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Review of warm-water fish experiments at  
hatcheries with plans for 1947

by

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With the establishment of the fish management policy for warm-water fishes as outlined in "For Better Fishing" a number of hatchery ponds were no longer needed for fish production. To make the best use of these facilities a number of experiments were instituted on these ponds. One set of experiments was begun on the raising of bait minnows. An alarming shortage of minnows in some areas has occurred in recent years. It is the aim of this group of experiments to find the facts needed so that bait dealers may raise a good share of their supply in their own ponds. This should benefit dealers and sportsmen who need to buy the minnows, and the resort industry.

Other experiments were begun on ways and means of controlling stunted populations of panfish. It is well known that many of our lakes contain stunted populations. Various ponds have been stocked with large numbers of bluegills so that stunting will occur. When stunting has been established then predatory species will be introduced,

or other ways of reducing numbers will be tried. In this way the best and most economical way of reducing a population should be found.

Methods of increasing production of waters are also being investigated. Fertilization is being conducted to test its effect on productivity and data on its cost will be considered in the evaluation of the results which may be gratifying but may cost too much to be of practical value. Various combinations of species in ponds are also being tried to learn what fish associations result in the greatest productivity. Will a pond producing a certain poundage of bluegills give additional poundage of largemouth bass if the species is added, or will the total poundage remain the same? Many times the Department is asked to plant a "new species" of fish in a lake. Fishermen may be satisfied that the lake is producing good largemouth bass fishing but they would also like to have perch, or bluegills, or crappies added. The experiments underway should provide an answer as to whether the introduction of a new fish will be at the expense of the bass or whether it will actually increase the productivity of the lake.

Another theory that is being checked is that faster growing fish die at an earlier age than do slower growing fish. To get an answer to this problem, cannibal and runt fish are being marked and planted in a pond with a normal growing population and these will be checked periodically to learn the relative survival rates.

Methods of population estimate, effects of fishing pressure on known populations and the value of various regulations on fishing are also being tested in the hatchery ponds.

During 1946 many of these experiments were begun. The Hillsdale Rearing Station was opened to public fishing under permit. The ponds

were stocked with different numbers and species combinations and different regulations were in effect on each pond. A close check was kept on each pond as to the number of hours it was fished, numbers and sizes of fish caught and after the season was closed the ponds were drained and the fish remaining were counted and weighed. While one year's data are not sufficient for any definite conclusions, an interesting result may be cited. Two ponds had as many pounds of fish at the end of the season as at the beginning even though a considerable number of fish were removed.

The other experiments were conducted at ponds at Drayton Plains, Wolf Lake, Hastings, Lydell Hatcheries, and the Almena and Fenton Rearing Ponds. As stated above these experiments have not been carried on long enough to present any definite conclusions.

For the year 1947 the following hatchery facilities will be used. For the conduct of productivity experiments, Ponds 13 at Wolf Lake, Ponds 2 and 3 at Almena, and Pond 7 at Drayton Plains will be used. In order to tell whether it is possible to increase the total production of a given body of water by various species combinations several ponds have been stocked with bass and bluegills. When these ponds reach a stabilized poundage per acre another species will be added to see whether an increase, decrease or the same poundage will be produced. When again a stabilized poundage is reached a third species will be introduced.

The experiments for the control of stunted bluegills consisted of stocking a number of ponds with various numbers of bluegills to first determine the numbers of fish it requires to create a stunted population. When stunting occurs some means of control will be instituted. Fingerling and adult largemouth bass will be added to some ponds, smallmouth bass, walleyes and northern pike will be tried in others, and

physical removal of some of the fish or their progeny will be done in still other ponds. From these experiments some method should be derived which will be applicable to natural waters in which stunting occurs. Partial poisoning has proven itself feasible but some method in which the fish are converted into a useful channel would be preferable. The following ponds will be used for these experiments: Wolf Lake, Ponds 3, 8, 14, 18, 19, 22, 23; Almena, Ponds 4 and 5; and Lydell, Ponds 18 and 21.

For the mortality studies Pond 10 at Wolf Lake, and Ponds 8 and 9 at Drayton Plains are being utilized. Hog or cannibal bass and slow growing or runt bass have been sorted from a population of large and smallmouth bass. These fish will be marked and returned to their parent group. Periodic checks will be made on survival to see whether or not the fast growing hogs die at an earlier age than do the slow growing or normal parts of the population.

