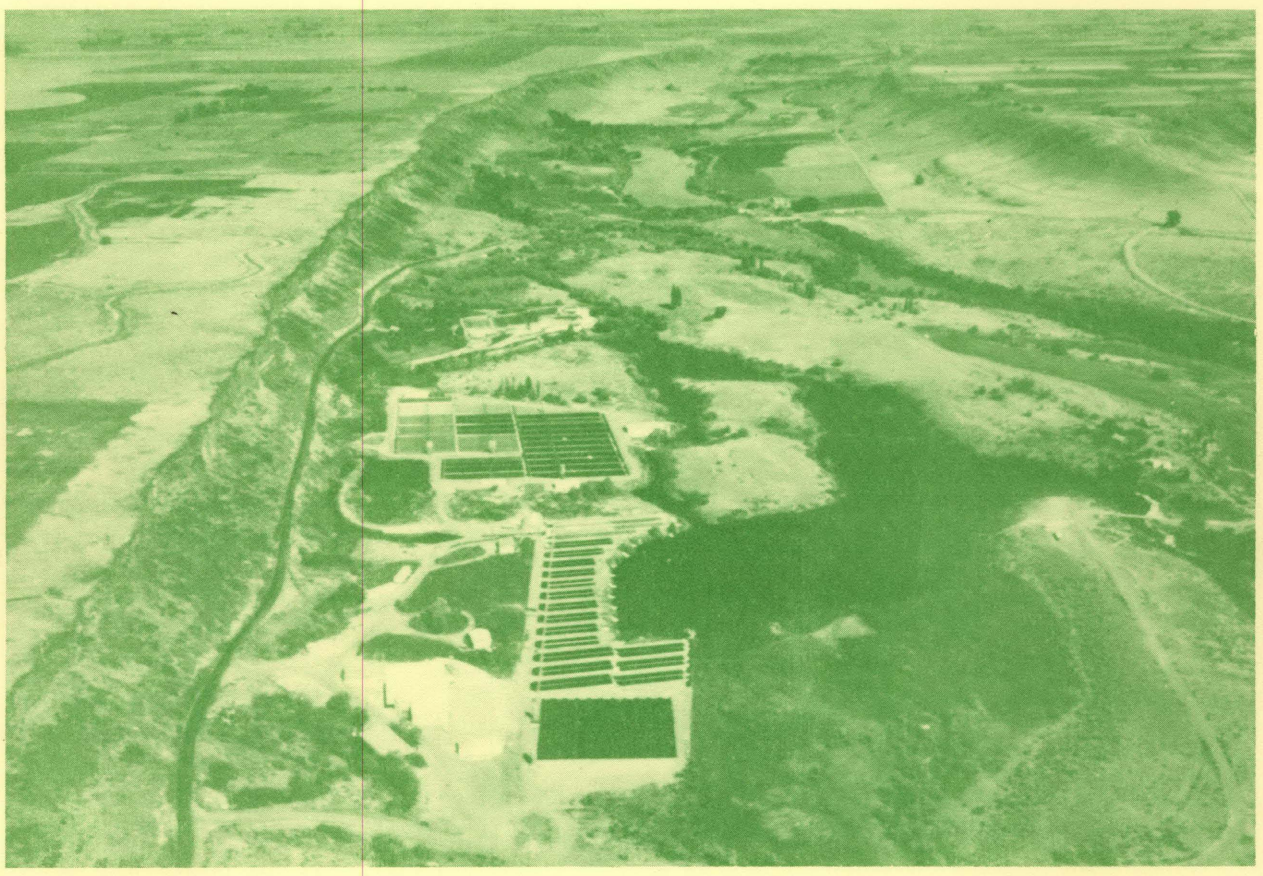
RESEARCH SUPPORTED BY IDAHO DEPARTMENT OF WATER RESOURCES

Appendix to a Report:

AQUACULTURE IN IDAHO

and Nationwide



George W. Klontz
Fishery Resources

and

John G. King
Watershed Management

IDAHO WATER RESOURCES RESEARCH INSTITUTE

UNIVERSITY OF IDAHO; MOSCOW, IDAHO

December 1974

Research Technical Completion Report
IDWR Project 45-080
April 1974 - December 1974

APPENDIX TO

A REPORT OF AQUACULTURE IN THE UNITED STATES

WITH PARTICULAR REFERENCE TO IDAHO

by

George W. Klontz
Fishery Resources

and

John G. King
Watershed Management

College of Forestry, Wildlife and Range Sciences

Submitted to

Idaho Department of Water Resources
Statehouse Annex
Boise, Idaho 83720

September 1974

This project was supported primarily with funds
provided by the Idaho Department of Water Resources

Idaho Water Resources Research Institute
University of Idaho
Moscow, Idaho

John S. Gladwell, Director

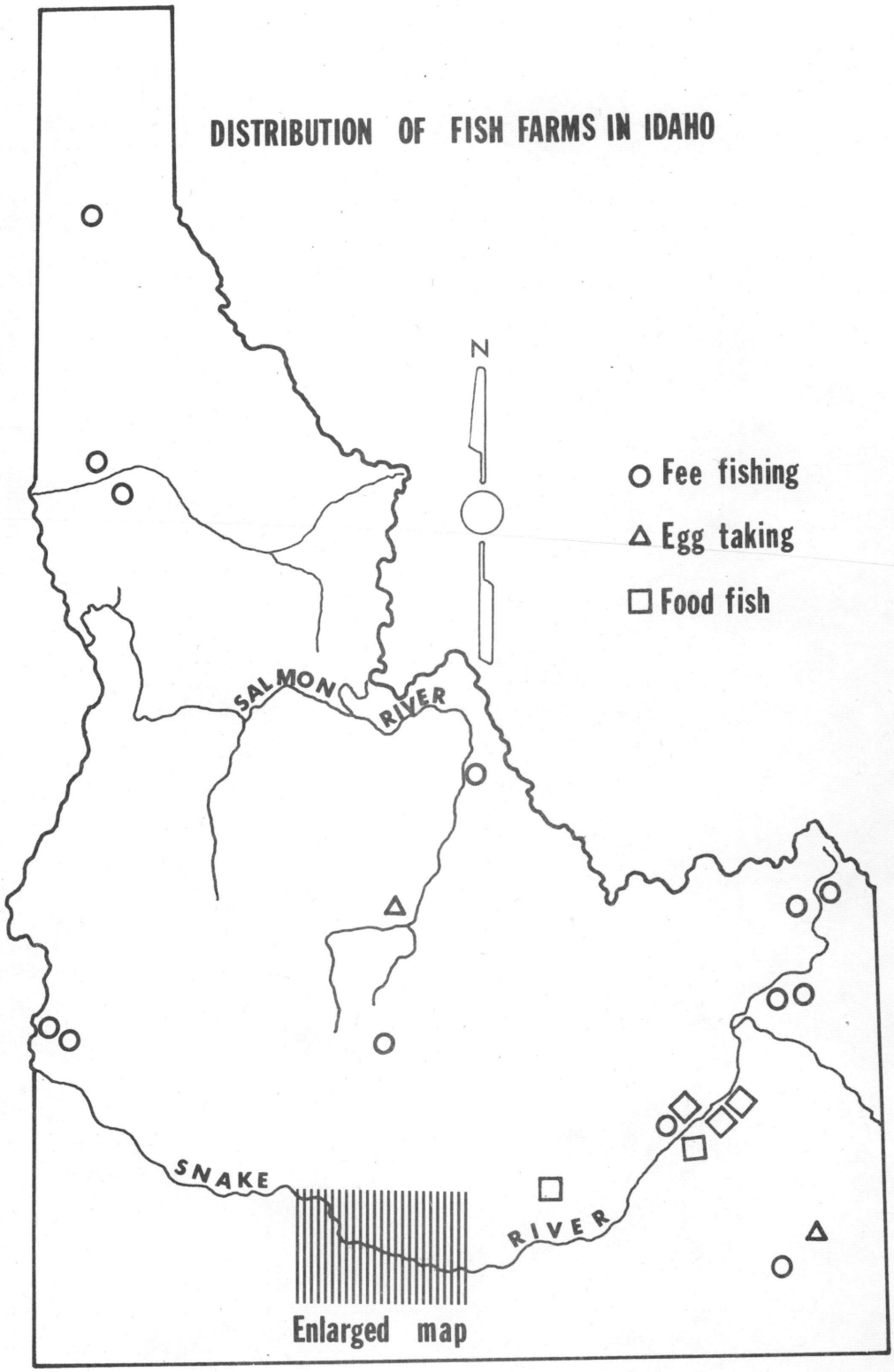
INTRODUCTION

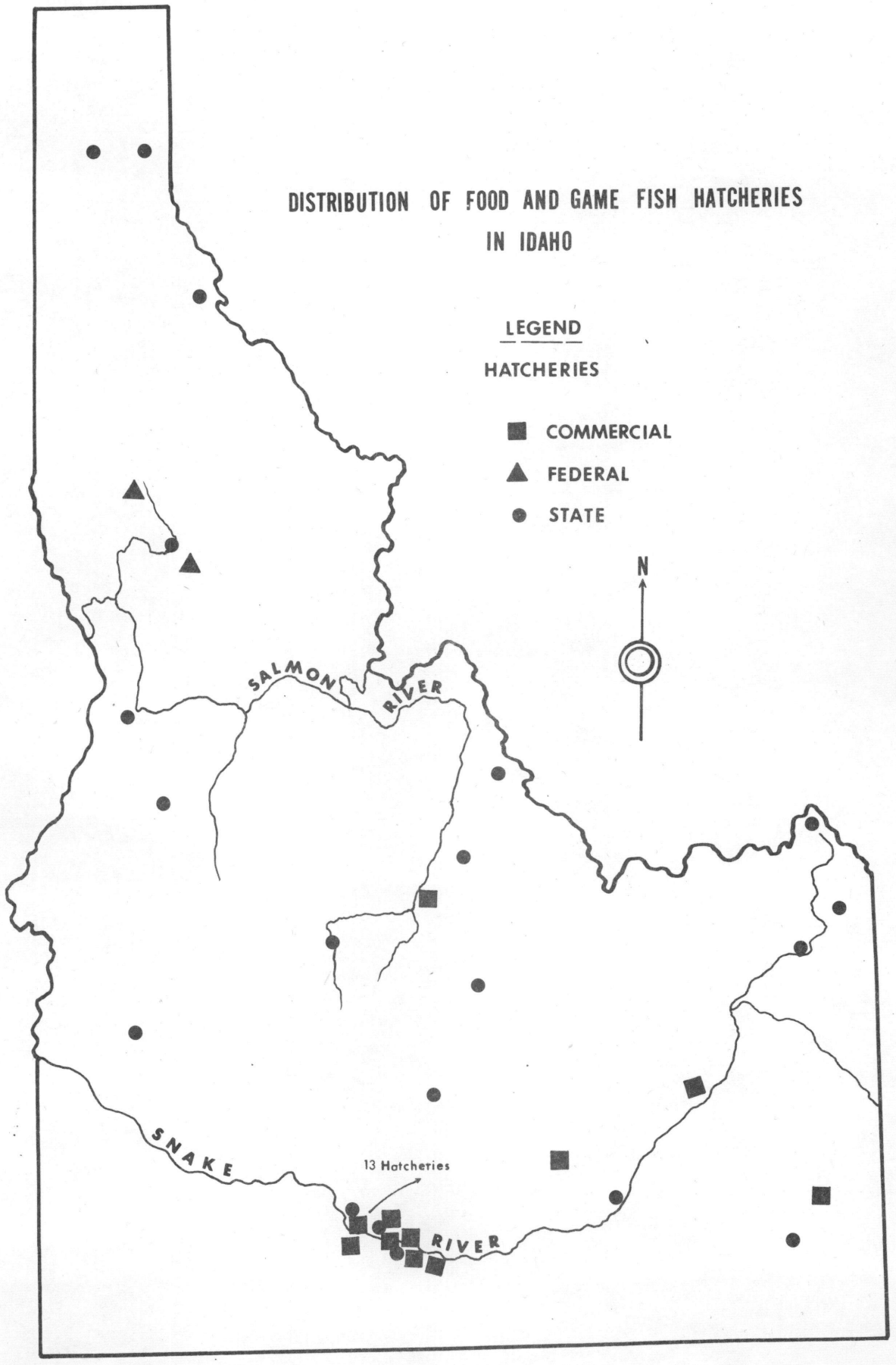
This supplement to the Report on Aquaculture in the United States with Particular Reference to Idaho contains a list of the commercial food fish farms in Idaho. Together with the list is an aerial photograph of each, a description of the water quality and quantity used by each, and a diagramatic outline of each facility to illustrate the water flow pattern. Finally, the questionnaires used during the 1973 and 1974 surveys are included to illustrate the types of data gathered.

