(10)

# SALTON SEA NATIONAL WILDLIFE REFUGE

&

# WATERFOWL DEVELOPMENT AREAS

## NARRATIVE REPORT

Sep - Dec 1950

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UNITED STATES DEPARTMENT OF THE INTERIOR
FISH & WILDLIFE SERVICE
BRAWLEY, CALIFORNIA

Salton Sea National Wildlife Refuge

&

Waterfowl Development Areas

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NARRATIVE REPORT

September, October, November, and December 1950

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United States Department of the Interior
Fish and Wildlife Service
Brawley, California

## REFUGE PERSONNEL

### REGULAR PERSONNEL

Edward J. O'Neill.....Refuge Manager
Lloyd R. Ramelli.....Refuge Manager
Will T. Wesley.....Maintenance Man
Clyde W. Stewart.....Tractor Operator
Alfred W. McFarland...Tractor Operator
W. Carl Ford.....Tractor Operator
Jerryl W. Sexton.....Clerk-Typist

### TEMPORARY PERSONNEL

John Barros.....Laborer
Jose Barros.....Laborer
Sylvester Barros.....Laborer
John K. Bauman.....Laborer
Melvin Ford.....Laborer
Raymond L. Gash.....Carpenter
William E. Hoff.....Laborer
Leon Lesicka.....Laborer
William Lewis Lynch...Laborer
Morris E. Mix.....Laborer
Estrel E. Weldon.....Laborer
Robert L. Woodard.....Laborer

# NARRATIVE REPORT

## I GENERAL CONDITIONS

### A. Weather Conditions, Etc.

This years fall-winter months in general brought higher extremes in temperature than last year. Precipitation was practically nil and to the winter vegetable farmers' delight, no frost came to the general Imperial Valley area.

One morning during the last week of October a very unusual bank of fog lay over the middle of the Valley. It was purely local, with the bank starting about a mile east of the El Centro Naval Air Station and extending as far as Holtville several miles to the east. Visibility in the fog area was about 200 feet with a zero ceiling. A Navy pilot, flying at 25,000 feet reported that the fog started near the center of Salton Sea and stretched into Mexico as far as the eye could see. Weather experts had no explanation for the freak fog which hung around for hours. Local sidewalk authorities refrained from comment having never seen such a phenomenon before.

The usual winter windstorms swept over tha Salton Sea country bringing lower temperatures in November and plenty of storms.

Stories of heat stricken dove hunters made the local press sheets again this year. A known count of 9 hunters were treated at the local hospitals and 3 died from heat exhaustion.

Tabulated below is the period weather data as compiled by the El Centro Naval Air Station at El Centro, California.

| MONTH | MAXIMUM | MINIMUM | PRECIPITATION |
|---|---|---|---|
| September | 120° | 63° | 0 |
| October | 105° | 56° | 0 |
| November | 91° | 35° | 0 |
| December | 87° | 40° | .05 |
| | | Total..... | .05 |

B. Water Conditions

Only minor changes have occured so far as water conditions are concerned. The Salton Sea shoreline continues to advance upward, due to increased Valley-wide irrigation, runoffs, and new spillage from the Coachella Valley to the north.

The New River, which was turned through Sections 22 and 23 of Unit I early in 1948, as a result of the Imperial Irrigation District's operations, continued to occupy substantially the same area. Silting to the extent of 6 feet in places has resulted wherever muddy waters meandered and deposited the silt load. There has been no definite proposal to date as to when the stream will be again diverted, however during November and December a new channel was excavated out into Salton Sea bypassing the west half of Section 14, Unit I.

Water levels varying from nearly 1 foot to about 3 inches were maintained as in past years, on the fresh water marsh areas. The total Wild Millet crop under the contour consisted of 600 acres which was flooded throughout the period after July 1st.

The refuge crops again were irrigated by flood-border method as in the past at 10 to 20 day intervals as required by weather and growth conditions. Total refuge alfalfa and barley crop acreages amounted to 1,350 acres.

This year, the District Board sanctioned use of free leach rater with which to reclaim Tracts 24 and 25, Unit I and Tracts 1 and 2 of Unit If. After processing the lands since June some spots of alkali remain in tha Unit I tract which was dried, retilled and a second flooding treatment started.

C. Fires

No fires occured on the refuge areas during the period.

## II WILDLIFE

### A. Migratory Birds

#### 1. Populations And Behavior

During the period Canada Geese returned from northern climes starting with a group of 4 October 23rd which reached an all time high of 640 by December 16th. We estimated that at least 800 honkers used the refuge units during short stop overs or as a wintering habitat.

The Canada Goose seasonal population an Salton Sea Refuge has been as follows for the past 4 seasons:

1950..... 640
1949..... 500
1948..... 400
1947..... 200

Cackling Geese returned to Salton Sea as early as November 20th. Less than 10 birds were present on December 9th when we considered the population at its peak.

White-fronted Geese first showed up September 20th when some 20 birds began to utilize refuge food plots. Throughout the period we estimated that about 800 used the refuge with a peak in population December 24th when 700 were present. This incidentally, represents the highest White-fronted Goose populations so far----- more than a 50 percent increase in peak numbers compared with figures of one year ago.

Snow Geese w%r% here 14 strong as early a% October 8th and their numbers increased steadily until 5,200 were recorded December 2nd. Total use for the species was a mere 6,000. This represents the lowest Snow Goose population figures since 1947.

Reports came in again this year of Ross Geese having been seen and killed by hunters. From descriptions given there is little doubt but what reports on this species are accurate, but no reliable record8 are available.

Mallards, Green-winged Teal and Coots were lower in population than last year. On the other hand, Shovellers, Baldpates, Pintails, Cinnamon Teal all showed gains over last years populations.

Ruddy Ducks remained about the same as last year.

Ducks in general were reported well dispersed over the country north of here where record rains had filled pot holes and lakes to capacity throughout California's Central Valley.

Fulvous Tree Ducks during September reached the highest population figures ever when almost 600 were present. During the fall months nearly 100 were taken in refuge live traps and banded.

2. Shorebirds, Gulls and Terns

New on the list of migrant shorebirds during the period is the Spotted Sandpiper. Red-backed Sandpipers were also observed this season.

An unusually large flock of Ring-billed Gulls made the flooded portion of Unit I its headquarters and night roosting ground.

The various other species which were recorded on the area during the September-December period are recorded on Form WR-1A.

3. Marsh and Water Birds

Sandhill Cranes were here again during November. Four showed up the 25th of the month.

4. Food and Cover

The food plots on the refuge were the most effective so far. Hunters complained vehemently that shooting was hampered by refuge crops which made for contented birds, disinterested in entering the adjacent shooting areas.

As shown on the accompanying progress map, refuge lands produced the greatest acreage of foods yet. A total of 990 acres of barley, 620 acres of Wild Millet and 360 acres of alfalfa held pintails and geese well into January.

In Unit II at first the birds seemingly refused to utilize the barley crops. Live decoys, taken from the banding traps, were temporarily penned up in the various fields without success for two weeks. Next, the areas were flooded with irrigation water several times..... still nothing entered the crops but blackbirds.

One morning, nearly a week after we had given up hope, we found an estimated 20,000 Pintails and several hundred geese in the crop where they remained for weeks. Based upon estimates of yield for all food plots, ducks and geese consumed an estimated 224 tons of refuge-produced dry grains. An additional half-carload of Tule Lake Refuge barley was fed during the season.

Wild Millet held early arrivals during August and September after which the crop had no apparent food value save for the blackbirds.

The Mourning Dove migration was less prominent this season than any we have witnessed. Perhaps this was due to the fact that the hunting season was in full swing about the time the birds normally gather in the vicinity.

The Salton Sea Refuge again participated in road blockades and hunter checks in cooperation with the local agent and California Fish & Game men. Below is a tabulation of the take data which was obtained at the station by Service personnel.

| DATE OF ROAD BLOCKADE | NO. HUNTERS | M. DOVE | W-WINGED DOVE |
|---|---|---|---|
| 9-2-50 | 248 | 2184 | 34 |
| 9-4-50 | 136 | 1202 | 21 |
| TOTALS..... | 384 | 3386 | 55 |

Average bag per hunter checked was 8.95 doves. The legal limit was 10 birds.

A field check of 57 hunters by Refuge Manager Ramelli revealed that 353 doves were taken with an average of 6.19 doves per hunter. Of the total 4 were White-winged Doves.