The fertilization experiments will be conducted in Ponds 7, 9, 11, 17, 20 and 21, and several raceways at Wolf Lake; and Ponds 2, 5, 6, 7, 8, 10, 11, and 12 at the Hastings Hatchery. These experiments will test the amounts of fertilizer to be used and their effects on the production of the waters, together with a cost accounting. This is a cooperative experiment with Michigan State College.

Ponds 4, 5, and several raceways at Wolf Lake; Ponds 1 to 6 at Drayton Plains; Pond 4 at Hastings; and Ponds 3, 5, 6, 11, and 14 at Lydell are being used for minnow experiments. These experiments involve survival, growth, and production of bait minnows under varying conditions; comparison between the use of fertilizer and direct feeding in ponds and raceways; the effect of combining 2 or more species in ponds; and the

survival and production of minnows from ponds stocked with different aged fry. Also techniques of culture of various species of popular bait minnows are being worked out to aid the bait dealers in establishing their own production ponds. For a detailed listing of what experiment will be conducted on each pond, and the biologist responsible for the supervision of the work, see the attached sheets. Maps of the hatchery ponds are also included with the experimental ponds marked by different colors.

In order to provide for the experimental plantings of warm-water fish recommended by the Institute the following will need to be produced in the various hatcheries.

- 3,700 Smallmouth bass fingerlings
- 21,700 Largemouth bass fingerlings and yearlings
- 3,000 Northern pike
- 32,800 Bluegill fingerlings
- ↓ 7,800 Largemouth bass yearlings to be planted in a controlled experiment in Woodward Lake, Ionia County, if the check is to be made this summer shows that bluegills are still stunted and small bass few in number. Some of these may be gotten from Pond 24 at Wolf Lake.

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↓ This planting is not on the list of experimental plantings for 1947. If the fish are available the planting should be made, otherwise they will be placed on the list for 1948.

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Some of the fish for the above stocking may be available from the Belmont and Greenville ponds.

At the conference held in Lansing March 19, several ponds were set aside for the raising of these fish, and fish for other experiments. These ponds were as follows:

Lydell Hatchery - Ponds available for raising fish - Ponds 1, 2, 4, 7, 8, 9, 10, 12, 13, 15, 16, and Island Pond. Pond 17 was to be used for stocking adult suckers to see if they would spawn and with what success the fish could be reared. Pond 10a is being used for a parasite experiment.

Hastings Hatchery - Ponds available for raising fish - Ponds 1, 3, 9, and 12.

Drayton Plains - Ponds available for raising fish - Ponds 10 and 11. These ponds were to be used for the raising of northern pike.

Wolf Lake - Ponds 1, 6, and 16 available. Pond 2 was to be stocked with suckers similar to Pond 17 at Lydell.

Fenton Rearing Station - Ponds 1, 2, and 3. It was decided that walleyes would be raised here. The bluegills now present in Pond 3 would be used in other experiments or planted.

Almena Rearing Station - Pond 1 would be available for rearing largemouth bass to yearling sizes for plantings next season.

Any ponds not used in the rearing of fish for stocking or in other experiments would be turned over to Yoder for expansion of the minnow experiments.

Warm-water fish experiments to be conducted at the  
hatcheries during 1947

(A blank after the pond number indicates that no experiment has  
been planned for this pond)

HILLSDALE REARING STATION

The same program that was conducted on these ponds will be in  
operation during this season.

Pond Number	Biologist as- signed to project
1. Restricted trout fishing under permit	Fukano
2. Restricted trout fishing under permit	Fukano
3. Fishing under permit--no size limit on bluegills	Fukano
4. Fishing under permit--no creel limit on bluegills	Fukano
5. No fishing in 1947. Pond was stocked with blue- gill and largemouth bass fry in 1946. This pond when opened will have no season limit on blue- gills.	
6. Fishing under permit--no size, no closed season or creel limit on bluegills.	Fukano

WOLF LAKE HATCHERY

1. _____	
2. Stock with adult suckers to see if they will spawn	Yoder
3. Control of stunted bluegills	Beckman
4. Minnow experiment with fertilization	Ball and Yoder
5. Minnow experiment--control pond for above	Ball and Yoder
6. _____	

WOLF LAKE HATCHERY (Continued)

7. Fertilization experiments	Ball
8. Control of stunted bluegills	Beckman
9. Fertilization experiment	Ball
10. Largemouth bass mortality studies	Beckman
11. Fertilization experiment	Ball
12. Fertilization experiment	Ball
13. Smallmouth bass--maximum productivity study	Beckman
14. Control of stunted bluegills	Beckman
15. Utility Pond--carry stock of various species	
16. _____	
17. Fertilization experiment	Ball
18. Control of stunted bluegills	Beckman
19. Control of stunted bluegills	Beckman
20. Fertilization experiment	Ball
21. Fertilization experiment	Ball
22. Control of stunted bluegills	Beckman
23. Control of stunted bluegills	Beckman
24. Stocked with bass and bluegills for supplying fish for experiments	
Raceways--12 raceways below the road for fertilization and minnow experiments	Ball and Yoder