The uses to which this supplement may be put are many. It should provide the fish farm managers with a new management perspective of their facilities. After attending to the marketing needs of the food fish industry, they must attend to the problems associated with optimal utilization of available water. In addition, the information will provide the state and federal agencies with a better understanding of the water problems--quality and quantity--of the aquaculture industry. Hopefully, ensuing regulations pertaining to the aquaculture industry will reflect some of the information collated here.

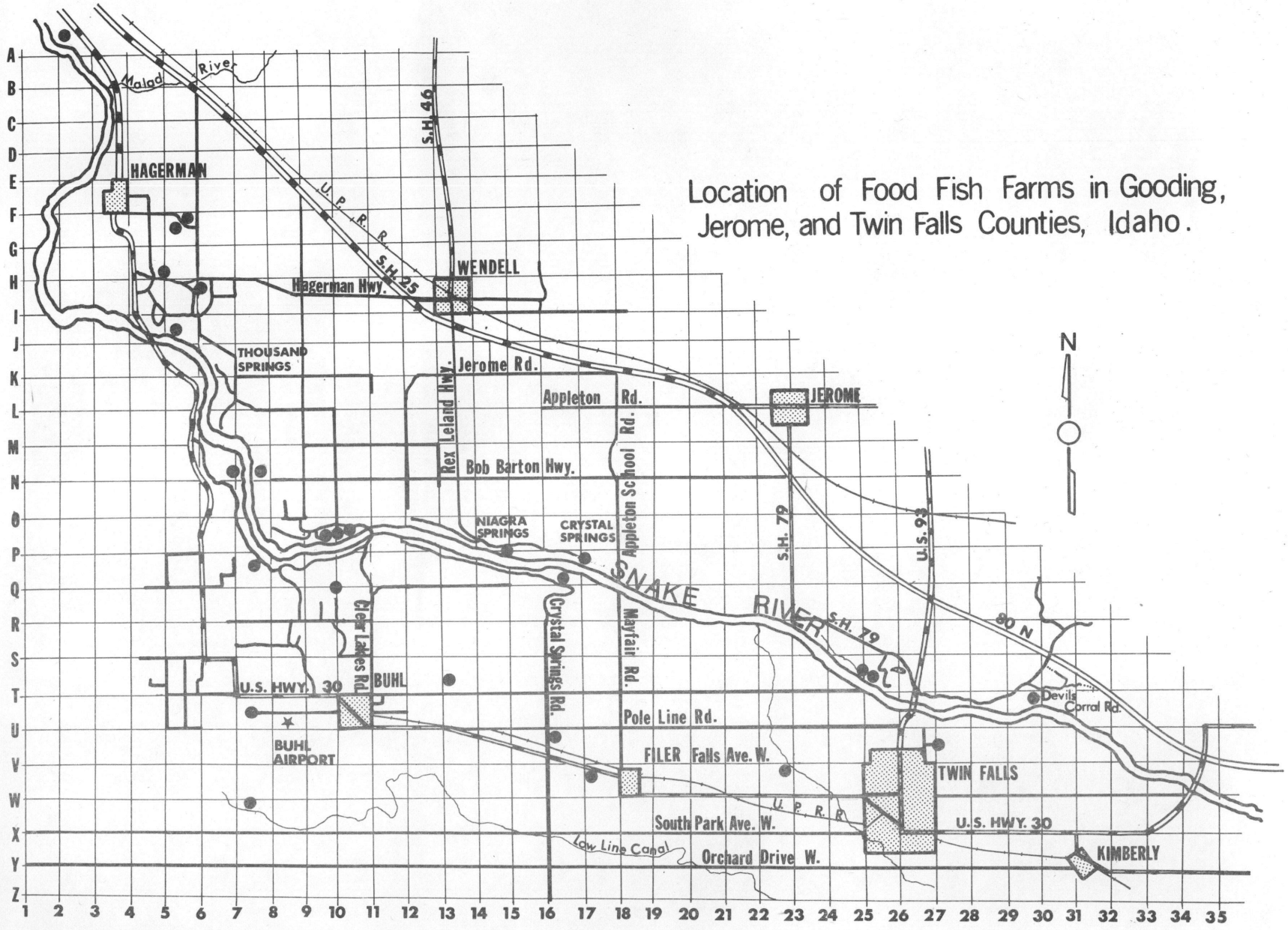
Educators responsible for providing their students with factual, up-to-date information about aquaculture should find this supplement useful. Researchers interested in studying the various fish health management problems occurring in intensive fish culture should also find this supplement beneficial to their planning.

Throughout the report and this supplement we have tried to keep from revealing the proprietary information. If any reader feels that we have revealed confidential information, we apologize. Several persons, including commercial fish farmers, reviewed the drafts and we followed their suggestions explicitly.


DISTRIBUTION OF FISH FARMS IN IDAHO
N
Fee fishing
Egg taking
Food fish
SALMON RIVER
SNAKE RIVER
Enlarged map


DISTRIBUTION OF FOOD AND GAME FISH HATCHERIES
IN IDAHO
LEGEND
HATCHERIES
COMMERCIAL
FEDERAL
STATE
N
SALMON RIVER
SNAKE
13 Hatcheries
RIVER

Location of Food Fish Farms in Gooding, Jerome, and Twin Falls Counties, Idaho.



Commercial Food Fish Farms in Idaho

	Plate
Clear Springs Trout Co. Route 4, Box 548 Buhl, Idaho 83316	
Clear Springs Trout Farm, Buhl	1
Crystal Springs Trout Farm, Hagerman	2
Crystal Springs Trout Farm, Springfield	3
Box Canyon Trout Farm, Buhl	4
Thousand Springs Trout Farms, Inc. Route 4, Box 232 Buhl, Idaho 83316	
Snake River Trout Farm, Buhl	5
Indian Springs Trout Farm, Blackfoot	6
Papoose Springs Trout Farm, Pocatello	7
Batise Springs Trout Farm, Pocatello	8
Idaho Springs Trout Farm, Hagerman	9
Idaho Trout Processors, Inc. 1306 Vista Avenue Boise, Idaho 83705	
Rainbow Trout Farms, Buhl and Filer	10
Clear Lakes Trout Farm, Buhl	11
Canyon Trout Farm, Twin Falls	12
Blue Lakes Trout Farm, Inc. P.O. Box 1237 Twin Falls, Idaho 83301	
Blue Lakes Trout Farm, Twin Falls	13
Greene's Trout Farm, Twin Falls	14

	Plate
Jones and Sandy Livestock Co. Box 265 Hagerman, Idaho 83332	15
Fish Breeders of Idaho 2914 Alta Vista Drive Twin Falls, Idaho 83301	16
Royal Catfish Industries P.O. Box 757 Twin Falls, Idaho 83301	17
Rim View Trout Co., Inc. P.O. Box 7503 Boise, Idaho	18
Caribou Trout Ranch P.O. Box 57 Soda Springs, Idaho 83276	19
Marine Protein Corporation Magic Springs Trout Farm P.O. Box 326 Hagerman, Idaho 83332	20
Rangen's Trout Research Laboratory Hagerman, Idaho 83332	21
White Water Trout Farm Hagerman, Idaho 83332	22
Valley Trout Farms, Inc. Route 2 Buhl, Idaho 83316	
Valley Trout Farm #1, Buhl - Ellis	23
Valley Trout Farm #2, Buhl - Ellis	24
Valley Trout Farm #3, Buhl - Yodek	25
Valley Trout Farm #4, Buhl - Weaver	26
Blind Canyon Aqua Ranch Route 1 Wendell, Idaho	27
Crystal Springs Ranch, Inc. Box 109 Buhl, Idaho 83316	28

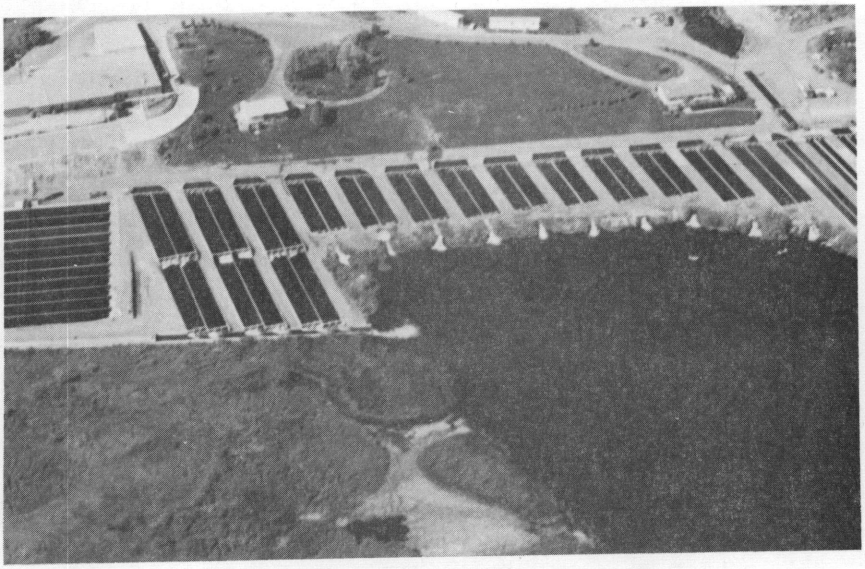
Plate

Gouge-eye Rainbow Trout Farm
Challis, Idaho

No photograph available

Rainbow Farms, Inc.
Box 277
Nampa, Idaho

No photograph available



CLEAR SPRINGS TROUT FARM

Clear Springs Trout Co.
Route 4, Box 548
Buhl, Idaho 83316

Started in 1966

Map Location: 0-9

Water Source: Clear Lake Springs

Water Flow: 225 CFS (Max.)
195 CFS (Min.)

Water Discharge: Clear Lake

Water Temp.: 58°F 14.2°C

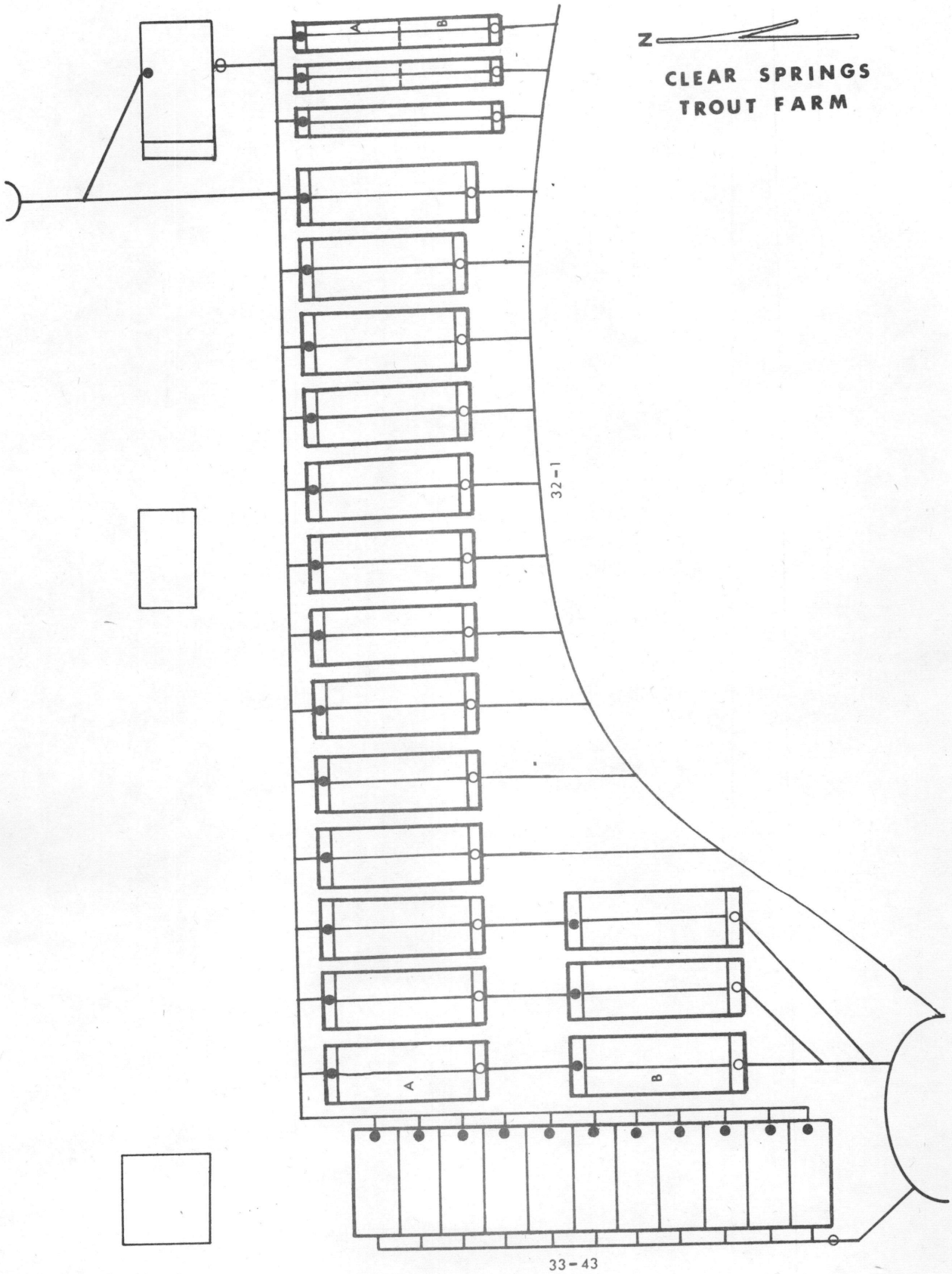
Water Chemistry:

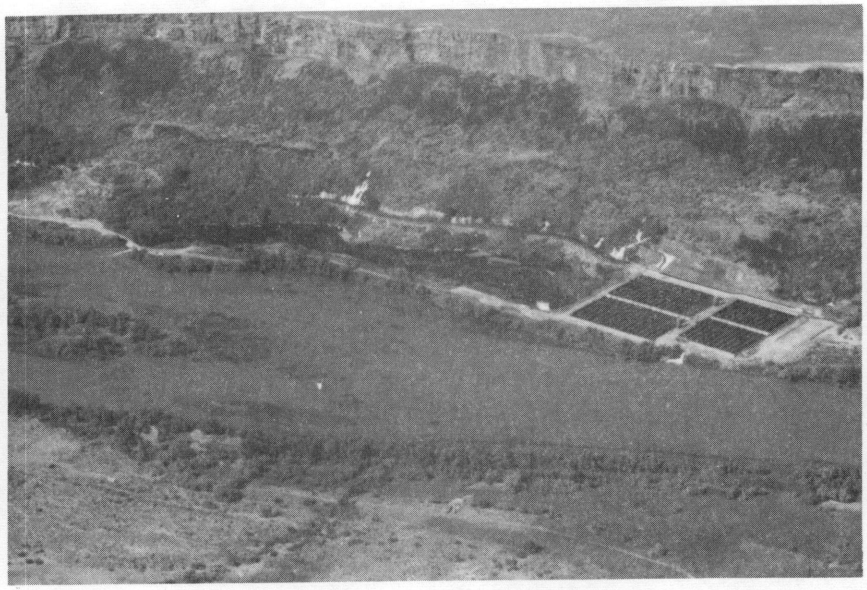
Dissolved Oxygen	9.2 ppm	Alkalinity	154 ppm
pH	7.88	Conductivity	861 µmhos
Nitrate	0.92 ppm	Phosphate	0.19 ppm
Hardness (Calcium)	103 ppm	Hardness (Total)	188 ppm
Calcium	25 ppm	Sodium	32.5 ppm
Potassium	5 ppm	Magnesium	24 ppm

Fish Rearing Space: 279,000 cubic feet in 53 ponds

Water Replacement Time: 20.7-23.89 minutes

Flow Diagram 1





CRYSTAL SPRINGS TROUT FARM

Clear Springs Trout Co.
Route 4, Box 548
Buhl, Idaho 83316

Started in 1969

Map Location: P-17

Water Source: Crystal Springs

Water Flow: 250 CFS (Max.)
150 CFS (Min.)

Water Discharge: Snake River

Water Temp.: 59°F 14.0°C

Water Chemistry:

Dissolved Oxygen	9.80 ppm	Alkalinity	205 ppm
pH	8.05	Conductivity	1145 µmhos
Nitrate	1.40 ppm	Phosphate	0.19 ppm
Hardness (Calcium)	154 ppm	Hardness (Total)	291 ppm
Calcium	38 ppm	Sodium	47 ppm
Potassium	7.5 ppm	Magnesium	34 ppm

Fish Rearing Space: 648,000 cubic feet in 50 ponds

Water Replacement Time: 43.2-72 minutes

Flow Diagram 2

CRYSTAL SPRINGS TROUT FARM, #1-3

Clear Springs Trout Co.
Route 4, Box 548
Buhl, Idaho 83316

Started in 1942

Map Location: Bingham County

Water Source: Springs and Farm #2 Effluent

Water Flow: 100 CFS (Max.)
60 CFS (Min.)

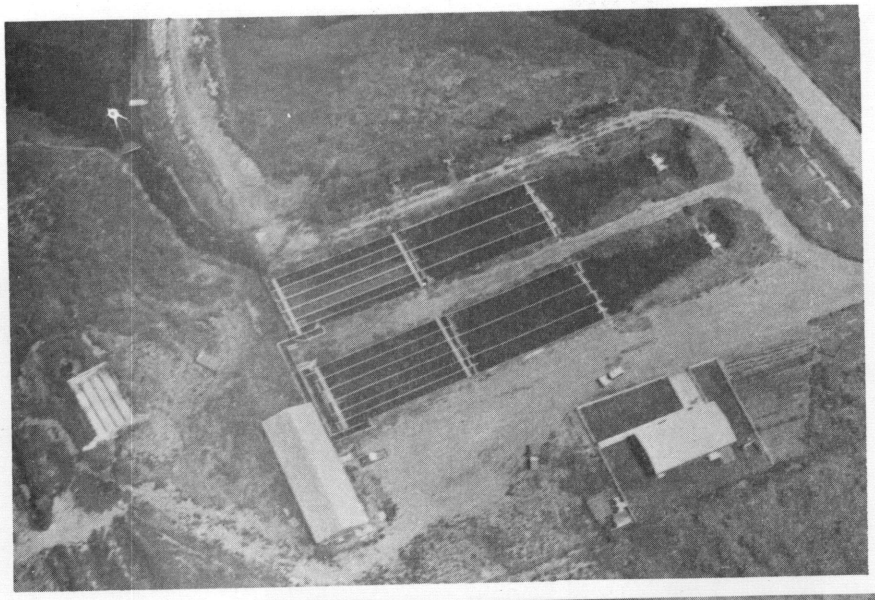
Water Discharge: Canal

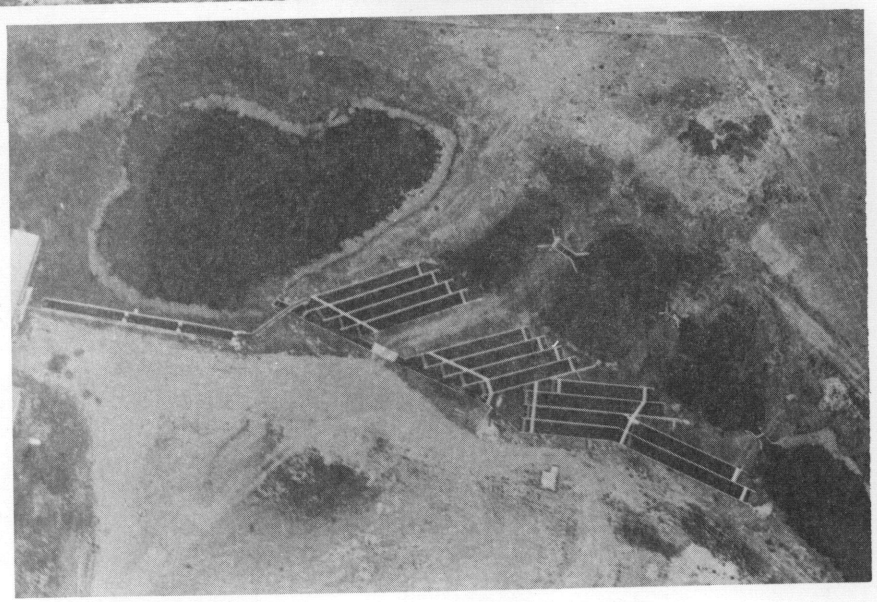
Water Temp.: 50-52°F 11.2°C

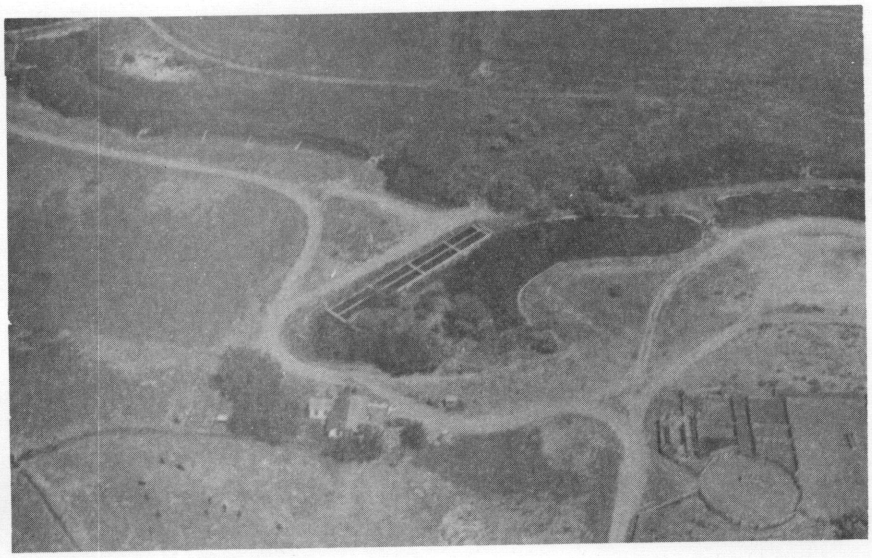
Water Chemistry:	#1	#2	#3
Dissolved Oxygen	-9.25 ppm	10.90 ppm	-9.6 ppm
Alkalinity	-257 ppm	-240 ppm	-171 ppm
pH	-7.60	-7.55	-7.70
Conductivity	-1925 µmhos	-1942 µmhos	-1063 µmhos
Nitrate	1.00+ ppm	1.00+ ppm	-1.00+ ppm
Phosphate	0.30 ppm	0.28 ppm	0.13 ppm
Hardness (Calcium)	205 ppm	205 ppm	171 ppm
Hardness (Total)	377 ppm	394 ppm	308 ppm
Calcium	47 ppm	45 ppm	54 ppm
Sodium	67.5 ppm	67.5 ppm	28 ppm
Potassium	7.5 ppm	6.5 ppm	8 ppm
Magnesium	42.5 ppm	22.5 ppm	42 ppm