B. Upland Game Birds

The population of Quail on and around the refuge units fared well, there being no open season in Imperial Valley this year.

The unexpected Botulism loss of hatchery Pheasants at the local State Game Farm left only the native reared birds for hunters. In spite of this reported shortage many residents hunted and obtained birds on their lands.

C. Other Birds

During the period 3 Harris Hawks were present on the area most of the time.

Vermillion Flycatchers also were a frequent sight for visitors.

We noted a very definite decrease in Blackbird numbers over the huge 1947-48 flocks seen here.

D. Fur Animals, Predators, Etc.

The population of Pocket Gophers along irrigation ditches in Unit II presented a real problem at subheadquarters. Twice the entire yard around the residence house was flooded as a result of Gophers and their tunneling work in the irrigation ditches. It may be advisable to consider future control of the species on irrigation ditches in view of the damages done to county roads, irrigation drainage ditches, and the many hours of labor spent on plugging holes. Neighboring farmers control the rodent on adjoining lands and it might be expected that the refuge likewise take action to prevent any criticism.

Status of the overall population of animals and rodents on the area appeared little changed over the previous period.

A lone Coyote near the entrance of Unit I was observed by Refuge Clerk-typist Sexton during the period, otherwise this species has been very rare on or around the refuge.

E. Fish

Fishing along the west boundary of Unit I where New River has continuously flowed for two years, has been good according to the fishermen checked. Catfish, Bass and Carp made up the creel during the period.

Commercial fishing this season was reported to be only fair. Common Carp were more in demand in Los Angeles markets than Mullet according to one commercial fisherman.

## III REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Developments

At subheadquarters the residence house is nearing completion with painting and final plumbing work in progress. A septic tank and disposal field were constructed and graveled.

The entire boundary of Unit II and newly acquired lands in Unit I, consisting of some 17 miles of roads and canals, was posted with blue goose trespass signs erected on white 4 x 4 posts.

The outlying levee in Tract 27, Unit I was completed on the upper (east) side, and all similar, small contours within were nearing completion at the close of this period. Concrete pipe and 18 inch drops were being provided for water circulation and control between contours. Runoff water from Tract 26 will be diverted into this marsh area as much as possible to utilize water which otherwise flows into Salton Sea.

In the Red Hill area an outlying levee was surveyed and construction by bulldozers started. This area will also be planted and maintained as a fresh water marsh following pre-irrigation and tillage to eliminate volunteer stands of Sesbania expected on this once farmed tract. The area, bisected by an old levee, is 2.44 feet higher on the west than on the east portion and presents a problem in bringing water in.

Graveling of headquarters court was started. The Imperial County gravel pit west of Imperial, California is the source of material and the County has consented to load our truck free of charge.

B. Cultivated Crops

| | |
|---|---|
| Total acres under lease..... | 4480 |
| Total acres under fallow..... | 610 |
| Total acres cropped..... | 2270 2980 |
| Total acres flooded by New River..... | 1800 |

October saw the last of 130 acres in Tract 18 and 19 of Unit I seeded to alfalfa. By the end of the period the crop appeared to be well established. This replaces the poor stand in Tract 7 of Unit II which, it is planned, will be leveled and reclaimed by leaching.

Canada and White-fronted Geese utilized the green alfalfa in Tracts 18, 19 and 26 so heavily that only once throughout the winter season was it necessary to resort to harvesting a portion of the alfalfa to prevent loss and to remove the mature growth, thus stimulating and making the new crop more attractive to waterfowl.

Based upon similar green alfalfa sold to a dehydration mill, we estimated that over a 60 day period, while an average of 1500 geese used these tracts of alfalfa, at least 100,000 pounds of green forage were consumed. Individuals easily averaged 1 to 1½ pounds each day at this rate. Definite signs of relief were heard from two neighboring farmers where feeding geese formerly ranged.

Night marauding of alfalfa by ducks is still unsolved although somewhat reduced over previous seasons. A combination of established long-flight habits and the picked over alfalfa plots used by geese during the daytime might possibly be the reason why ducks have failed to give up grazing in distant fields.

Alfalfa in Tracts 3 and 4 of Unit II grew and produced well, however due to increased night traffic along "k" Lateral Road by hunters, workers, and Pumice Island mining trucks, the expected utilization didnot occur. Ever during irrigation only small flocks of ducks stopped briefly despite the fact that seeded lettuce grew on about one-half of the fields.

Geese spent a few days in that area, otherwise it was necessary to harvest the crop through dehydration processing. Oddly enough, and disconcerting too, White-fronted and Canada Geese flocked to the field the day the dehydration mill workers started cutting for harvest .....a great stimulation indeed for the critical observers who chanced to pass by!

## IV ECONOMIC USE OF REFUGE

Haying and grazing activities are included on Form NR-10 attached.

## V PUBLIC RELATIONS

### A. Recreational Uses

No recreational facilities, etc. on the refuge.

B. Refuge Visitors

| NAME | DATE | IDENTIFICATION | PURPOSE |
|---|---|---|---|
| Mr. Fred Ross | 9/7 | Calif. F&G - Supv. | Tour Refuge |
| Mr. Wm. Anderson | 9/8 | " " | Bird Banding |
| Mr. E. L. Hartzog | 9/13 | IID -Supt. Water Distb. | Discuss future development Un.I |
| Mr. J. Sheldon | 9/16 | IID | " " |
| Messr. Loveland, Jefferson, et al | 9/24 | I.V. Depredation Com. & Sportsmen | Tour Un. I & II |
| Mr. F. Dart | 10/31 | F&WS - Refuge Manager | Equipment Transf. |
| Mr. Leo Laythe) Party | 11/6-8 | " Reg. Director | Tour Refuge |
| Mr. A.W. Elder) Party | | " Game Agent | " " |
| Mr. Rex Schmitt | 11/7-8 | " Photographer | Photography |
| Mr. K.F. MacDonald) Party | 11/16-17 | " Refuge Supv. | Inspection |
| Mr. A.V. Meyers ) Party | | | |
| Mr. Ross Hanson | 11/17-18 | " Pilot-Biologist | Aerial census |
| Mr. F. Gallup, et al | 11/25 | Banding Cooperator | Tour Refuge |
| Mr. Jim Burnham | 11/28 | F&WS - Desert Game R. | Equipment Transf. |
| Mr. Wm. Anderson ) Party | 12/3 | Calif. F&G | Tour Un.I |
| (Zoology Students) | | UCLA | " " |
| Mrs. J. H. Comby, et al | 12/28 | San Bernardino Aud.Soc. | " " |

C. Violations

Many cases participated in during road blockades were turned over to State Wardens for prosecution. Refuge personnel participated in 15 arrests which brought a total of $250.00 in fines to State and local County treasures.

On October 20th three hunters landed an airplane in a barley field only a few hundred feet from the office and were preparing to take to the marsh when apprehended. Despite the fact that the refuge was buzzed 4 times and birds driven off, a plea of "not guilty" and the claim of engine trouble got nimrods off scot free!

## OTHER ITEMS

On October 24th an amateur deep-sea diver, John McPhearson of Tucson, Arizona attempted to decend into Salton Sea near Unit XIX to examine the site of the old Liverpool Salt Mining Plant in ths village of Salt Town (Salton), submerged by the floodwaters of the Colorado which created Salton Sea some 44 years ago.

Strong winds and rain on the sea prevented the dive and McPhearson stated he would attempt the trip at a later date. He was particularily interested in exploring the city's streets and the narrow gauge steam engine abandoned at the salt works in 1906 when the Colorado River burst its sluices.

Throughout the period and coincidental to refuge banding operations Mr. William Anderson of the California Fish and Game trapped and banded ducks at Unit I. Mr. Anderson banded 300 ducks and coots between hunting seasons and was successful in capturing about 150 Fulvous Tree Ducks.

A group of 25 persons including sportsmen and the local game depredation group, toured the State and Federal units on September 24th to look over the expanding projects, discuss the value of the areas and to determine whether or not to open the 1200 acres of Lea Act lands in Unit II to hunting.

At a later meeting the group of committeemen voted against opening the Lea Act lands to hunting this season in view of continued crop depredations in the Valley, the relatively low usage of State-provided blinds (20%), and the lack of blind facilities on Federal units.

