down for a month awaiting repair parts to the motor.

At the present time the dike section is about two-thirds completed to station #188. The fill is pushed in place by the bulldozer after being dumped by the scrapers. The peat not removed by the dragline in the ditch other than in the core trench pushes up to the top in being displaced by the fill. This piles up along the upstream toe and may have to

be removed before the toe of the dike can be completed. There is still some fill in the haul road that will be placed in the dike section when most of the fill has been completed.

On the east end following completion of the dike section from Station 0.00 to 30.00, the dragline dug the drainage ditch and completed it to Station 30.00. We are awaiting the 24" CMC to put in under the town road, but the dragline is going ahead with the excavation of the ditch to the marsh.

On the west side of the Main Ditch the dike line has been staked and cut and fill elevation set from Station 0.00 to Station 52.00. Upon completion of work on the east side the dragline will be moved to the western side and operations started there. On August 8 the dragline was started on a double shift basis while working on the east end. This has speeded progress considerably and will enable us to get working on the west Side much sooner.

A shop building was started and is half completed, the completion held up pending receipt of materials to use in putting on the transite siding. The building is composed of two fuse storage buildings from the Crab Orchard Refuge moved here for a repair shop.

Refuge Maintenance

This activity encompassed maintenance of buildings, repair of boundary fences, posting of newly acquired lands, and some cleanup around building sites. Most of our time during the summer months is taken up with farming and grazing permits, in harvesting activities and posting.

B. Plantings

For the most part the crops have done very well this year. Grains suffered a little in late May and early June when a prolonged dry spell existed resulting in some grain with long stray and short heads. Peas did very well in most instances and were harvested early enough to plant buckwheat in time for it to ripen. Corn has done exceedingly well, it being the best corn crop in this vicinity for a good many years. Both sweet and field corn have done well and it appears that it will have time to ripen before the first frost. Yields as high as five and six tons of sweet corn to the acre have been reported, and it is expected that field corn will do equally as well. Much stover must be plowed under as the growth of the stalks is so heavy that there is more than enough to normally needed for silo filling. Buckwheat is doing well and at

the end of the period most of it had completed blossoming and was setting seed. There should be a bumper crop of corn and buckwheat this year so that we should have enough for supplemental feeding of the waterfowl for both the fall and spring migrations.

IV. ECONOMIC USE OF REFUGE

A. Grazing

The condition of the grazing units remained good during the summer due to the frequent rains with grass and forage growth doing well. The amount of grazing was about the same as last year with a few less grazing units used than last year. There will be no necessity for reduction in AUM's on any of the units this year as all are in excellent condition.

B. Haying

The hay crop was exceptionally good on young stands and even some of the older alfalfa and clover stands did better than anticipated. There was not the demand for hay this year as in the past two years, but all tame hay and about 225 acres of marsh hay was cut. The higher water levels prevented one hay operator from cutting as much hay in the area south of Wheeler Ditch as last year.

V. FIELD INVESTIGATION

No activity under this heading.

VI. PUBLIC RELATIONS

A. Recreational Uses

Fishing and boating on the marsh remained the principal recreational uses made of the refuge. The Main Ditch is the only waterway there outboard motors on boats may be used, due to the heavy growth of aquatics in the sloughs and side ditches. It seems that motor boating is popular only in the early spring when owners like to try out their boats and motors after winter storage. Fishing falls off in mid-summer, but in mid-August it picked up considerable on Wheeler Ditch following completion of the core trench excavation. Good catches of yellow perch, northers, and some pan fish have been made there since that time.

B. Refuge Visitors

May 10-20	Mr. H.A. Carter	Land Acquisition
May 19	Mr. Kibbe	Refuge Inspection
May 27	Mr. Karl Kobes	Pick up truck
June 2	Mr. Huey	Inspection of Const. Work
June 10	Messrs. Recroft & Carter	Land Acquisition
June 16	Mr. Noble Buell	Pick up Jeep
June 20	Mr. Carter	Land Condemnation Hearing
June 21	Mr. R.O. Gustafson	Equipment Inspection
June 23	Messrs. Griffith & Gillett	Refuge Inspection
June 29	Messrs. Salyer & Gillett	Refuge Inspection
July 12-13	Messrs. Taylor & Huey	Inspection of Const. Work
July 12-14	Mr. Ray Wright	Dike Surveys

C. Refuge Participation

On May 3 a talk was made before the joint meeting of the Attwater and Burnett Conservation Clubs at Burnett, Wisconsin. On June 20th another talk and discussion on the refuge and waterfowl was made before the Beaver Dam Rotary Club. In these talks as in others the Century of Conservation theme of the Department of the Interior was highlighted, and the reactions of the audiences were of surprise at the conservation activities of the department. It appeared that many persons are quite unaware of the force that the department plays in such activities.