ALMENA REARING STATION

1. _____	
2. Bluegills--maximum productivity studies	Beckman
3. Largemouth bass--maximum productivity studies	Beckman



ALMENA REARING STATION (Continued)

- |                                 |         |
|---------------------------------|---------|
| 4. Control of stunted bluegills | Beckman |
| 5. Control of stunted bluegills | Beckman |

DRAYTON PLAINS HATCHERY

- |   |         |
|---|---------|
| 1. Creek chub experiment                | Yoder   |
| 2. Creek chub experiment                | Yoder   |
| 3. Creek chub experiment                | Yoder   |
| 4. Creek chub experiment                | Yoder   |
| 5. Creek chub experiment                | Yoder   |
| 6. Creek chub experiment                | Yoder   |
| 7. Bluegill--maximum productivity study | Beckman |
| 8. Smallmouth bass--mortality studies   | Beckman |
| 9. Largemouth bass--mortality studies   | Beckman |
| 10. _____                               |         |
| 11. _____                               |         |

HASTINGS HATCHERY

- |   |       |
|---|-------|
| 1. _____                                      |       |
| 2. Fertilization experiment--bluegill breeder | Ball  |
| 3. _____                                      |       |
| 4. Minnow experiment                          | Yoder |
| 5. Fertilization--golden shiner               | Ball  |
| 6. Fertilization--bluegills                   | Ball  |
| 7. Fertilization--bluegills                   | Ball  |
| 8. Fertilization--bluegills                   | Ball  |
| 9. _____                                      |       |

HASTINGS HATCHERY (Continued)

- 10. Fertilization experiment Ball
- 11. Fertilization experiment Ball
- 12. \_\_\_\_\_

LYDELL HATCHERY

- 1. \_\_\_\_\_
- 2. \_\_\_\_\_
- 3. Minnow experiment Yoder
- 4. \_\_\_\_\_
- 5. Minnow experiment Yoder
- 6. Minnow experiment Yoder
- 7. \_\_\_\_\_
- 8. \_\_\_\_\_
- 9. \_\_\_\_\_
- 10. \_\_\_\_\_
- 10a. Parasite study Allison
- 11. Minnow experiment Yoder
- 12. \_\_\_\_\_
- 13. \_\_\_\_\_
- 14. Minnow experiment
- 15. \_\_\_\_\_
- 16. \_\_\_\_\_
- 17. Adult suckers to see if they will spawn Yoder
- 18. Control of stunted bluegills Beckman
- 19. Walleye holding--50 adults from Newaygo--transfer  
25 tagged and 25 untagged Eschmeyer