On October 26 personnel participated in a meeting at Yuma, Arizona which brought Arizona and California wardens, Region 1 and 2 Agents and various refuge employees together to discuss game laws and enforcement problems involving the Colorado River and International Boundary.

Mr. Lloyd Ramelli, on temporary detail at Salton Sea Refuge, cooperated with Game Management Agents and State wardens almost nightly on dove hunting patrol during September.

Date Submitted .....August 23, 1951

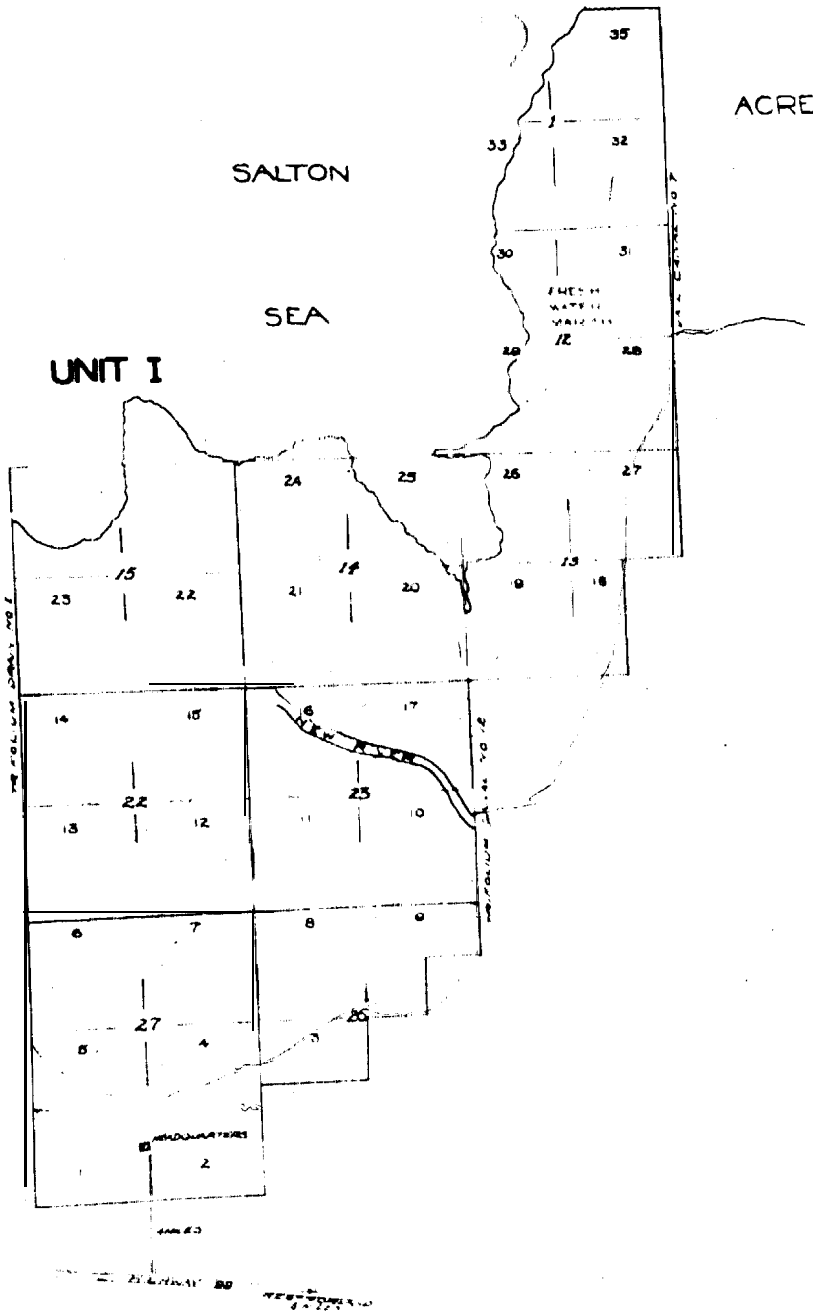
Edward J. O'Neill
Refuge Manager

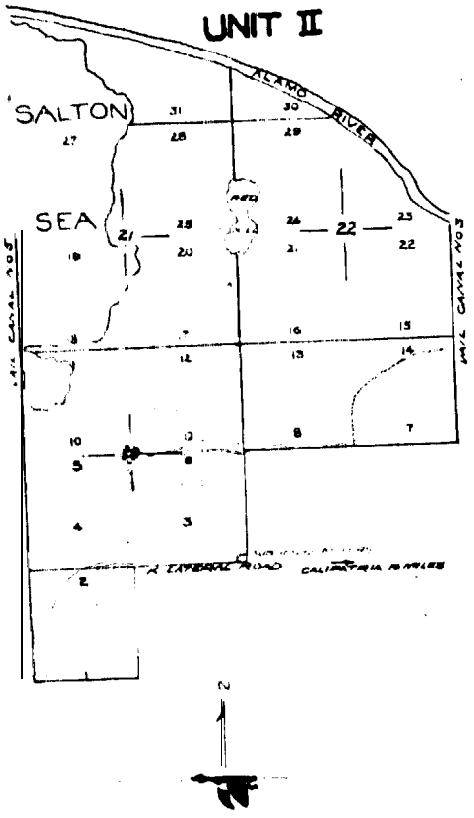
Approved: _____

_____

ACREAGES – DECEMBER 1950