Fish Rearing Space: 288,500 cubic feet in 55 ponds

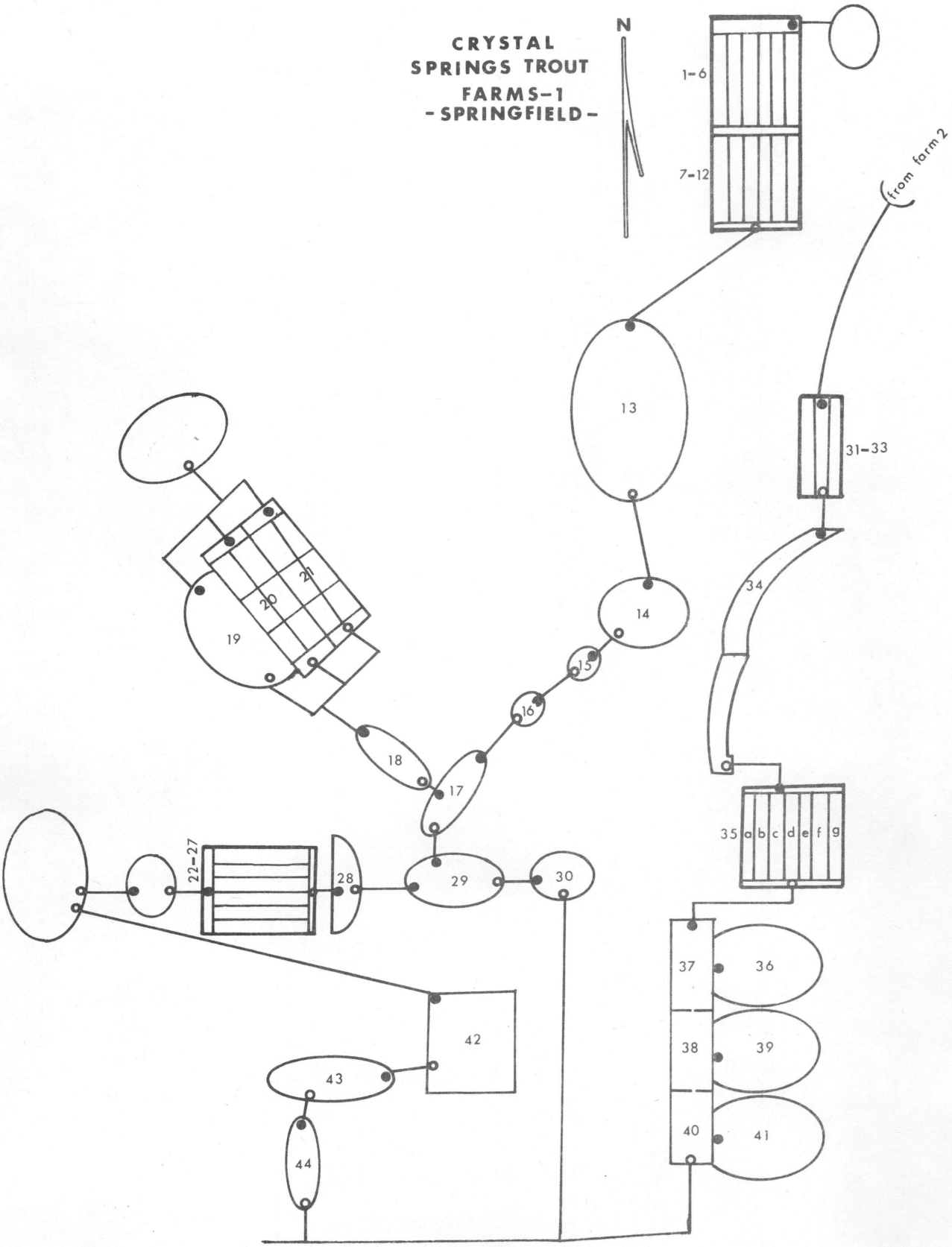
Water Replacement Time: 28.8-80.1 minutes



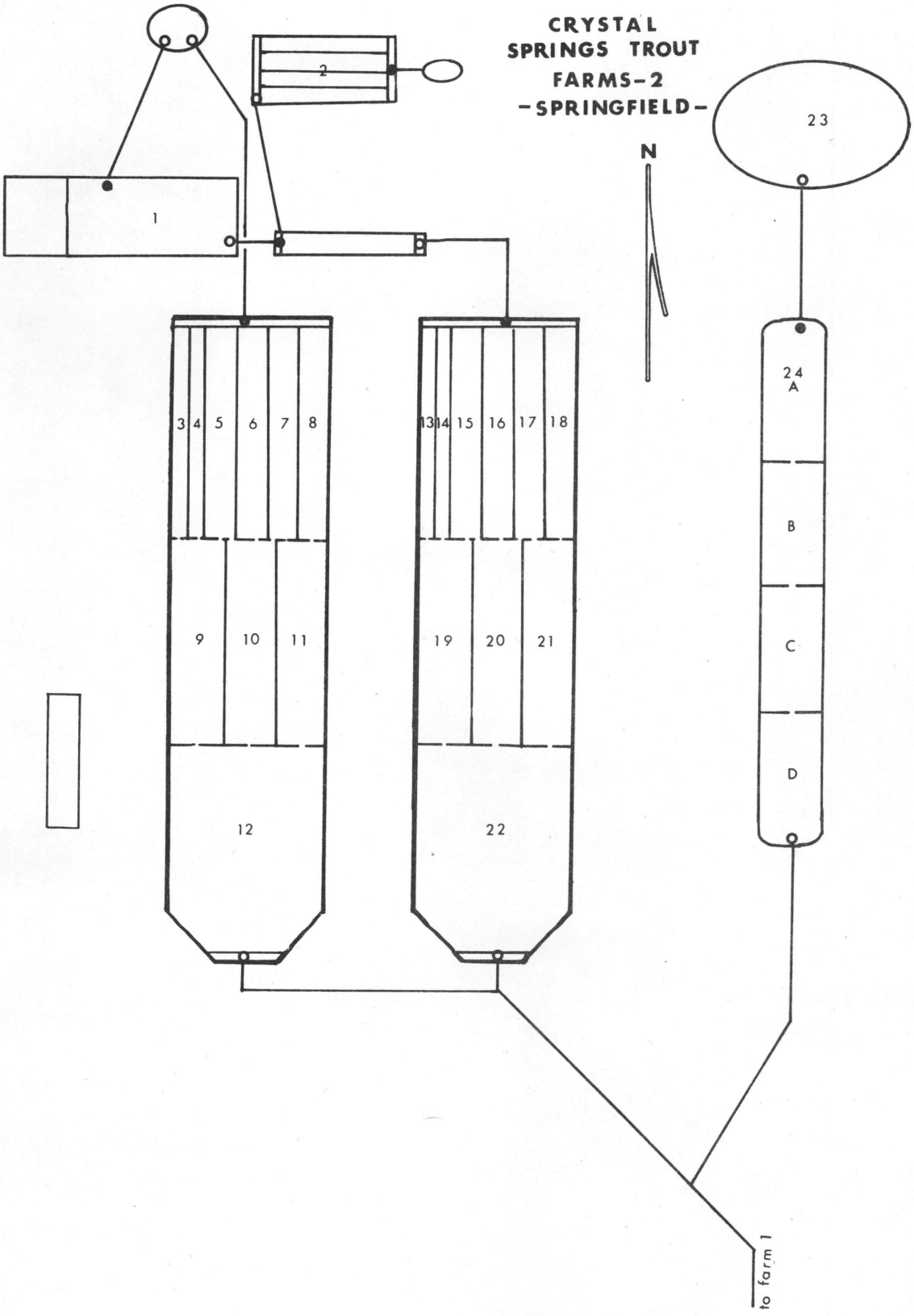




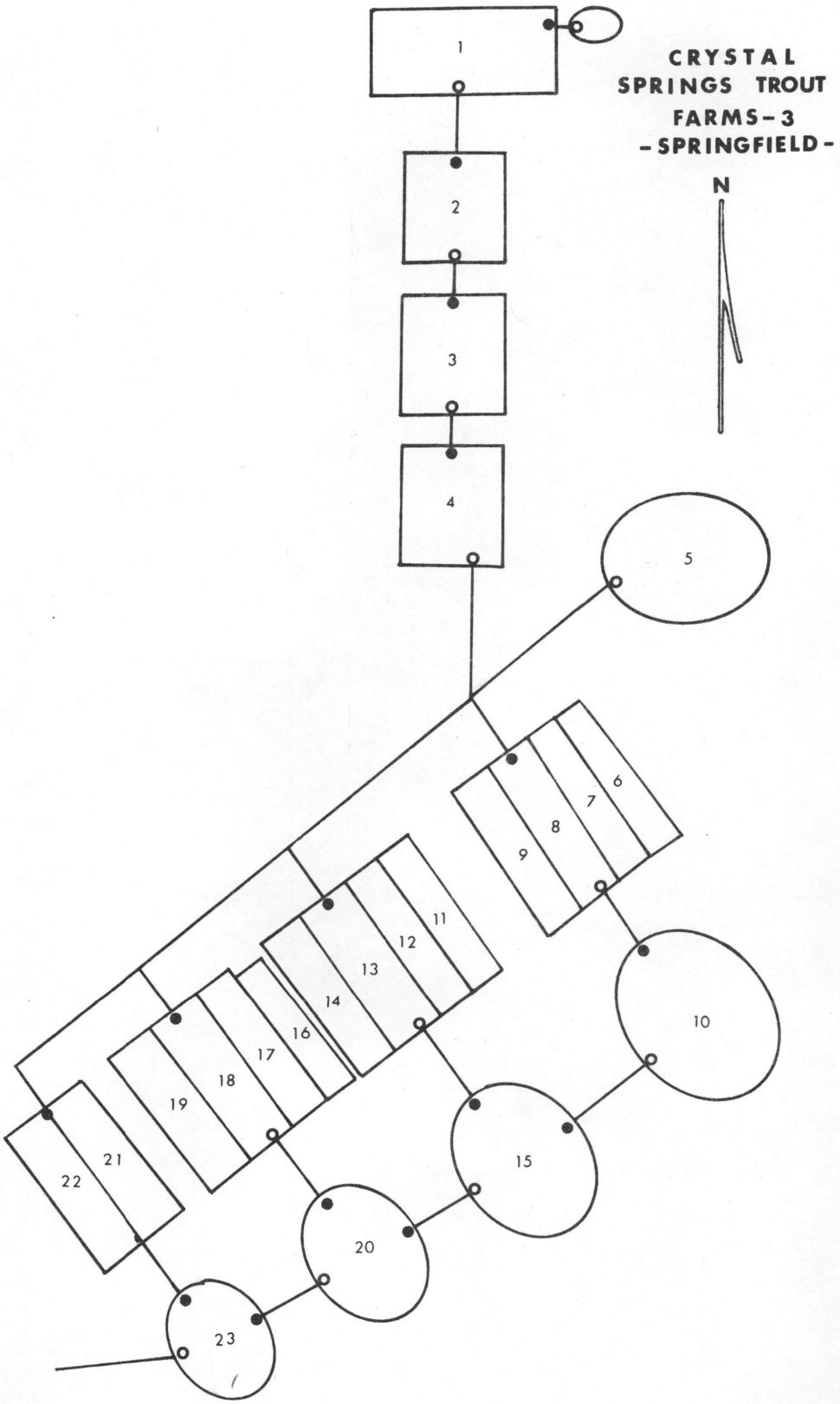
Flow Diagram 3

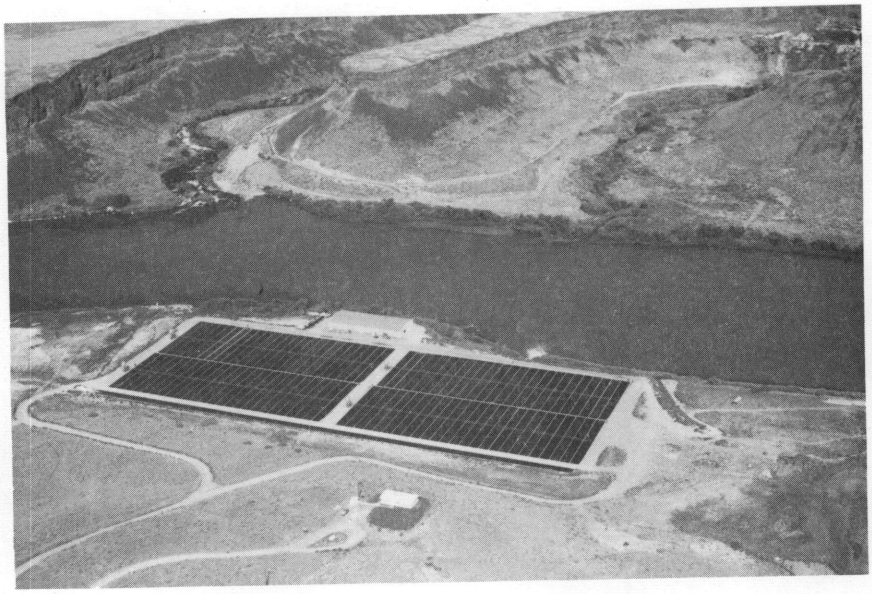


Flow Diagram 4



Flow Diagram 5





BOX CANYON TROUT FARM

Clear Springs Trout Co.
Route 4, Box 548
Buhl, Idaho 83316

Started in 1973

Map Location: N-7

Water Source: Box Canyon Springs

Water Flow: 325 CFS (Max.)
242 CFS (Min.)