20. Minnow experiment

Yoder

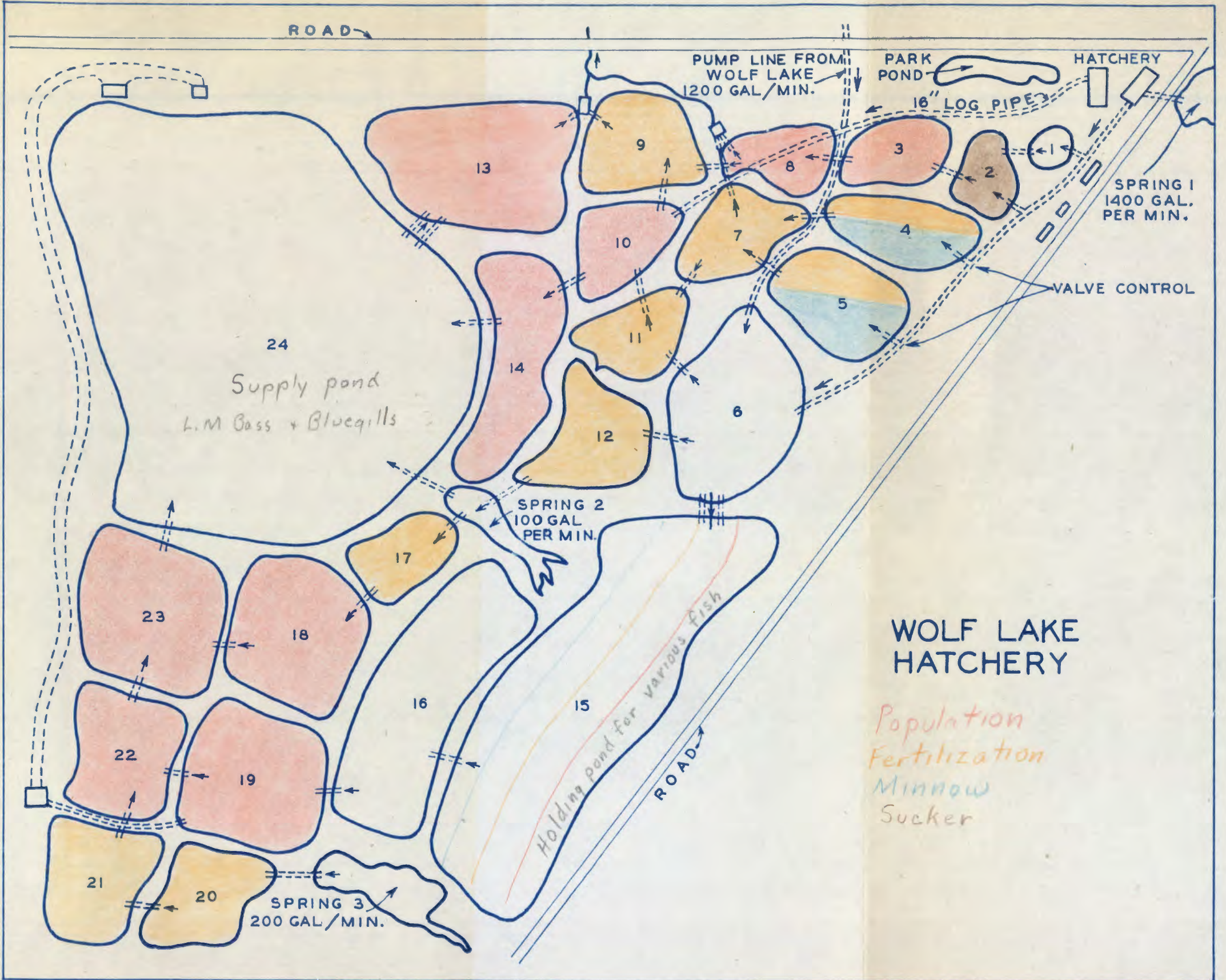
21. Control of stunted bluegills

Beckman

Island. \_\_\_\_\_

The hatching facilities of Comstock Park and Drayton Plains will be required to hatch the suckers and chubs.

One pond is being requested for use in minnow experiments at the U. S. Fish and Wildlife Service hatchery at Northville, Michigan.



# WOLF LAKE HATCHERY

Population  
 Fertilization  
 Minnow  
 Sucker

24  
 Supply pond  
 L.M Bass + Bluegills

15  
 Holding pond for various fish

SPRING 3  
 200 GAL/MIN.

SPRING 2  
 100 GAL  
 PER MIN.

PUMP LINE FROM  
 WOLF LAKE  
 1200 GAL/MIN.

SPRING 1  
 1400 GAL.  
 PER MIN.