| | |
|---|---|
| BARLEY | 990 |
| ALFALFA | 360 |
| W. MILLET | 620 |
| FALLOW | 610 |
| F.W. MARSH | 300 |

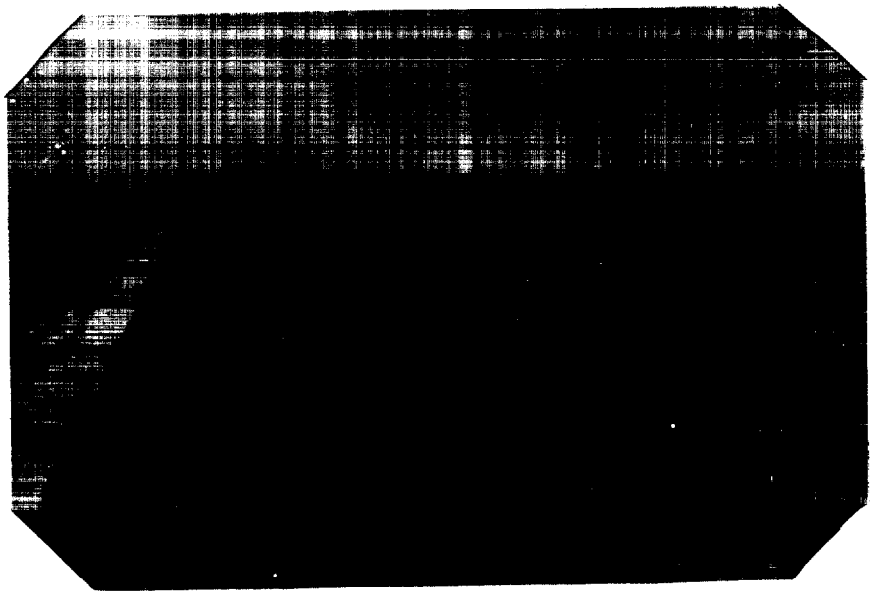


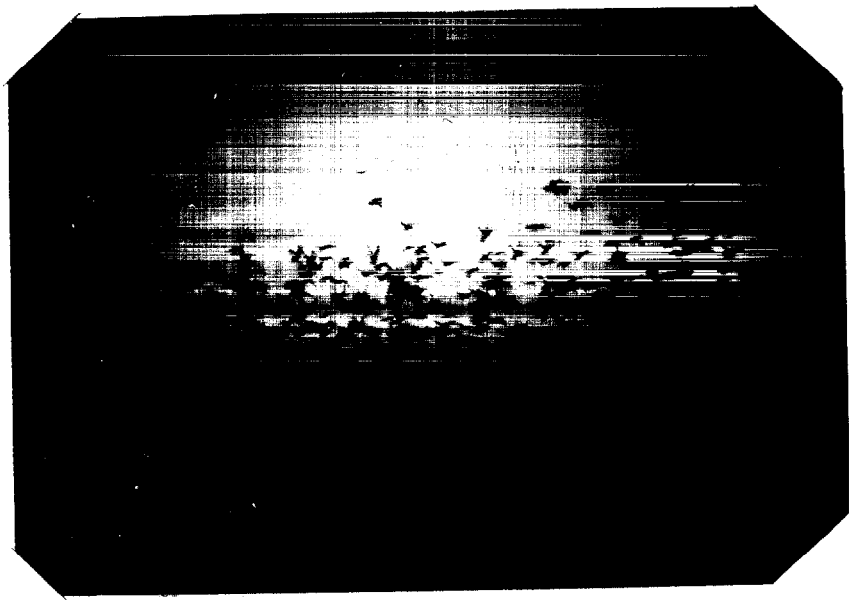

# PROGRESS MAP

## SALTON SEA REFUGE

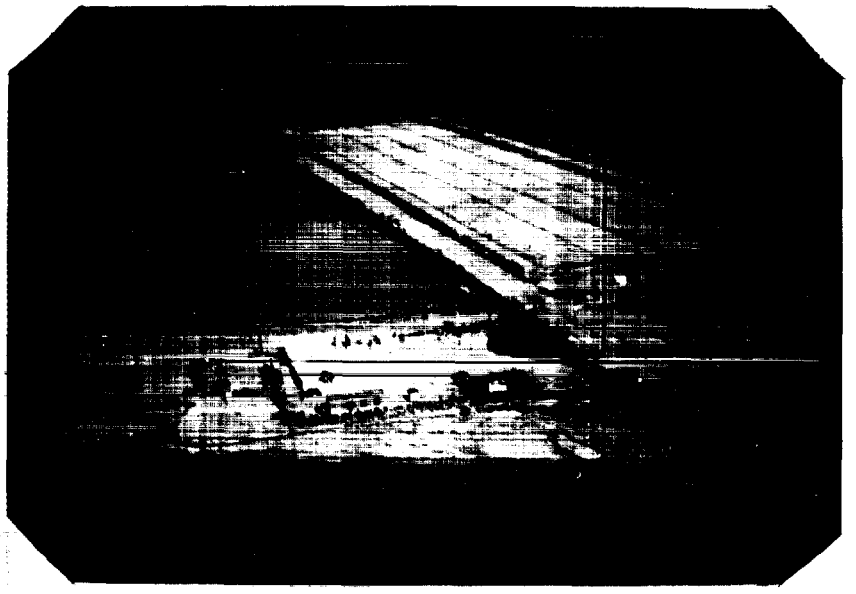
SCALE — 3 INCHES = 1 MILE



New India variety alfalfa crop, Tracts 18,19, Unit I two months after planting. "At least 100,000 pounds of green alfalfa was consumed."
Photo 12/8/50 L. Lesicka

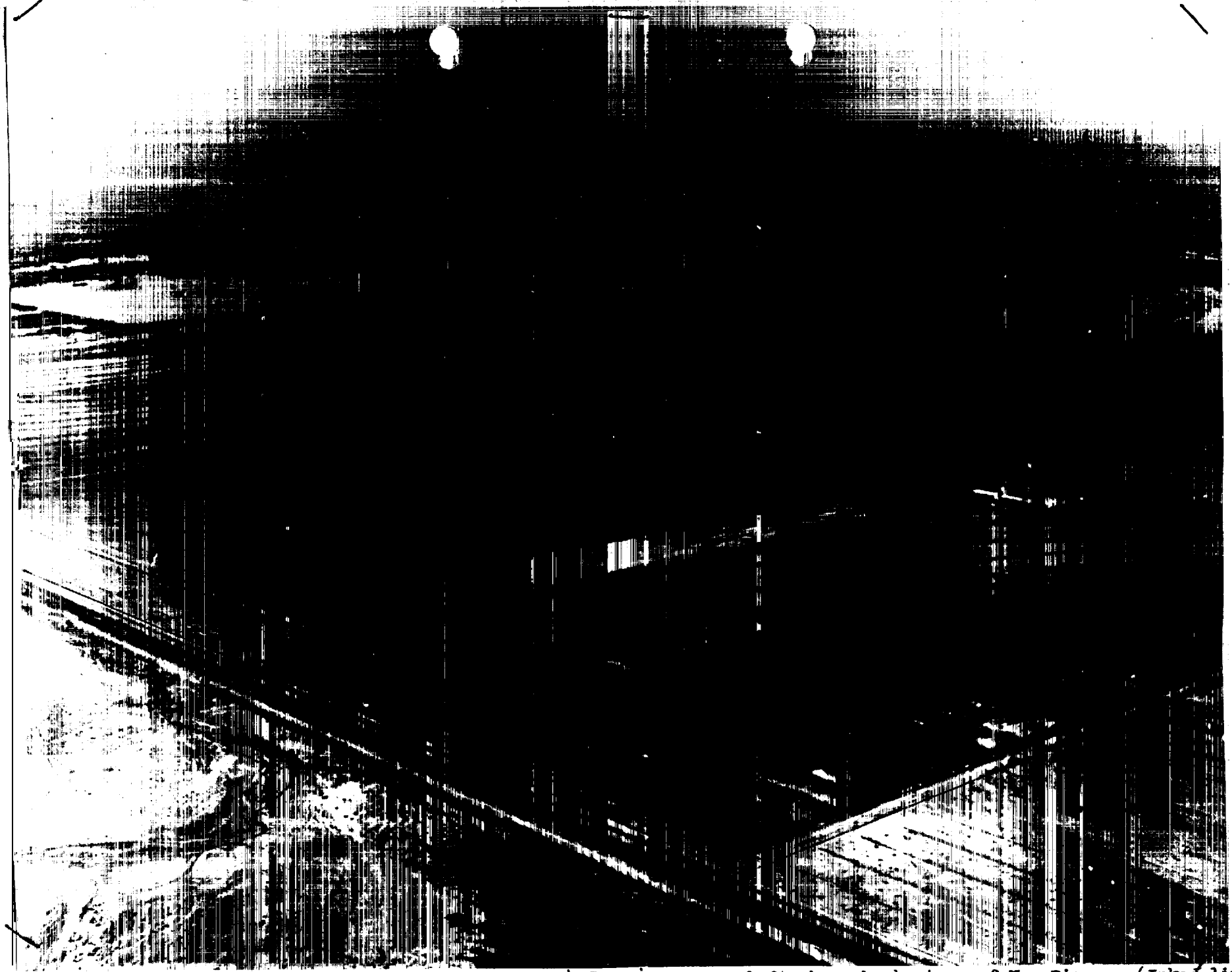


Ducks in barley field Tract 5, Unit I "The food plots on the refuge were the most effective so far." Photo 9/27/50 L. Ramelli.