VII. OTHER ITEMS

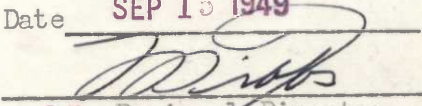
A. State Roads: Construction of the roadway fill for relocated State Highway 49 was just about completed at the end of the period. All that remained of the work was shoulder dressing, seeding, borrow pits etc. A new contract covering a sand and gravel lift was let and the contractor started work on that portion east of the marsh in mid-August. The bridge across the Rock River two miles east of the Waupun city limits was completed but has not been opened to traffic.

Respectfully submitted,

 Donald F. Gray
 Refuge Manager

Approved:

Date SEP 15 1949


 Acting Regional Director

WATERFOWL

Refuge Horicon Refuge

Months of May 1

to August 31

194 9

(1) Species Common Name	(2) First Seen		(3) Peak Concentration		(4) Last Seen		(5) Young Produced		(6) Total
	Number	Date	Number	Date	Number	Date	Broods Seen	Estimated Total	Estimated for Period
I. <u>Swans:</u> Whistling swan									
II. <u>Geese:</u> Canada goose Cackling goose Brant White-fronted goose Snow goose Blue goose									
III. <u>Ducks:</u> Mallard Black duck Gadwall Baldpate Pintail Green-winged teal Blue-winged teal Cinnamon teal Shoveller Wood duck Redhead Ring-necked duck Canvas-back Scaup Golden-eye Buffle-head Ruddy duck							4 2 9 1 1	21 8 94 4	1000 500 30 40 20 1000 500 50 10
IV. <u>Coot:</u> <u>Florida Gallinule</u>									300 150

SUMMARIES

Total Production:

Geese _____

Ducks 130

Coots 52.

Total waterfowl usage during period 3500

Peak waterfowl numbers 3500

Areas used by concentrations Townline-Wheeler Ditch Area

Principal nesting areas this season Townline-Wheeler

Lehner Ditch

Reported by Donald V. Gray

INSTRUCTIONS

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance.
- (2) First Seen: The first refuge record for the species during the season concerned in the reporting period, and the number seen. This column does not apply to resident species.
- (3) Peak Concentration: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned in the reporting period.
- (5) Young Produced: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (6) Total: Estimated total number of the species using the refuge during the period. This figure may or may not be more than that used for peak concentrations, depending upon the nature of the migrational movement.

Note: Only columns applicable to the reporting period should be used. It is desirable that the Summaries receive careful attention since these data are necessarily based on an analysis of the rest of the form.

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Horicon Refuge

Months of May 1 to August 31 1949

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Pied-billed Grebe									15	150
Great Blue Heron										100
American Egret										120
E. Green Heron	1	5-2	60	8-9						80
King Rail										10
Virginia Rail										30
Sora Rail										120
II. Shorebirds, Gulls and Terns:										
Terns:										
Upland Plover								3	9	46
Spotted Sandpiper										50
Solitary Sandpiper										60
Lesser Yellowlegs										50
Greater Yellowlegs										75
Black Tern										350
Common Tern										30

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons:</u>					
Mourning dove					350
White-winged dove					
IV. <u>Predaceous Birds:</u>					
Golden eagle					
Duck hawk					6
Horned owl					
Magpie					
Raven					
Crow					400
Red-tailed Hawk					12
Coopers Hawk					4
Marsh Hawk					22
Reported by <u>Donald V. Gray</u>					

INSTRUCTIONS

- (1) **Species:** Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
 II. Shorebirds, Gulls and Terns (Charadriiformes)
 III. Doves and Pigeons (Columbiformes)
 IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) **First Seen:** The first refuge record for the species for the season concerned.
- (3) **Peak Numbers:** The greatest number of the species present in a limited interval of time.
- (4) **Last Seen:** The last refuge record for the species during the season concerned.
- (5) **Production:** Estimated number of young produced based on observations and actual counts.
- (6) **Total:** Estimated total number of the species using the refuge during the period concerned.

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

1613

Refuge Horicon Refuge

Months of May to August 31, 1949

(1) Species	(2) Density	(3) Young Produced	(4) Sex Ratio	(5) Removals	(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'd. Estimated Total	Percentage	Hunting For Re- stocking For Research	Estimated number using Refuge Pertinent information not specifically requested. List introductions here.
Ring-necked Pheasant	3000 Acres Marsh edge, willows thicket & agricul- tural lands	2.0	21 1000	40% M 60% F		2500
Hungarian Partridge	1000 Acres Pasture & agricul- tural lands	10	0 30	50-50		100

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

- (1) SPECIES: Use correct common name.
- (2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.
- (4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.
- (5) REMOVALS: Indicate total number in each category removed during the report period.
- (6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.
- (7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-1570
NR-8a

REFUGE GRAIN REPORT

Refuge Horicon National Wildlife Refuge

Months of May thru August 1949..