PARK POND

HATCHERY

16" LOG PIPE

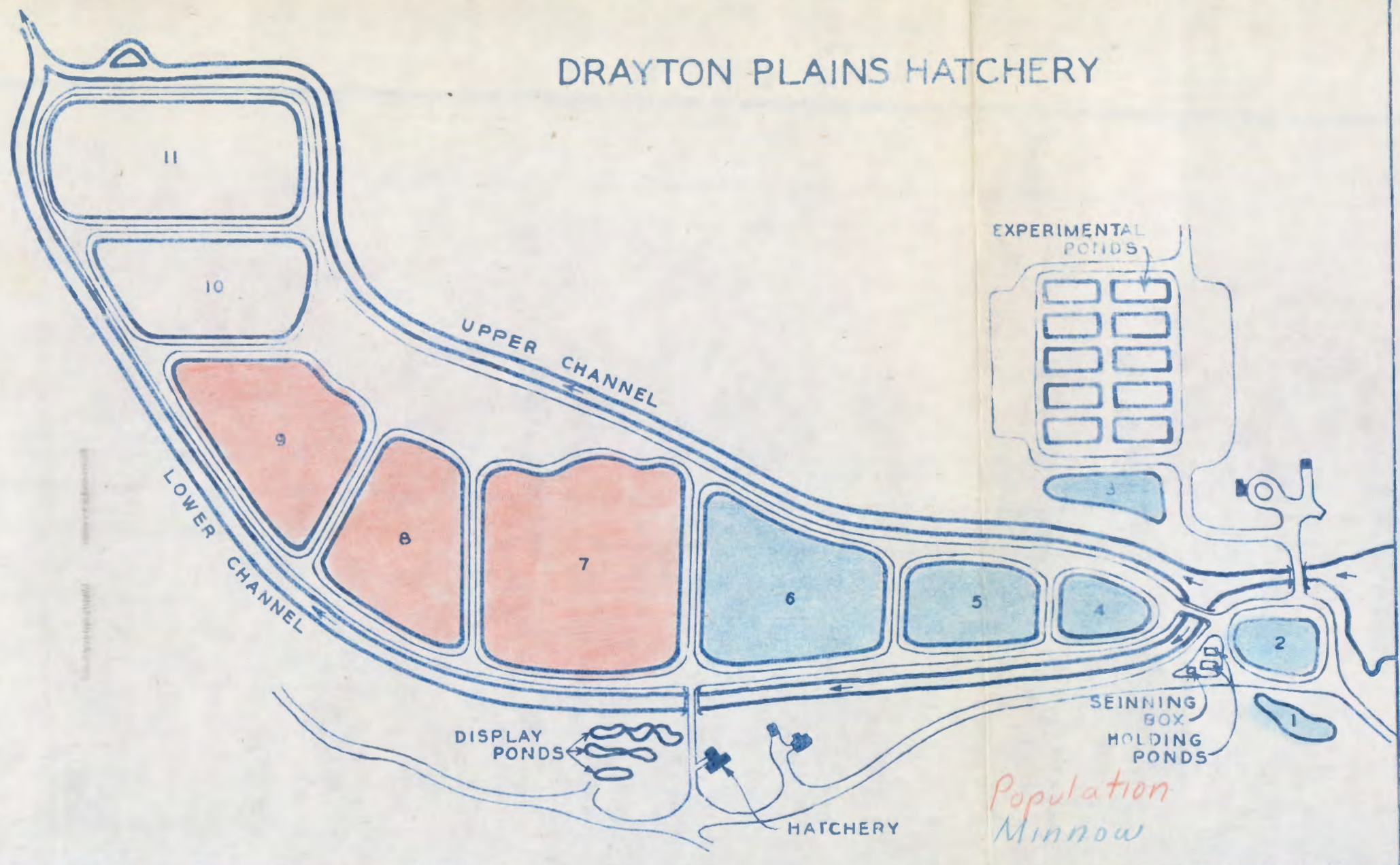
VALVE CONTROL

ROAD

ROAD