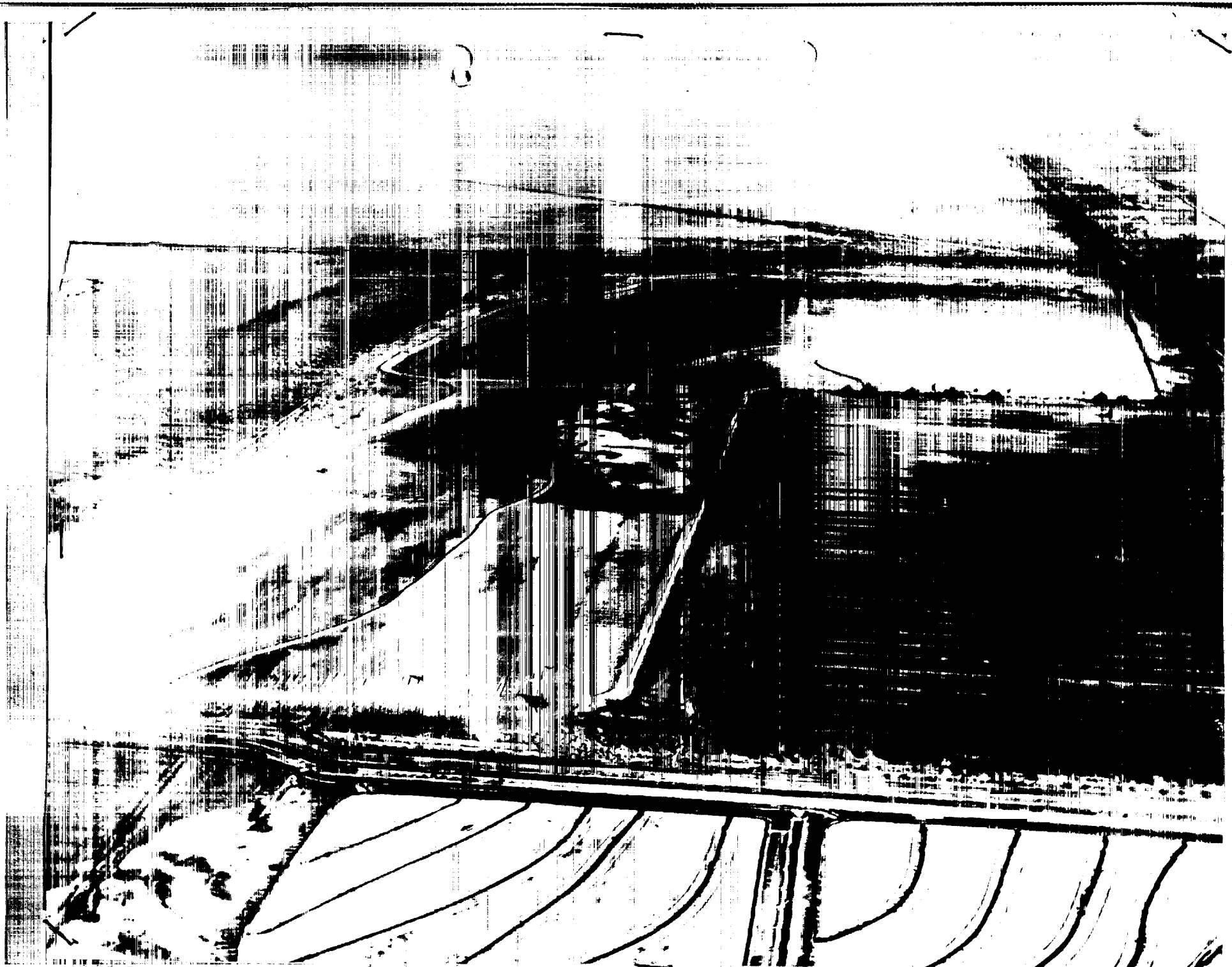


Aerial view of refuge headquarters, Tracts 4, 5, etc. Unit I. Photo 11/17/50 L. Ramelli - R. Hanson.

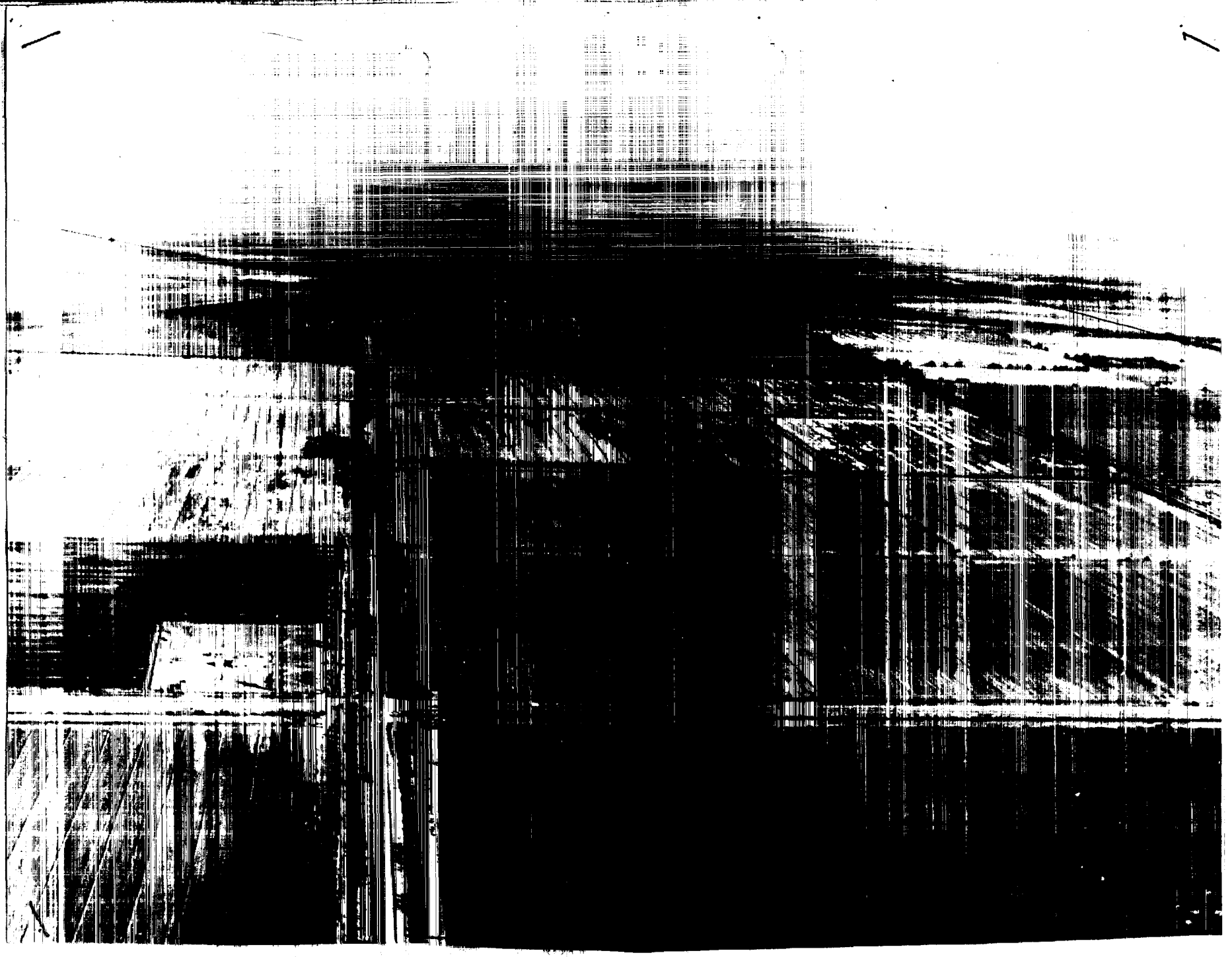
Subheadquarters Unit II showing progress on residence house at close of period. Rock Hill in background. Photo 11/7/50 Rex Schmitt.



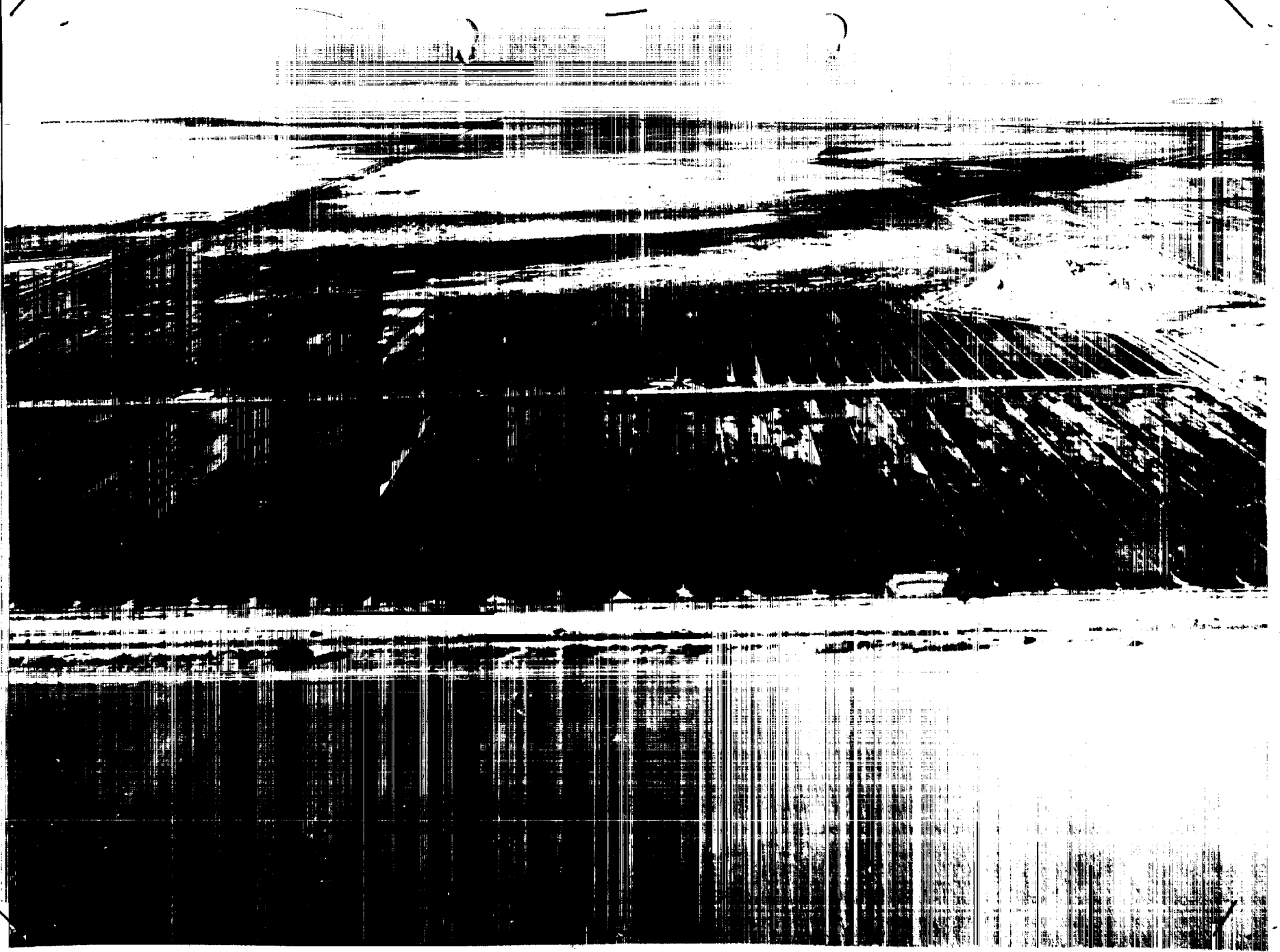
Aerial view showing Unit I, headquarters, tracts 4,5, etc. Upper left shows backwaters of New River. (Inked line is boundary) Photo 11/17/50 R. Hanson-E.O'Neill