Water Discharge: Snake River

Water Temp.: 58°F 15.0°C

Water Chemistry:

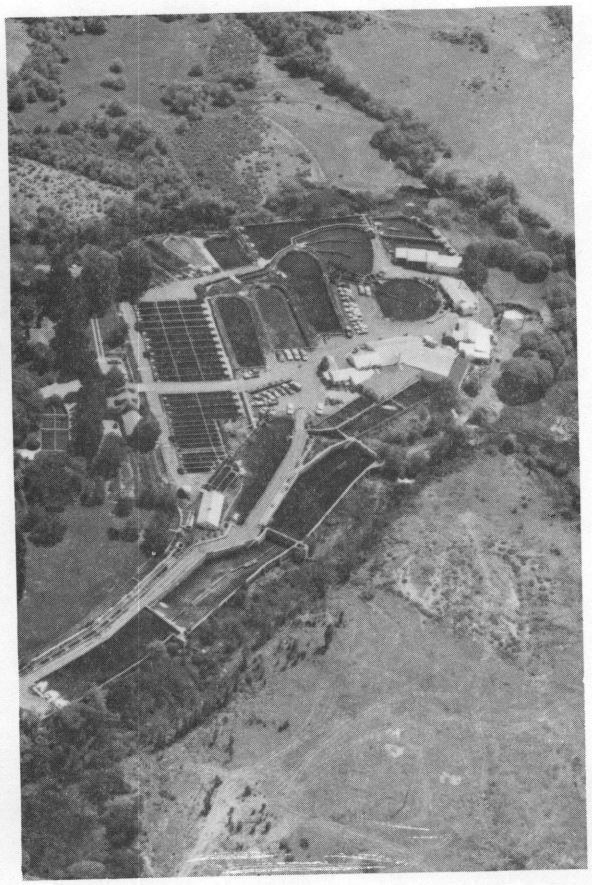
Dissolved Oxygen	11.10 ppm	Alkalinity	120 ppm
pH	8.45	Conductivity	648 µmhos
Nitrate	0.62 ppm	Phosphate	0.29 ppm
Hardness (Calcium)	86 ppm	Hardness (Total)	188 ppm
Calcium	17.5 ppm	Sodium	31 ppm
Potassium	7 ppm	Magnesium	19 ppm

Fish Rearing Space: 1,134,000 cubic feet in 100 ponds

Water Replacement Time: 58-78 minutes

Flow Diagram 6

BOX CANYON TROUT FARM



SNAKE RIVER TROUT FARM

Thousand Springs Trout Farms, Inc.
Route 4, Box 232
Buhl, Idaho 83316

Started in 1928

Map Location: O-11

Water Source: Thousand Springs

Water Flow: 129.5 CFS (Max.)
96.6 CFS (Min.)

Water Discharge: Clear Lake

Water Temp.: 58°F 14.1°C

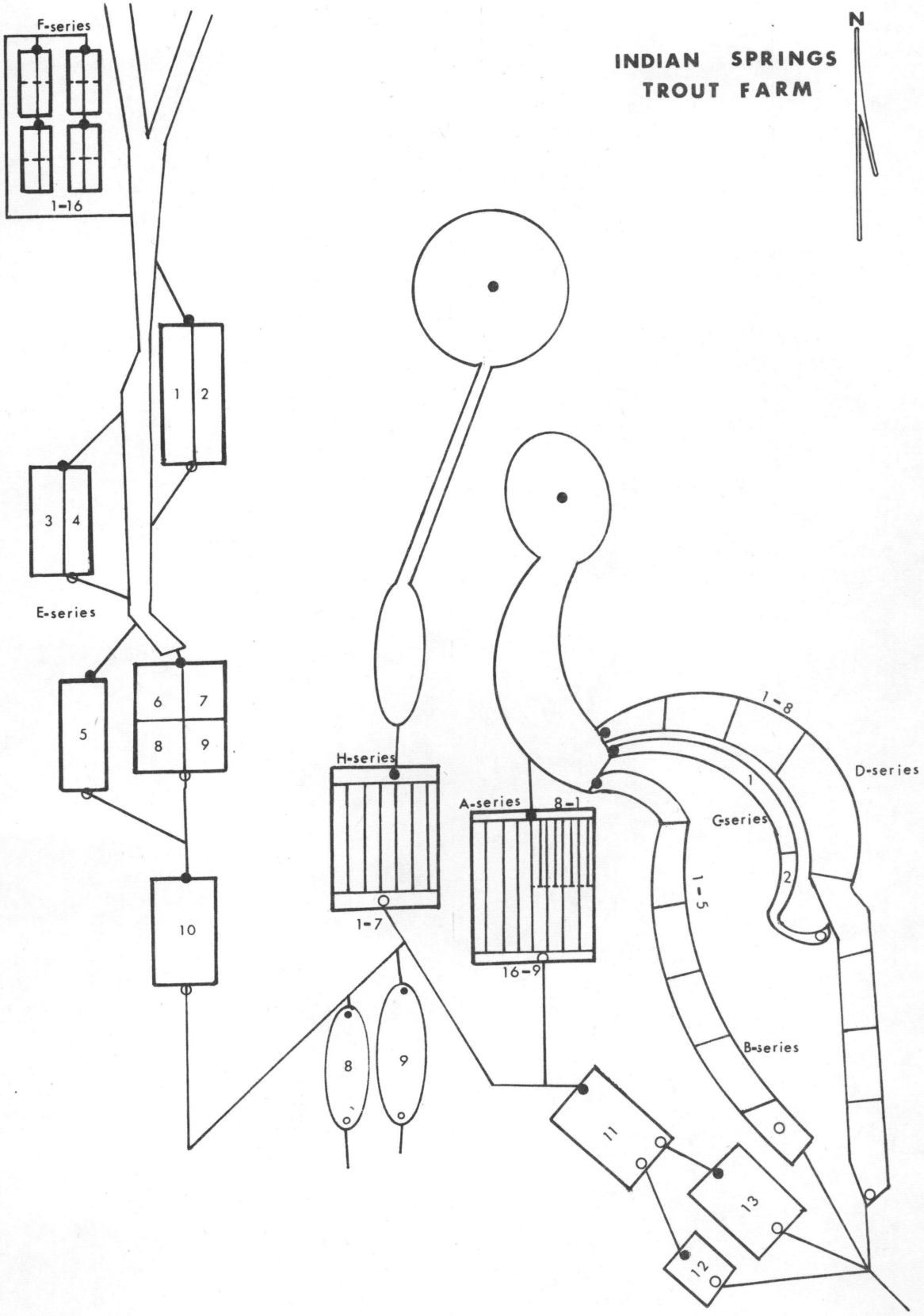
Water Chemistry:

Dissolved Oxygen	9.25 ppm	Alkalinity	205 ppm
pH	8.28	Conductivity	1198 µmhos
Nitrate	2.02 ppm	Phosphate	0.18 ppm
Hardness (Calcium)	137 ppm	Hardness (Total)	257 ppm
Calcium	37 ppm	Sodium	39 ppm
Potassium	6 ppm	Magnesium	31 ppm

Fish Rearing Space: 299,900 cubic feet in 55 ponds

Water Replacement Time: 38.5-51.7 minutes

Flow Diagram 8



INDIAN SPRINGS TROUT FARM

Thousand Springs Trout Farms, Inc.
Route 4, Box 232
Buhl, Idaho 83316

Started in 1952

Map Location: Bingham County

Water Source: Springs

Water Flow: 231.1 CFS (Max.)
125 CFS (Min.)

Water Discharge: Snake River

Water Temp.: 52°F 13.5°C

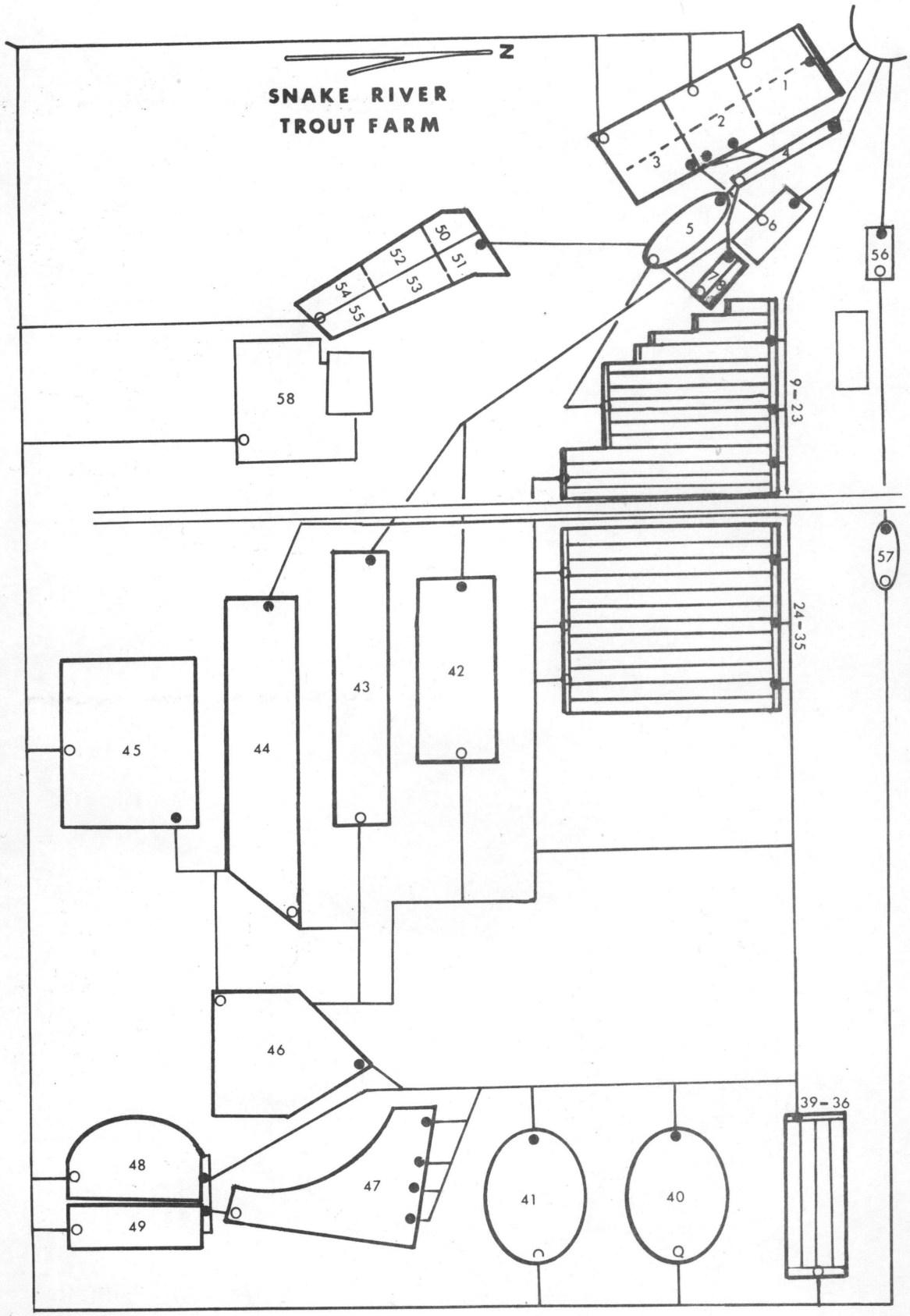
Water Chemistry:

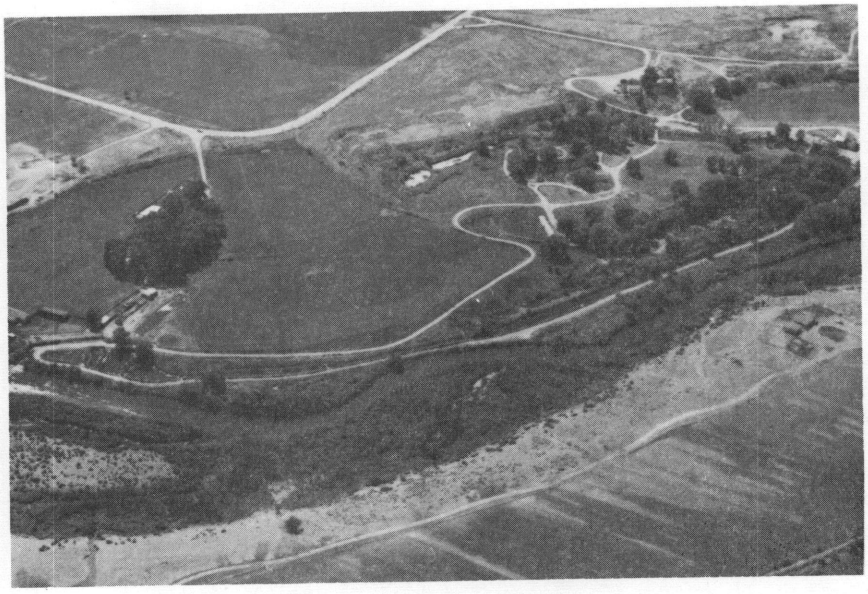
Dissolved Oxygen	12.2-6.5 ppm	Alkalinity	-222 ppm
pH	7.8-8.0	Conductivity	989-1013 µmhos
Nitrate	0.90 ppm	Phosphate	0.16 ppm
Hardness (Calcium)	171 ppm	Hardness (Total)	291 ppm
Calcium	53.75 ppm	Sodium	26.125 ppm
Potassium	4.625 ppm	Magnesium	23.5 ppm

Fish Rearing Space: 415,500 cubic feet in 62 ponds

Water Replacement Time: 29.9-55.4 minutes

Flow Diagram 7





PAPOOSE SPRINGS TROUT FARM

Thousand Springs Trout Farms, Inc.
Route 4, Box 232
Buhl, Idaho 83316

Started in 1914

Map Location: Bannock County

Water Source: Springs

Water Flow: 44 CFS (Max.)
37.7 CFS (Min.)

Water Discharge: Portneuf

Water Temp.: 48-58°F 13.0°C

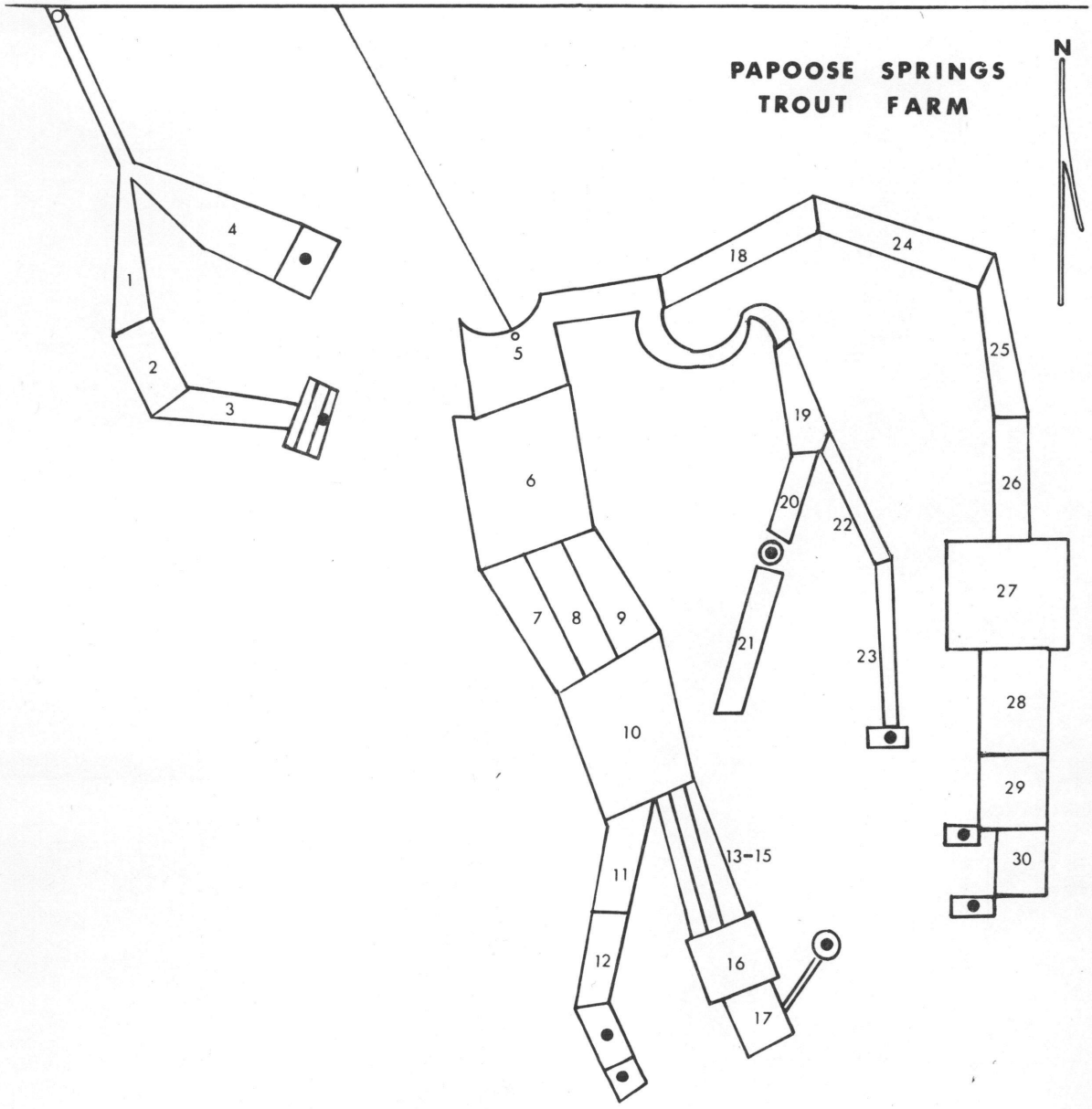
Water Chemistry:

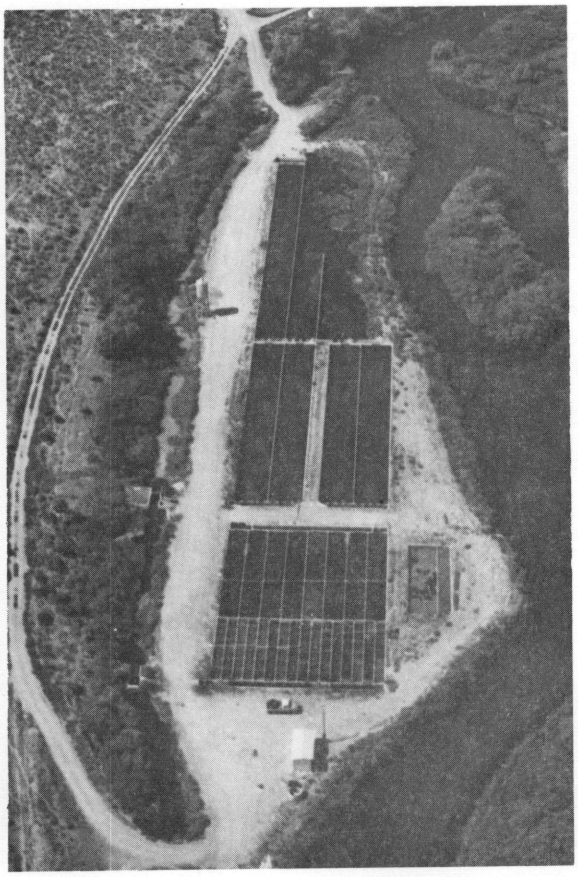
Dissolved Oxygen	-6.70 ppm	Alkalinity	-223 ppm
pH	-7.70	Conductivity	-942 µmhos
Nitrate	-223 ppm	Phosphate	0.27 ppm
Hardness (Calcium)	153 ppm	Hardness (Total)	-257 ppm
Calcium	-42.5 ppm	Sodium	30 ppm
Potassium	4.75 ppm	Magnesium	23.75 ppm

Fish Rearing Space: 109,100 cubic feet in 30 ponds

Water Replacement Time: 41.3-48.2 minutes

Flow Diagram 9





BATISE SPRINGS TROUT FARM

Thousand Springs Trout Farms, Inc.
Route 4, Box 232
Buhl, Idaho 83316

Started in 1973

Map Location: Bannock County

Water Source: Springs via Rowland Creek

Water Flow: 29 CFS (Max.)
20.2 CFS (Min.)

Water Discharge: Portneuf

Water Temp.: 55-58°F 14.7°C

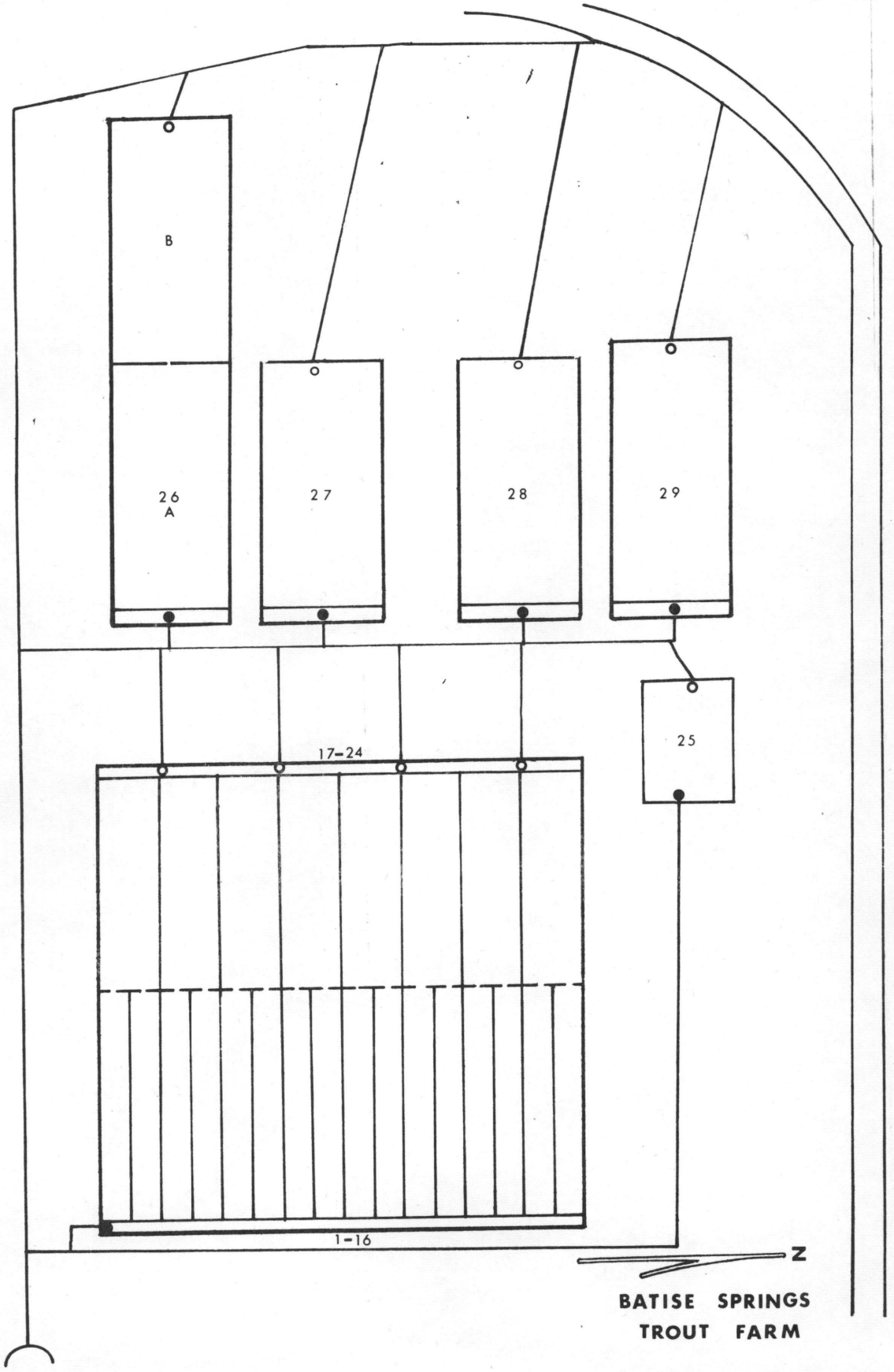
Water Chemistry:

Dissolved Oxygen	-10.10 ppm	Alkalinity	-223 ppm
pH	-7.65	Conductivity	-1308 µmhos
Nitrate	-1.00+ ppm	Phosphate	1.46 ppm
Hardness (Calcium)	154 ppm	Hardness (Total)	274 ppm
Calcium	47.5 ppm	Sodium	44.5 ppm
Potassium	8 ppm	Magnesium	28 ppm

Fish Rearing Space: 106,440 cubic feet in 29 ponds

Water Replacement Time: 49.7 minutes

Flow Diagram 10



IDAHO SPRINGS TROUT FARM

Thousand Springs Trout Farms, Inc.
Route 4, Box 232
Buhl, Idaho 83316

Started in 1951

Map Location: F-5

Water Source: Tupper Springs, Hewitt Springs, Billingsley Creek

Water Discharge: Billingsley Creek

Water Flow: 203 CFS (Max.)
143 CFS (Min.)