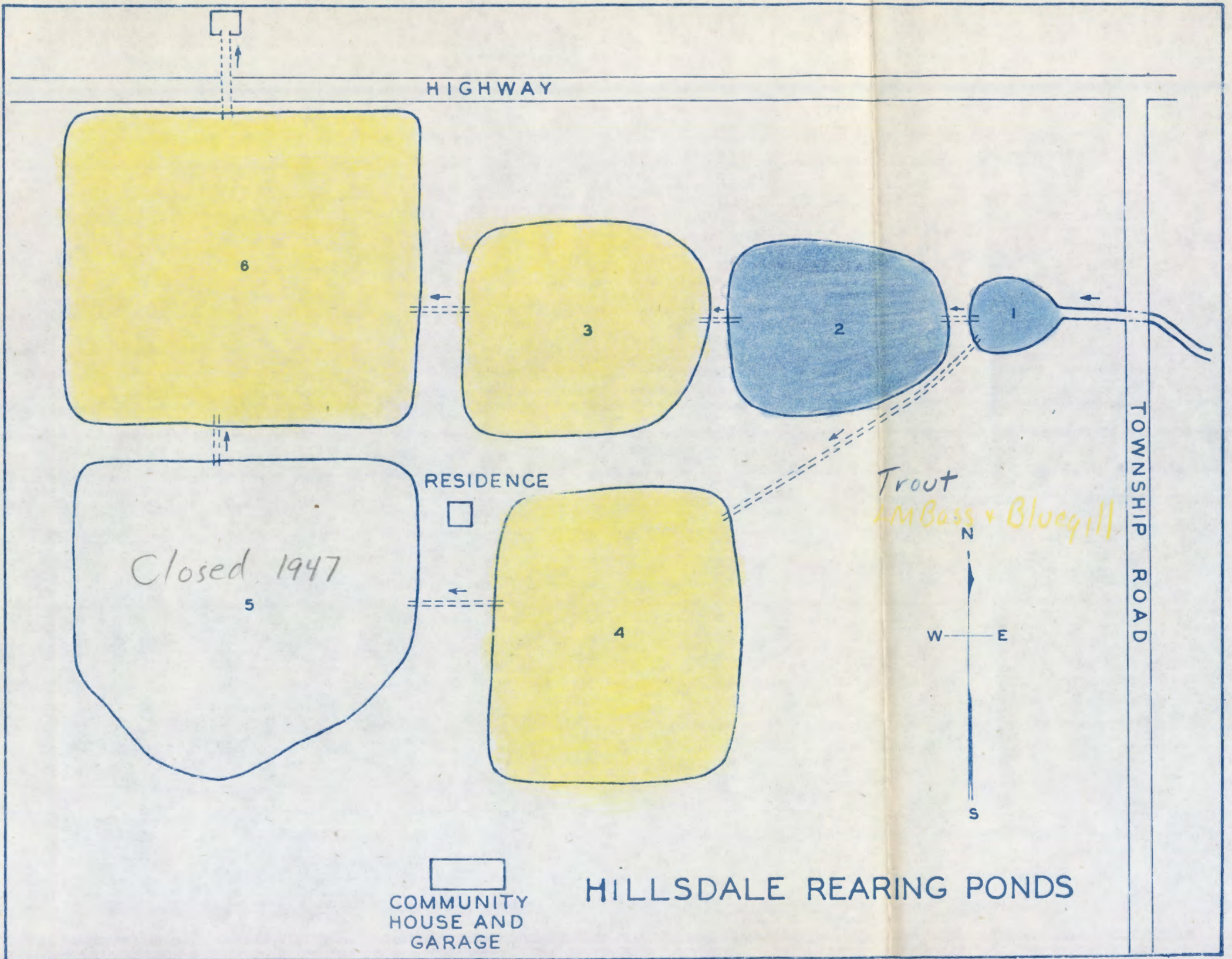


# DRAYTON PLAINS HATCHERY



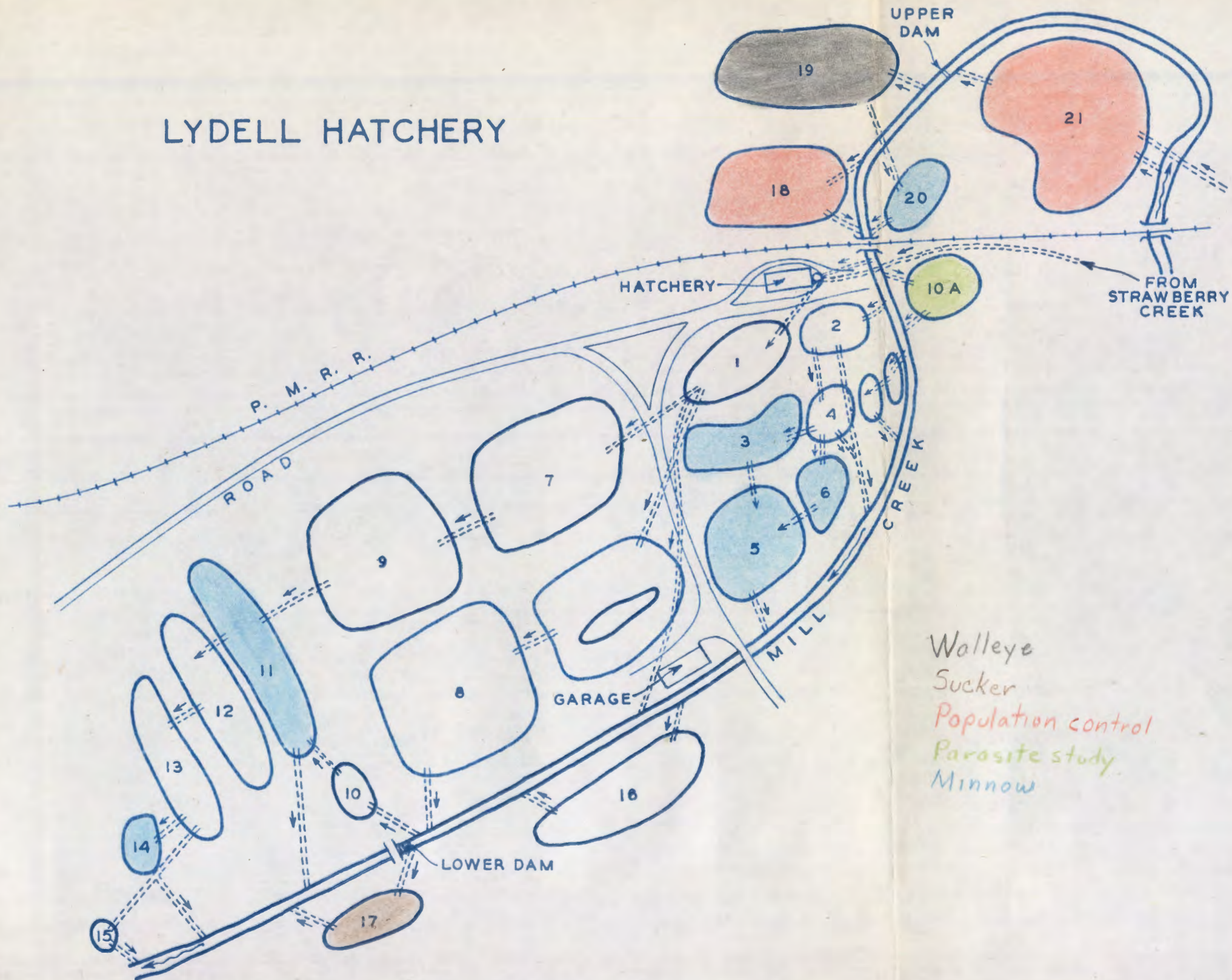
*Population*  
*Minnow*