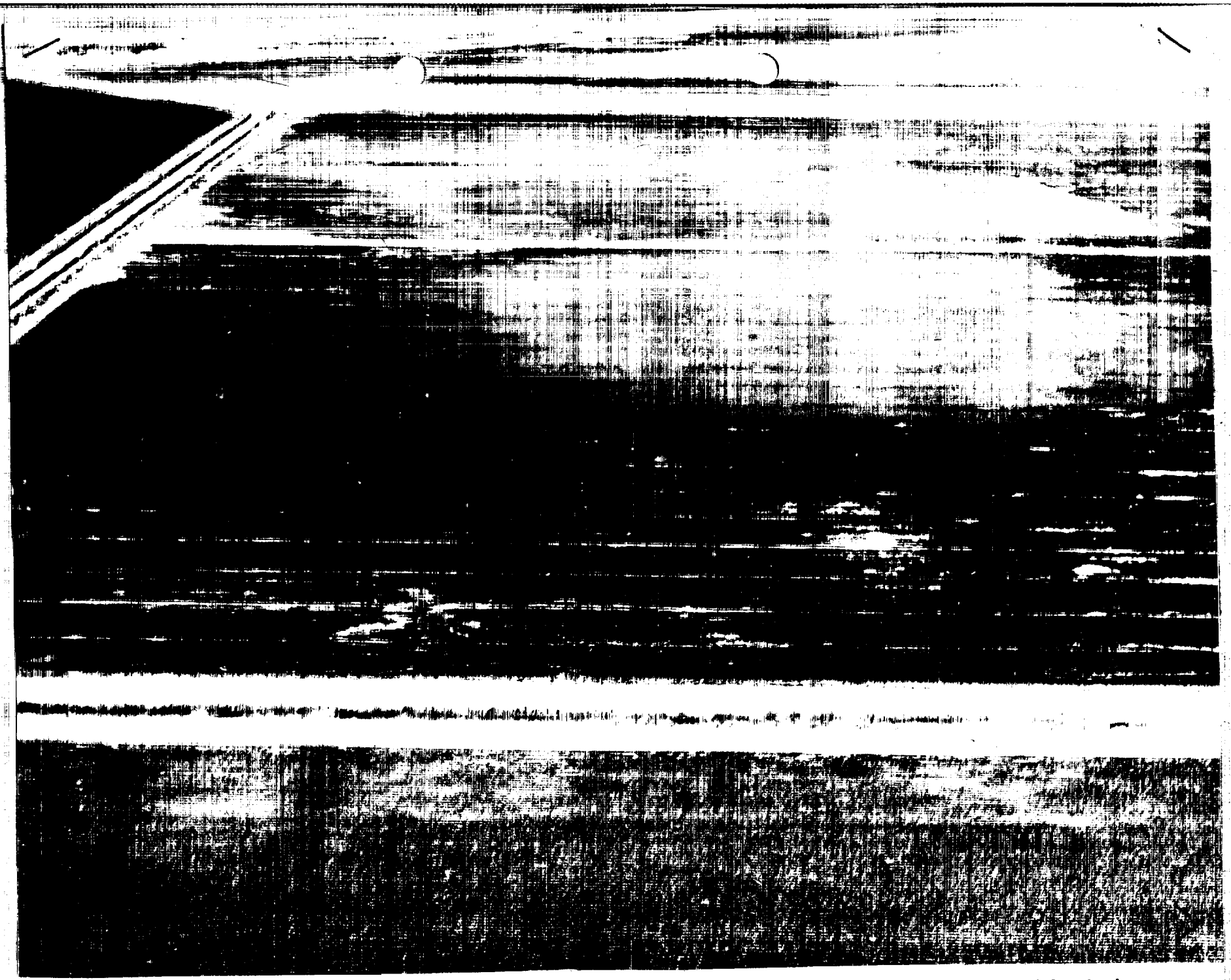
Aerial view showing Tracts 26,27,28,29 Unit I, situation of alfalfa and progress on fresh water marsh area.



Unit II showing aerial view of subheadquarters, various tracts of barley, alfalfa, south of Alamo River. Photo 11/17/50 Ross Hanson-E. O'Neill (Inked line is boundary).



Aerial view showing Unit II Tracts 2,4,5, Rock Hill, Alamo River, Etc. (Inked line is boundary).
Photo 11/17/50 ....R. Hanson- E. O'Neill.



Aerial view of Elmore Ranch west of Salton Sea Refuge showing alfalfa fields as grazed by ducks.
Photo December, 1950 Ross Hanson-E. O'Neill.

# WATERFOWL

Refuge Salton Sea Months of September to December 19 50

| (1) Species | (2) First Seen | | (3) Peak Concentration | | (4) Last Seen | | (5) Young Produced | | (6) Total |
|---|---|---|---|---|---|---|---|---|---|
| Common Name | Number | Date | Number | Date | Number | Date | Broods Seen | Estimated Total | Estimated for Period |
| I. Swans: | | | | | | | | | |
| Whistling swan | | | | | | | | | |
| II. Geese: | | | | | | | | | |
| Canada goose | 4 | 10/23/50 | 640 | 12/16/50 | | | | | 800 |
| Cackling goose | 7 | 11/20/50 | 10 | 12/9/50 | | | | | 20 |
| Brant | | | | | | | | | |
| White-fronted goose | 20 | 9/20/50 | 700 | 12/24/50 | | | | | 800 |
| Snow goose | 14 | 10/8/50 | 5,200 | 12/2/50 | | | | | 6,000 |
| Blue goose | | | | | | | | | |
| III. Ducks: | | | | | | | | | |
| Mallard | | | 430 | 9/9/50 | | | | | 500 |
| Black duck | | | | | | | | | |
| Gadwall | 2 | 9/9/50 | 300 | 12/9/50 | | | | | 1,500 |
| Baldpate | (Previous period) | | 15,000 | 12/31/50 | | | | | 20,000 |
| Pintail | " | " | 27,800 | 12/31/50 | | | | | 50,000 |
| Green-winged teal | " | " | 8,000 | 12/17/50 | | | | | 10,000 |
| Blue-winged teal | | | | | | | | | |
| Cinnamon teal | " | " | 3,200 | 10/23/50 | | | | | 3,000 |
| Shoveller | " | " | 7,200 | 12/17/50 | | | | | 10,000 |
| Wood duck | | | | | | | | | |
| Redhead | " | " | 140 | 12/24/50 | | | | | 150 |
| Ring-necked duck | | | | | | | | | |
| Canvas-back | " | " | 200 | 12/9/50 | | | | | 200 |
| Scaup | " | " | 930 | 11/26/50 | | | | | 1,000 |
| Golden-eye | | | | | | | | | |
| Buffle-head | 2 | 10/23/50 | 2 | 10/23/50 | | | | | 20 |
| Ruddy duck | (Previous period) | | 450 | 11/26/50 | | | | | 1,000 |
| Fulvous Tree Duck | " | " | 580 | 9/9/50 | 1 | 11/11/50 | | | 1,000 |
| IV. Coot: | " | " | 3,240 | 11/11/50 | | | | | 10,000 |