(1) VARIETY	(2) ON HAND BEGINNING OF PERIOD	(3) RECEIVED DURING PERIOD	(4) TOTAL	(5) GRAIN DISPOSED OF				(6) ON HAND END OF PERIOD	(7) PROPOSED USE		
				TRANS- FERRED	SEEDED	FED	TOTAL		SEED	FEED	SURP.
Barley	362	331	693	200		30	230	463	63	200	200
Oats	506	1398	1904	700*		20	720	1184		300	8
Oats-wheat-barley	277	380	657			30	30	627	27	300	300
Corn	627		627			40	40	587		400	187
Spring Wheat	109		109			50	50	59		59	0
Millett	6		6					6	6		0

- (8) Indicate shipping or collection points Horicon Refuge Waupun or Mayville, Wisconsin
- (9) Grain is stored at Refuge Granaries
- (10) Remarks * As of September 13, 1949. 700 Bu. of oats to Region 4 September 8-13.

NR-8a

REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)--55 lbs., Corn (ear)--70 lbs., Wheat--60 lbs., Barley--50 lbs., Rye--55 lbs., Oats--30 lbs., Soy Beans--60 lbs., Millet--50 lbs., Cowpeas--60 lbs., and Mixed--50 lbs. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

- (1) List each type of grain separately: Corn, wheat, proso millet, etc. Include only domestic grains; aquatic and other seeds will be listed on NR-9.
- (3) Report all grain received during period from all sources, such as transfer, share-cropping, or harvest from food patches.
- (4) A total of Columns 2 and 3.
- (6) Column 4 less Column 5.
- (7) This is a proposed breakdown by varieties of grain listed in Column 6.
- (8) Nearest railroad station for shipping and receiving.
- (9) Where stored on refuge: "Headquarters grainary", etc.
- (10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.



DRAGLINE EXCAVATING CORE TRENCH FOR DIKE IN
WHEELER DITCH.



FIRST TRIP OF TOURNAPULLS OUT ON DIKE IN 1949
MAY 9, 1949



FIRST TOURNAPULL BROKE THROUGH HAUL ROAD AS IT PREPARED TO UNLOAD.



LOADING TOURNAPULL WITH AID OF PUSHER TRACTOR IN PIT ON OLD SCHREIBER FARM.



PUSHING DIKE FILL IN PLACE WITH BULLDOZER



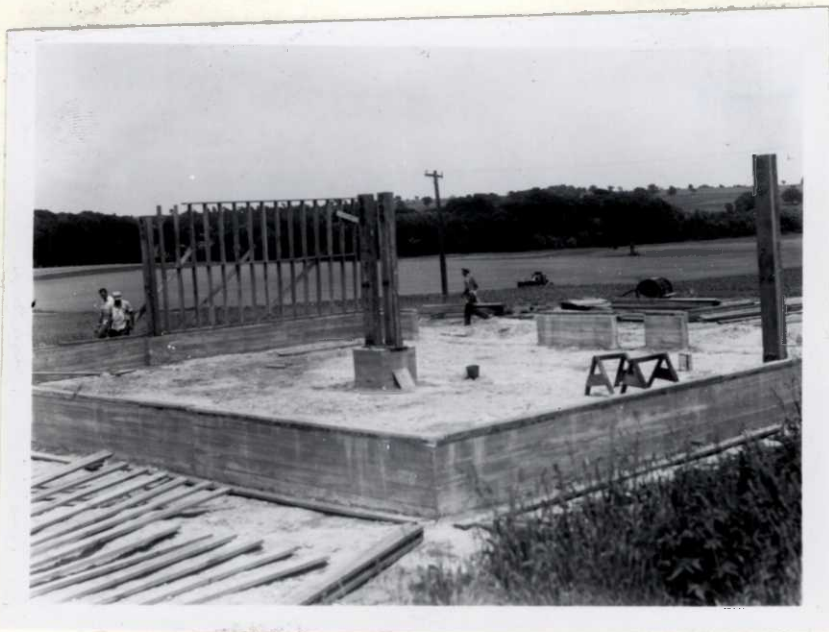
VIEW OF TOURNAPULL WHERE IT BROKE THROUGH THE HAUL
ROAD ON FIRST TRIP OUT ON MAY 9, 1949



GENERAL VIEW OF OPERATIONS ON DIKE CONSTRUCTION AT
WHEELER DITCH LOOKING FROM THE EASTERN END. JUNE 1949



CLOSER VIEW OF PUSHER LOADING OPERATIONS.



CONSTRUCTION UNDERWAY ON REFUGE SHOP BUILDING.