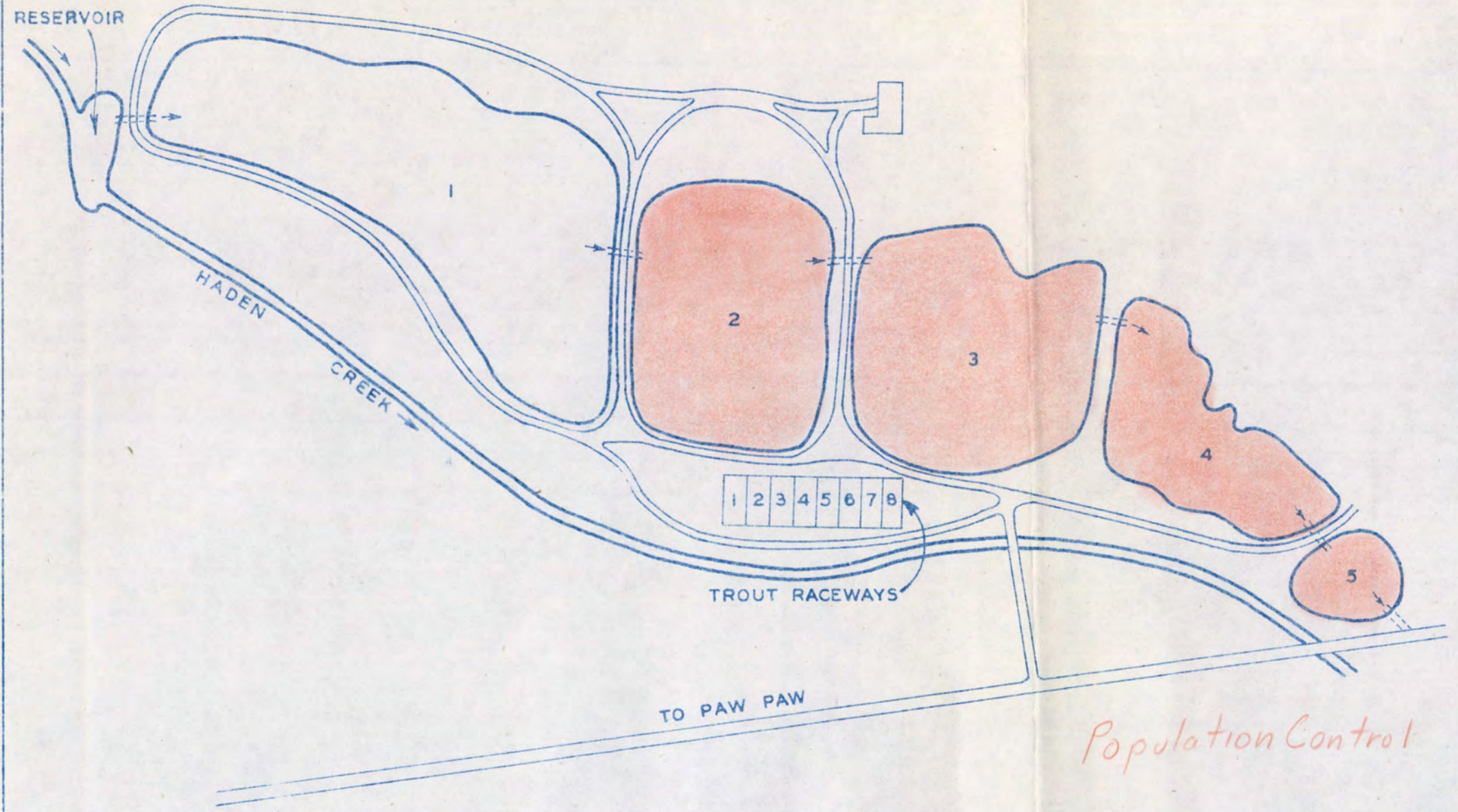
# LYDELL HATCHERY



Walleye  
Sucker  
Population control  
Parasite study  