116 090

3-1750
(July 1946)

(over)

Form NR-1

## SUMMARIES

Total Production:

Geese _____

Ducks _____

Coots _____

Total waterfowl usage during period 116,690

Peak waterfowl numbers 74,102

Areas used by concentrations Units I & II, New River and Salton Sea shoreline

Principal nesting areas this season _____

Reported by Salton Sea Refuge

## 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 Seenr 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 Salton Sea Months of September December 9/30

| (1) Species | (2) First Seen | | (3) Peak Numbers | | Lee | | (5) Production | | | (6) Total |
|---|---|---|---|---|---|---|---|---|---|---|
| Common Name | Number | Date | Number | Date | Numb | D | Numbe oloni | Total # Nests | Total Young | Estimated Number |
| I. Water and Marsh Birds: | | | | | | | | | | |
| Pied-billed Grebe | (Previous | period) | 10 | | | | | | | |
| Great Blue Heron | " | " | 10 | | | | | | | |
| American Egret | " | " | 200 | | | | | | | |
| Brewster's Egret | " | " | 150 | | | | | | | |
| White-face Glossy Ibis | " | " | 80 | | | | | | | |
| Wood Ibis | " | " | 1,000 | | | | | | | |
| Green Heron | " | " | 8 | | | | | | | |
| Black-crowned Nt. Heron | " | " | 5 | | | | | | | |
| Clapper Rail | " | " | 10 | | | | | | | |
| Sora Rail | " | " | 10 | | | | | | | |
| Florida Gallinule | " | " | 200 | | | | | | | |
| White Pelican | " | " | 300 | | | | | | | |
| Cormorant | " | " | 100 | | | | | | | |
| Sandhill Crane | " | " | 4 | 11/26/50 | | | | | | |
| II. Shorebirds, Gulls and Terns: | | | | | | | | | | |
| Caspian Tern | " | " | 10 | | | | | | | |
| Gull-billed Tern | " | " | 60 | | | | | | | |
| Black Tern | | | 20 | | | | | | | |
| Ring-billed Gull | | | 4,000 | | | | | | | |
| Wilson Snipe | | | 3 | | | | | | | |
| Black-necked Stilt | | | 500 | | | | | | | |
| American Avocet | | | 300 | | | | | | | |
| Wilson Phalarope | | | 50 | | | | | | | |
| Spotted Sandpiper | | | 2 | | | | | | | |
| Western Sandpiper | | | 500 | | | | | | | |
| Least Sandpiper | | | 30 | | | | | | | |
| Red-backed Sandpiper | | | 6 | | | | | | | |
| Long-billed Curlew | | | 1,500 | | | | | | | |
| Long-billed Dowitcher | | | 600 | | | | | | | |

(over)

| | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|
| III. Doves and Pigeons: | | | | | |
| Mourning dove | | | | | |
| White-winged dove | | | | | |
| IV. Predaceous Birds: | | | | | |
| Golden eagle | | | | | |
| Duck hawk | | | | | |
| Horned owl | | | | | |
| Magpie | | | | | |
| Raven | | | | | |
| Crow | | | | | |

Reported by .....

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 Gruiiformes)
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 [redacted] Months of [redacted] to [redacted], 19[redacted]

| (1) Species | (2) Density | | (3) Young Produced | | (4) Sex Ratio | (5) Removals | | | (6) Total | (7) Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| comm Nam | Cover types, total acreage of habitat | Acres per Bird | Number broods obs'v'd. | Estimated Total | Percentage | Hunting | For Re-stocking | For Research | Estimated number using Refuge | Pertinent information not specifically requested. List introductions here. |
| [redacted] | [redacted] | | | | | | | | 150 | |
| [redacted] | " " | | | | | | | | 300 | |

# 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.

3-1753
Form NR-3
(June 1945)

# BIG GAME

Refuge Salton Sea Calendar Year 1950

| (1) Species | (2) Density | (3) Young Produced | (4) Removals | | | | (5) Losses | | | (6) Introductions | | Estimated Total Refuge Population | | (8) Sex Ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Common Name | Cover types, total Acreage of Habitat | Number | Hunting | For Re-stocking | Sold | For Research | Predation | Disease | Winter Loss | Number | Source | At period of Greatest use | As of Dec. 31 | |
| (No big game species on refuge.) | | | | | | | | | | | | | | |

Remarks:

Reported by _____

# INSTRUCTIONS

Form NR-3 - BIG GAME

(1) SPECIES: Use correct common name; i.e., Mule deer, black-tailed deer, white-tailed deer. It is unnecessary to indicate sub-species such as northern or Louisiana white-tailed deer.

(2) DENSITY: 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 sire of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated total number of young produced on refuge.

(4) REMOVALS: Indicate total number in each category removed during the year.

(5) LOSSES: On the basis of known records or reliable estimates indicate total losses in each category during the year.

(6) INTRODUCTIONS: Indicate the number and refuge or agency from which stock was secured.

(7) TOTAL REFUGE POPULATION: Give the estimated population of each species on the refuge at period of its greatest abundance and also as of Dec. 31.

(8) SEX RATIO: Indicate the percentage of males and females of each species as determined from field observations or through removals.

116008

## INSTRUCTIONS

Form NR-3 - BIG GAME

(1) SPECIES: Use correct common name; i.e., Mule deer, black-tailed deer, white-tailed deer. It is unnecessary to indicate sub-species such as northern or Louisiana white-tailed deer.

(2) DENSITY: 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 86 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 total number of young produced on refuge.

(4) REMOVALS: Indicate total number in each category removed during the year.

(5) LOSSES: On the basis of known records or reliable estimates indicate total losses in each category during the year.

(6) INTRODUCTIONS: Indicate the number and refuge or agency from which stock was secured.

(7) TOTAL REFUGE POPULATION: Give the estimated population of each species on the refuge at period of its greatest abundance and also as of Dec. 31.

(8) SEX RATIO: Indicate the percentage of males and females of each species as determined from field observations or through removals.

116008

Form NR-5 DISEASE 1616

Refuge Salton Sea Year 19 50

## Botulism NONE

Period of outbreak _____

Period of heaviest losses _____

**Losses:**

| | Actual Count | Estimated |
|---|---|---|
| (a) Waterfowl | | |
| (b) Shorebirds | | |
| (c) Other | | |

| Number Hospitalized | No. Recovered | % Recovered |
|---|---|---|
| (a) Waterfowl | | |
| (b) Shorebirds | | |
| (c) Other | | |

Areas affected (location and approximate acreage) _____

Water conditions (average depth of water in sickness areas, reflooding of exposed flats, etc.