Minnow

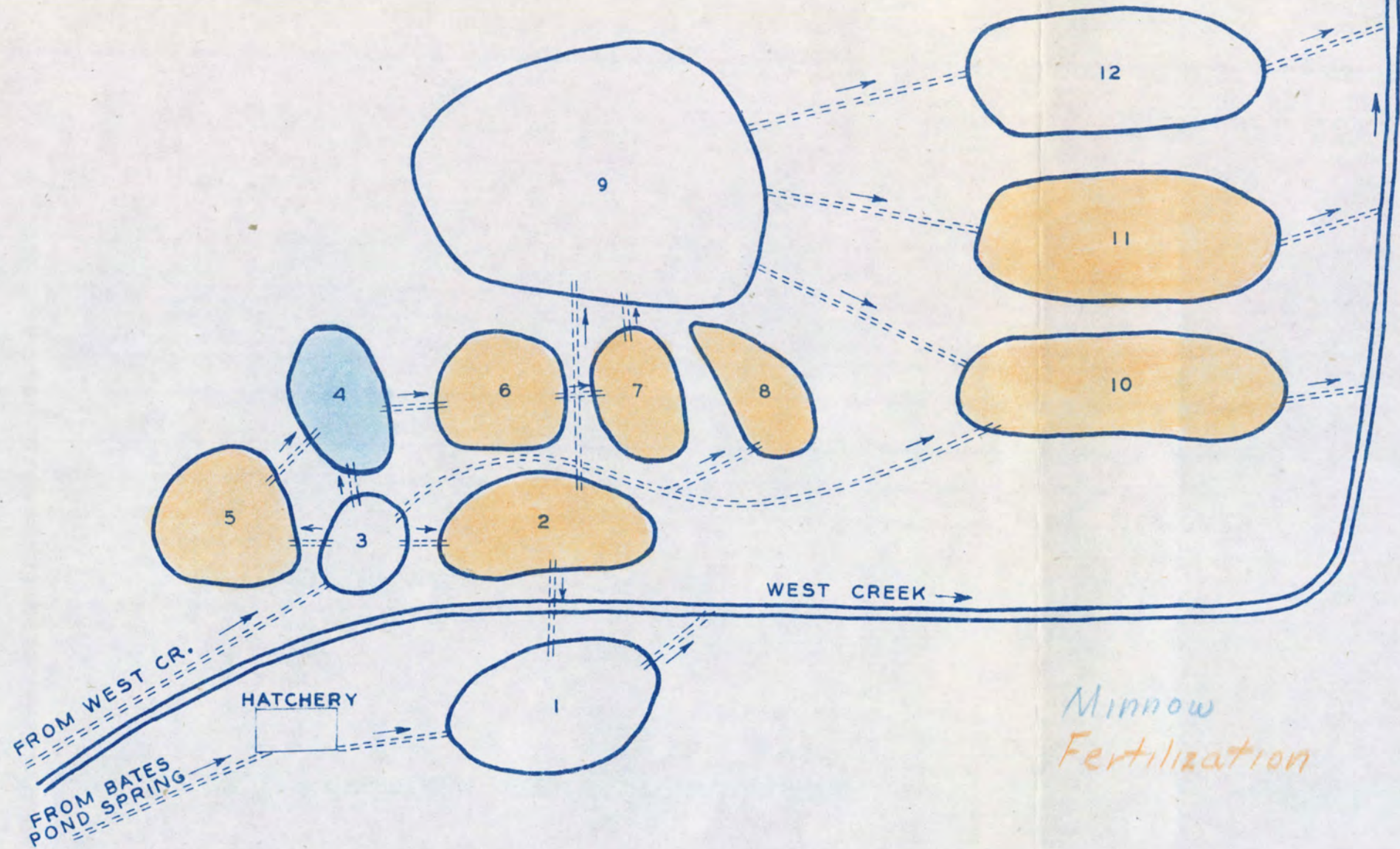


# ALMENA PONDS





# HASTINGS HATCHERY



*Minnow  
Fertilization*