Condition of vegetation and invertebrate life _____

Remarks _____

## Lead Poisoning or other Disease NONE

Kind of disease _____

Species affected _____

| Number Affected Species | Actual Count | Estimated |
|---|---|---|
| | | |
| | | |
| | | |

Number Recovered _____

Number lost _____

Source of infection _____

Water conditions _____

Food conditions _____

Remarks _____

3-1756
Form NR-6
(April 1946)

FISH

Refuge Salton Sea Year 19 50

| Species | Relative Abundance | Sport Fishing | | Commercial Fishing | | Restocking | | Number removed for Restocking |
|---|---|---|---|---|---|---|---|---|
| | | Man days Fishing | Number Taken | No. of Permits | Pounds Taken | Number Stocked | Area Stocked | |
| | No fishing on refuge--- | | Resource undeveloped | | | | | |

REMARKS:

3-1757
Form NR-7
(April 1946)

PLANTINGS
(Marsh – Aquatic – Upland)

Refuge Salton Sea Year 1950

| Species | Location of Area Planted | Rate of Seeding or Planting | Amount Planted (Acres or Yards of Shoreline) | Amount & Nature of Propagules | Date of Planting | Survival | Cause of Loss | Remarks |
|---|---|---|---|---|---|---|---|---|
| Wild Millet | Unit I | 1/2 Bu./Ac | 600 Ac. | | June | Fair | | |

TOTAL ACREAGE PLANTED: 600 Acres

Marsh and aquatic_____
Hedgerows, cover patches_____
Food strips, food patches_____
Forest plantings_____

3-1758
Form NR-8
(April 1946)

# CULTIVATED CROPS

Refuge Salton Sea Year 19 50

| Permittee (If farmed by refuge personnel, so indicate) | Permit No. | Unit or Location | Crops Grown | Avg. Yield per Acre | Permittee's Share | | Government's Share or Return | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Harvested | | Unharvested | | Compensatory Services, or Cash Revenue |
| | | | | | Acres | Bu. Harvested | Acres | Bu. | Acres | Bu. | |
| Refuge Personnel | | Unit I | Barley | | | | | u. | 120 | | |
| " " | | Unit II | " | | | | | | 870 | | |
| | | | | | | | | | 210 | | |
| " " | SAL-7 | Unit I | Alfalfa | 5/8 Bu. | 80 | 25 | 80 | 25 | 150 | | (1/2 of seed) |
| | SAL-6 | Unit II | " | 2½ Bu. | 120 | 360 | 120 | 275 | | | (1/2 of seed) |
| | | | | | | | | | 620 | | |
| " " | | Unit I | Wild Millet | | | | | | | | |
| " " | | Unit I | (Fallow) | | | | | | (320) | | |
| " " | | Unit II | " | | | | | | (290) | | |

Summary of Crops Grown:

| Crop | Acreage | Permittee's Share | | Government's Share | | | | Total Revenue |
|---|---|---|---|---|---|---|---|---|
| | | Acres | Bushels | Harvested Acres | Harvested Bu. | Unharvested Acres | Unharvested Bu. | $ |
| Barley | 990 | | | | | 990 | | |
| Alfalfa | 360 | 200 | 385 | 200 | 300 | 360 | | |
| Wild Millet | 620 | | | | | 620 | | |
| Fallow | 610 | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS

Cultivated Crops Report Form NR-8 should be prepared on a calendar-year basis for all crops harvested or utilized during the calendar year and submitted with the December 31 refuge report.

Permittee – List each permittee separately. If lands of the refuge are farmed by refuge personnel or hired labor, this should be indicated in the Permittee column.

Permit No. – List the number of the Special Use Permit issued to the individual .

Use or Location – The Unit No. or name specified in the Economic Use Plan should be listed in this column.

Crops Grown – A separate line of the form should be used for each crop grown by each permittee or by refuge personnel. This is important, since if each crop grown by each operator is not specifically enumerated, the report will be of no value for statistical purposes.

Average Yield per Acre – It is important that the average yield per acre of each crop grown by each operator should be shown.

Permittee's Share – Only the number of acres harvested or utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. It is requested that all crops harvested be reduced to bushels wherever possible, or, as in the case with the harvesting of seed such as that of sweet clover, alfalfa, bromegrass, etc., the total harvested crop in pounds may be shown. Timothy, alfalfa, or other hay harvested by the permittee should be shown on Form NR-10 and should not be shown in the Permittee's Share column.

Government's Share or Return – Harvested – Show the number of bushels harvested for the Government and the acreage from which this share is harvested, both for grain raised by refuge personnel and by permittees. Unharvested – show the exact number of acres of crops allowed to remain unharvested as food and cover for wildlife. An estimate of the number of bushels of grain that is available for the wildlife in such unharvested crops should be shown in the Bushels column.

Compensatory Services, or Cash Revenue – Show other services received by the Government in cooperative farming activities, the number of acres of food strips planted for wildlife, the amount of wildlife crops not otherwise reported that are planted by cooperators for the Service, or the cultivation of wildlife plantations. If the permit is on a fee basis indicate the, total cash revenue received by the Service.

3-1570
NR-8a

# REFUGE GRAIN REPORT

Refuge Salton Sea Months of September through December, 1950

| (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 or Suitable Use* | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Transferred | Seeded | Fed | Total | | Seed | Feed | Surplus |
| Barley | 200 bu. | 1750 bu. | 1950 bu. | | 78 | 1448 bu. | 526 bu. | 1424 bu. | X | X | |
| Milo Maize | None | 50 | 50 | | | | | 50 | X | | |
| Sudan Grass | None | 60 | 60 | | | | | 60 | X | | |
| Wild Millet | 2 | | 2 | | | | | 2 | X | | |
| Bedding Smart ~~Straw~~ | | 1/4 | 1/4 | | | | | 1/4 | X | | |

(8) Indicate shipping or collection points Westmorland, California & Brawley, California

(9) Grain is stored at Headquarters, Salton Sea Refuge

(10) Remarks one carload of barley received from Tule Lake Refuge during period.

*See instructions on back.

16—61482-1

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 lb., corn (ear)-70 lb., wheat—60 lb., barley-50 lb., rye-55 lb., oats-30 lb., soy beans-60 lb., millet-50 lb., cowpeas—60 lb., and mixed--50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

**(1)** List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. 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. Indicate if grain is suitable for seeding new crops.

**(8)** Nearest railroad station for shipping and receiving.

**(9)** Where stored on refuge : "Headquarters granary," etc.

**(10)** Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

16—61482-1 U S. GOVERNMENT PRINTING OFFICE

3-1759
Form NR-9
April 1946)

# COLLECTIONS AND RECEIPTS OF PLANTING STOCK
(Seeds, rootstocks, trees, shrubs)

Refuge Salton Sea Year 1949/50

| Species | Collections | | | | Receipts | | Total Amounts on Hand | Amount Surplus |
|---|---|---|---|---|---|---|---|---|
| | Amount | Date or Period or Collection | Method | Unit Cost | Amount | Source | | |
| Alfalfa | 605 Bu. | June | Combine | Share Crop 1/2 basis | 275 bu.<br>25 bu. | Mr. R.S. Reese<br>Mr.C.M. Severe | 300 bu. | 250 bu. |

3-1760
Form NR-10
(April 1946)

# HAYING AND GRAZING

Refuge Salton Sea Year 19/ 50

| Permittee | Permit No. | Unit or Location | Actual Acreage Utilized | Animal Use Months | Tons of Hay Harvested | Period of Use From | To | Rate | Total Income | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| Mr. Arnold Shields | SAL-1 | Tr.3,4, Un.II | 120 | 1205.6 | | 12/26 | 1/18/50 | 2¢AUD | 747.50 | 1625 hd. sheep grazing Winter Alfalfa |
| " " | SAL-1 | Tr. 7,14, Unit II | 120 | 417.7 | | 1/16 | 1/28/50 | 2¢AUD | 259.00 | 1850 hd. " " |
| " " | SAL-2 | Tr. 3, 4,7, 14Unit II | 240 | 1716.1 | | 3/19 | 4/15/50 | 2¢AUD | 1064.00 | 1900 hd. " " |
| " " | SAL-3 | Tr.26, Un.I | 80 | 246.45 | | 4/3 | 4/12/50 | 2¢AUD | 152.80 | 764 hd. " " |
| Mr. R. S. Reese | SAL-4 | Tr.3,4,7,14 Unit II | | | | | | | | |
| | | Tr.26, Un.I | 380 | | 111.5 | 5/10 | 5/22/50 | $2.50 | 278.75 | Baled alfalfa hay |
| Mr. John Sexton | SAL-5 | Tr.3, Un.II | | | | | | | | |
| | | Tr.26, Un.I | 120 | | 72 | 6/8 | 6/17/50 | $2.50 | 180.00 | " " " |
| Central Mills, Inc. | SAL-8 | Tr.4, Un.II | 80 | | 12.8 | 12/17 | 12/20/50 | $16. | 204.80 | For dehydration |
| " " " | " | Tr.26, Un.I | 80 | | 26 | 12/17 | 12/20/50 | $10. | 260.00 | " " |

Totals:

Acreage grazed 560 Animal use months 3585.85 Total income Grazing $2,223.30

Acreage cut for hay 600 Tons of hay cut 222.3 Total income Haying 923.55