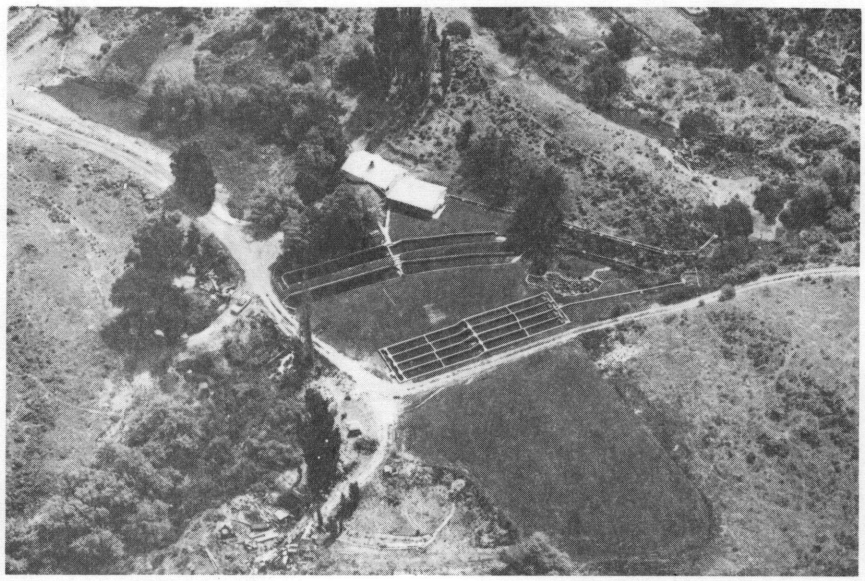
Water Temp.: 58°F 15.6°C

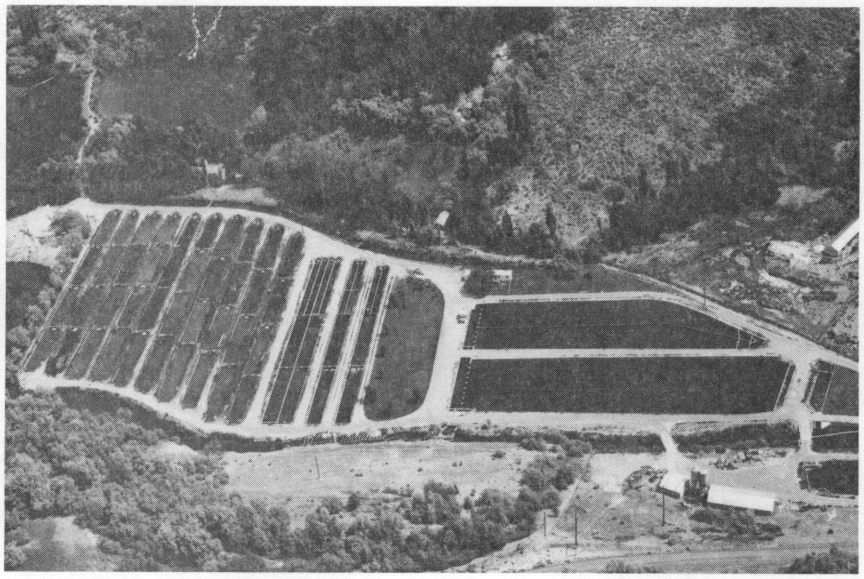
Water Chemistry:

Dissolved Oxygen	9.35 ppm
Alkalinity	137 ppm
pH	8.05
Conductivity	708 µmhos
Nitrate	0.90 ppm
Phosphate	0.29 ppm
Hardness (Calcium)	68 ppm
Hardness (Total)	171 ppm
Calcium	14.33 ppm
Sodium	26 ppm
Potassium	5.19 ppm
Magnesium	22.16 ppm

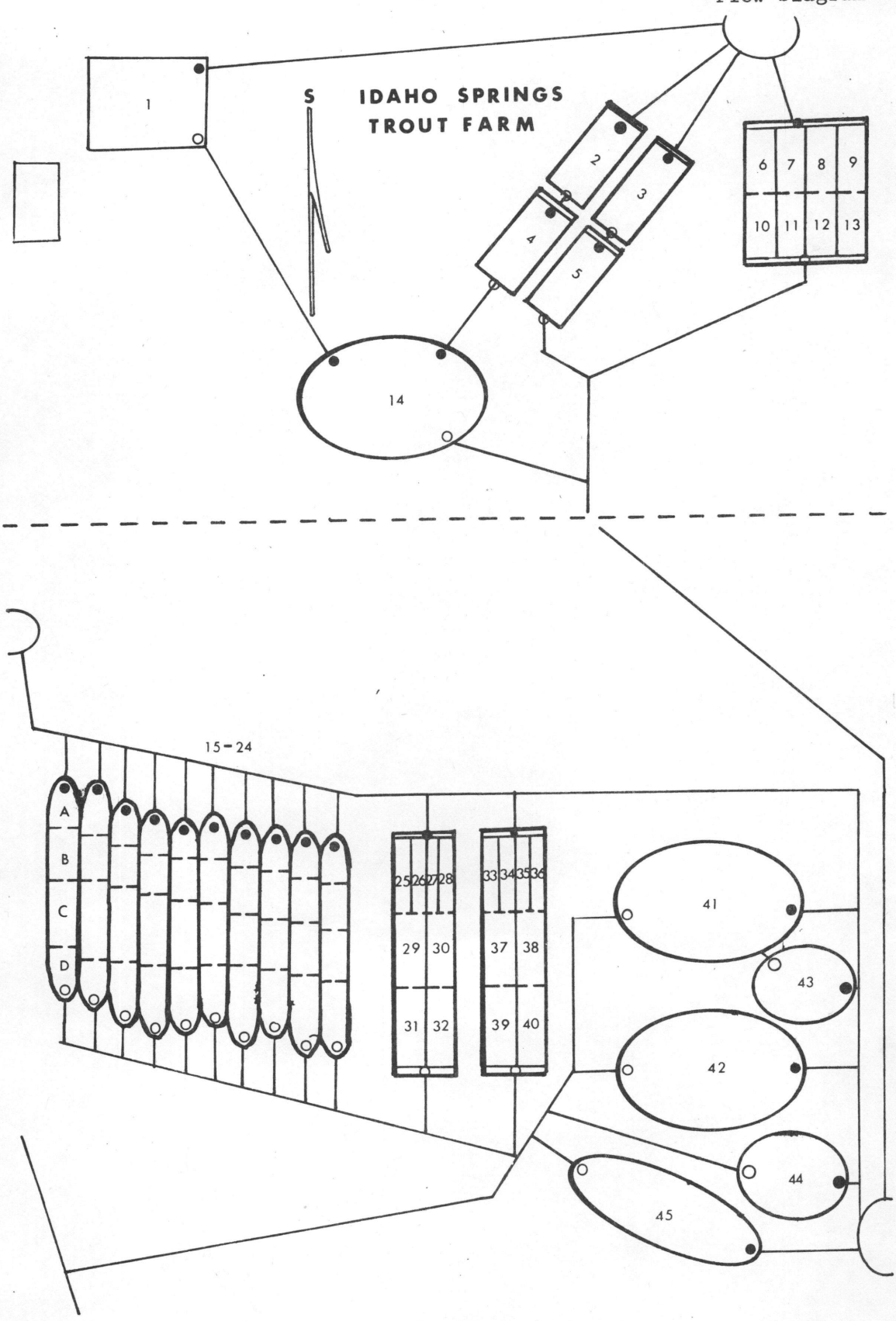
Fish Rearing Space: 404,600 cubic feet in 69 ponds

Water Replacement Time: 33.2-47.0 minutes





Flow Diagram 11



RAINBOW TROUT FARMS, BUHL

Idaho Trout Processors, Inc.
1302 Vista Avenue
Boise, Idaho 83705

Started in 1947

Map Location: Q-10

Water Source: Seep Tunnel

Water Flow: 12 CFS (Max.)
6 CFS (Min.)

Water Discharge: Mendini Seepage Drain

Water Temp.: 58°F 14.1°C

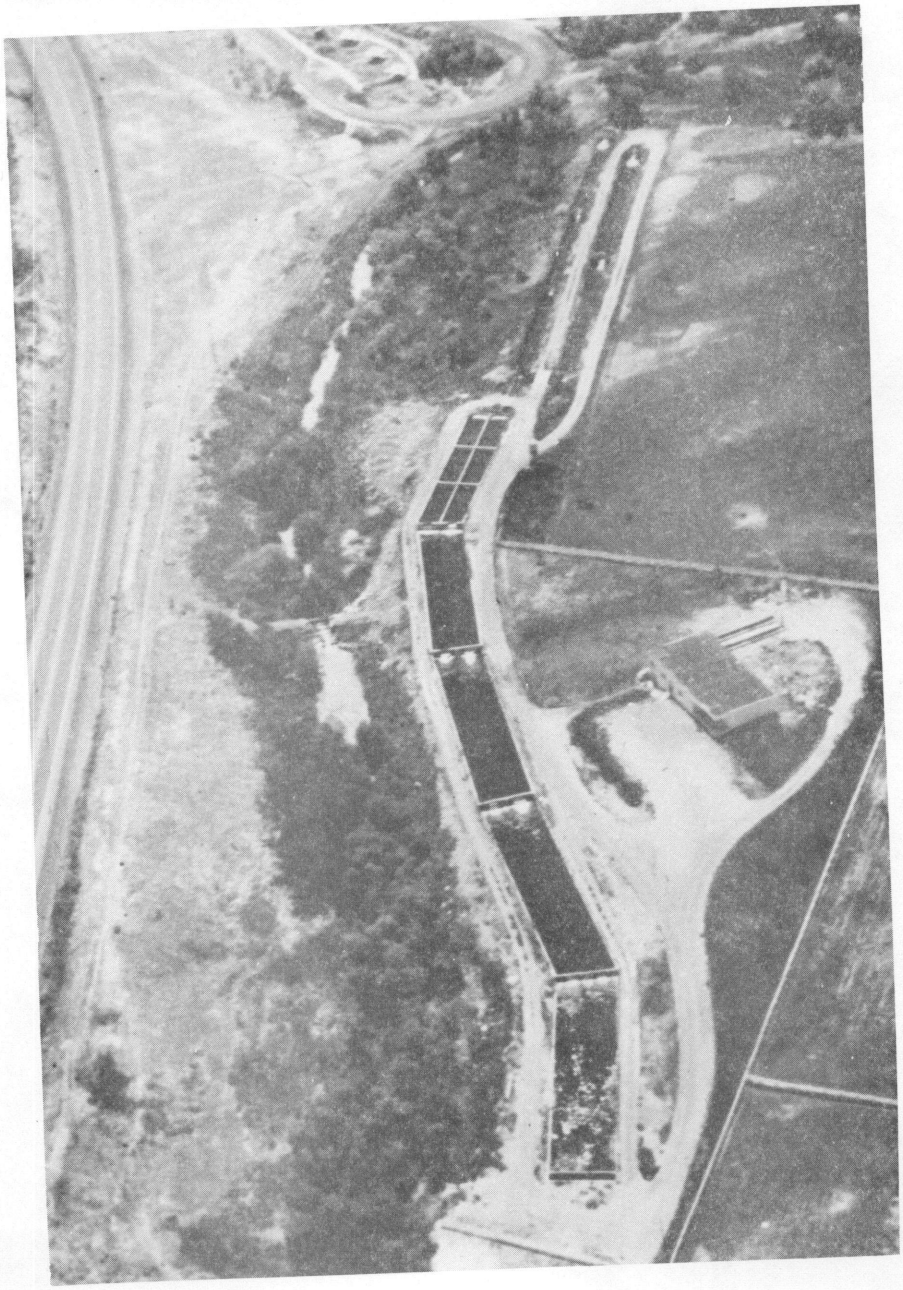
Water Chemistry:

Dissolved Oxygen	8.75 ppm	Alkalinity	359 ppm
pH	7.90	Conductivity	1764 µmhos
Nitrate	3.50 ppm	Phosphate	0.18 ppm
Hardness (Calcium)	223 ppm	Hardness (Total)	342 ppm
Calcium	48 ppm	Sodium	107 ppm
Potassium	12.5 ppm	Magnesium	49 ppm

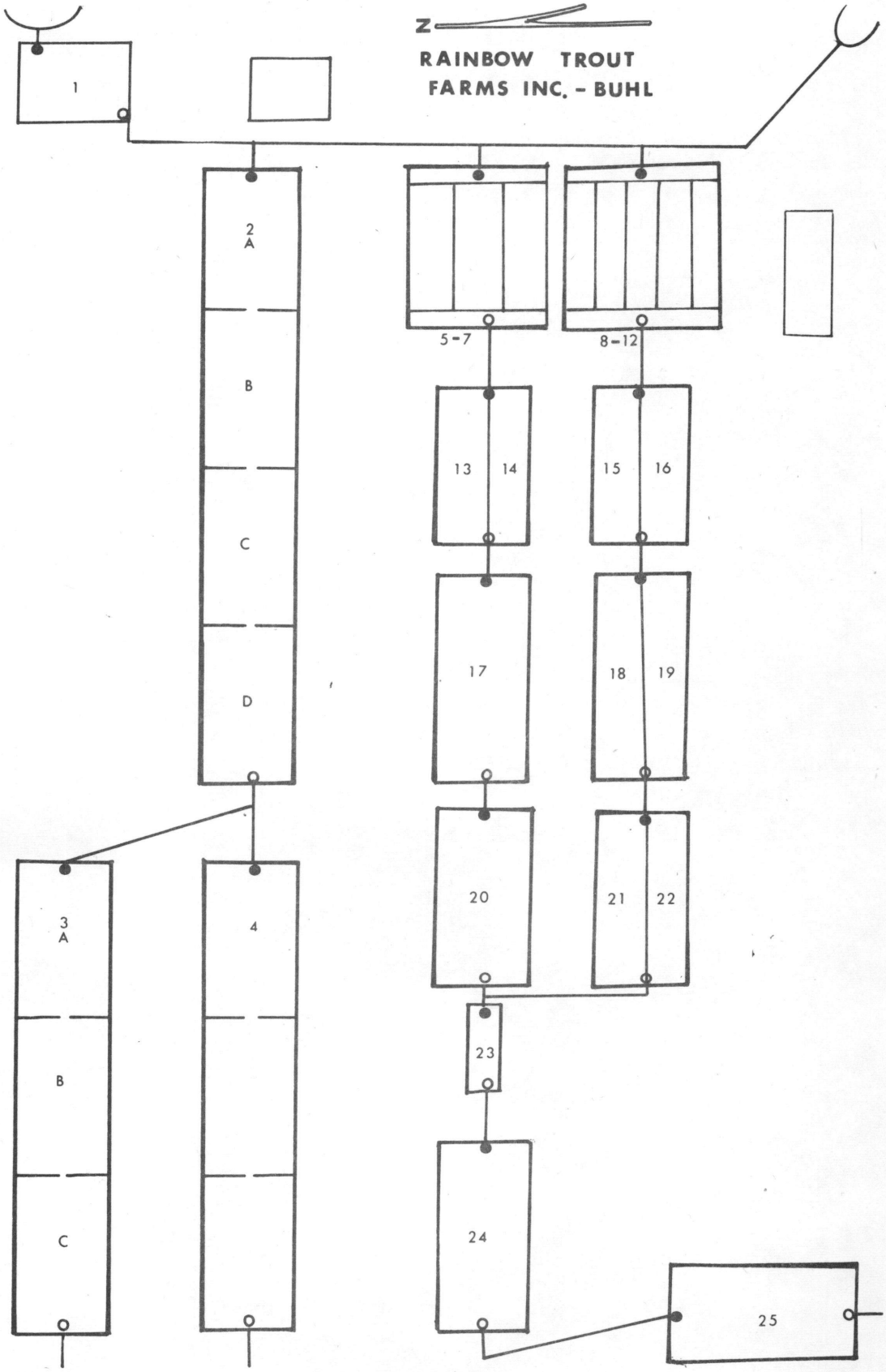
Fish Rearing Space: 73,500 cubic feet in 24 ponds

Water Replacement Time: 102.0-204 minutes

(



Flow Diagram 12



RAINBOW TROUT FARMS, FILER

Idaho Trout Processors, Inc.
1302 Vista Avenue
Boise, Idaho 83705

Started in 1947

Map Location: V-17

Water Source: Seep Tunnel

Water Flow: 25 CFS (Max.)
12 CFS (Min.)

Water Discharge: Cedar Draw

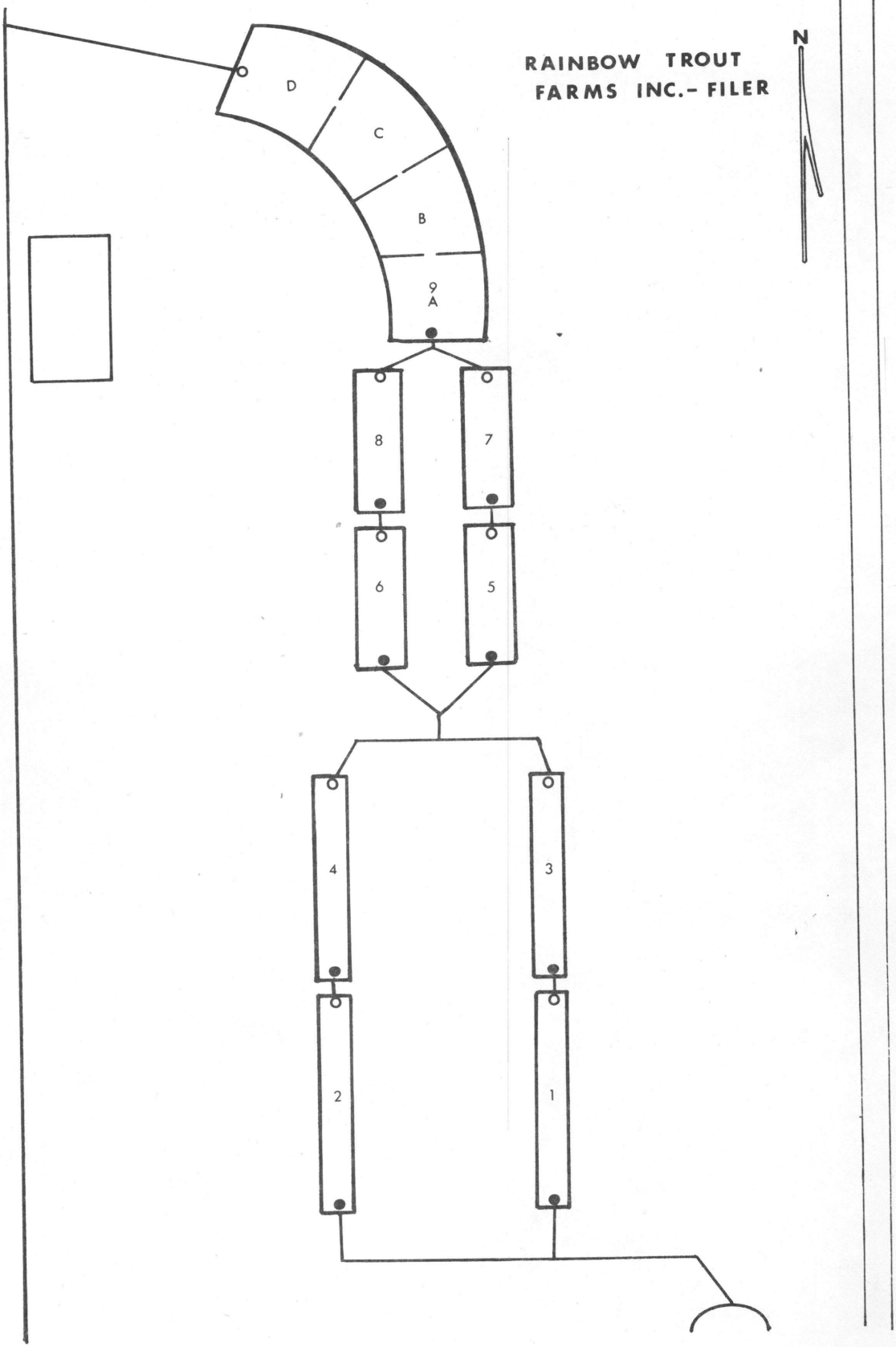
Water Temp.: 58°F 13.4°C

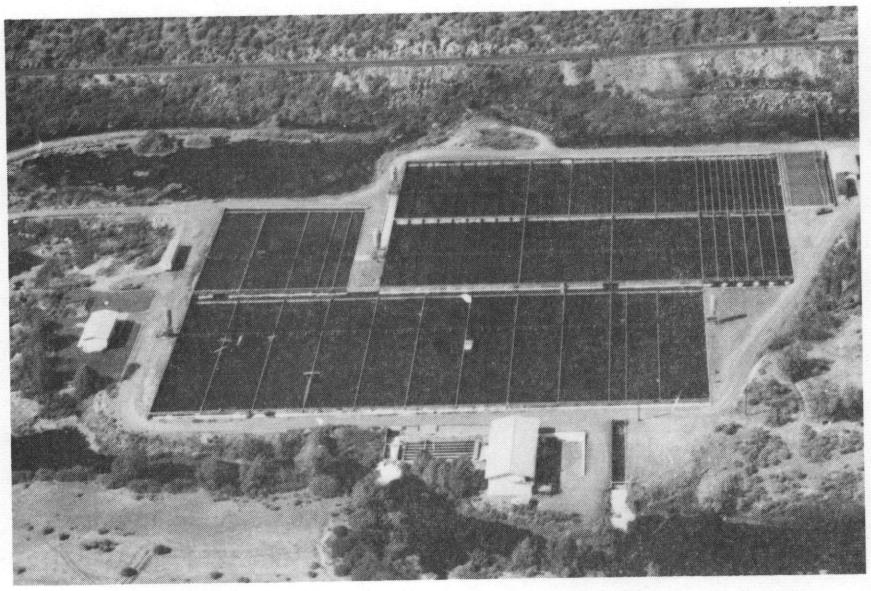
Water Chemistry:

Dissolved Oxygen	8.90 ppm	Alkalinity	291 ppm
pH	8.22	Conductivity	1860 µmhos
Nitrate	2.60 ppm	Phosphate	0.27 ppm
Hardness (Calcium)	205 ppm	Hardness (Total)	377 ppm
Calcium	42 ppm	Sodium	91 ppm
Potassium	6.5 ppm	Magnesium	51 ppm

Fish Rearing Space: 88,800 cubic feet in 12 ponds

Water Replacement Time: 59.2-123.3 minutes


RAINBOW TROUT
FARMS INC.- FILER
N
D
C
B
9
A
8
7
6
5
4
3
2
1



CLEAR LAKES TROUT FARM

Idaho Trout Processors, Inc.
1302 Vista Avenue
Boise, Idaho 83705

Started in 1960

Map Location: 0-10

Water Source: Thousand Springs

Water Flow: 173 CFS (Max.)
148 CFS (Min.)

Water Discharge: Clear Lake

Water Temp.: 58°F 14.1°C

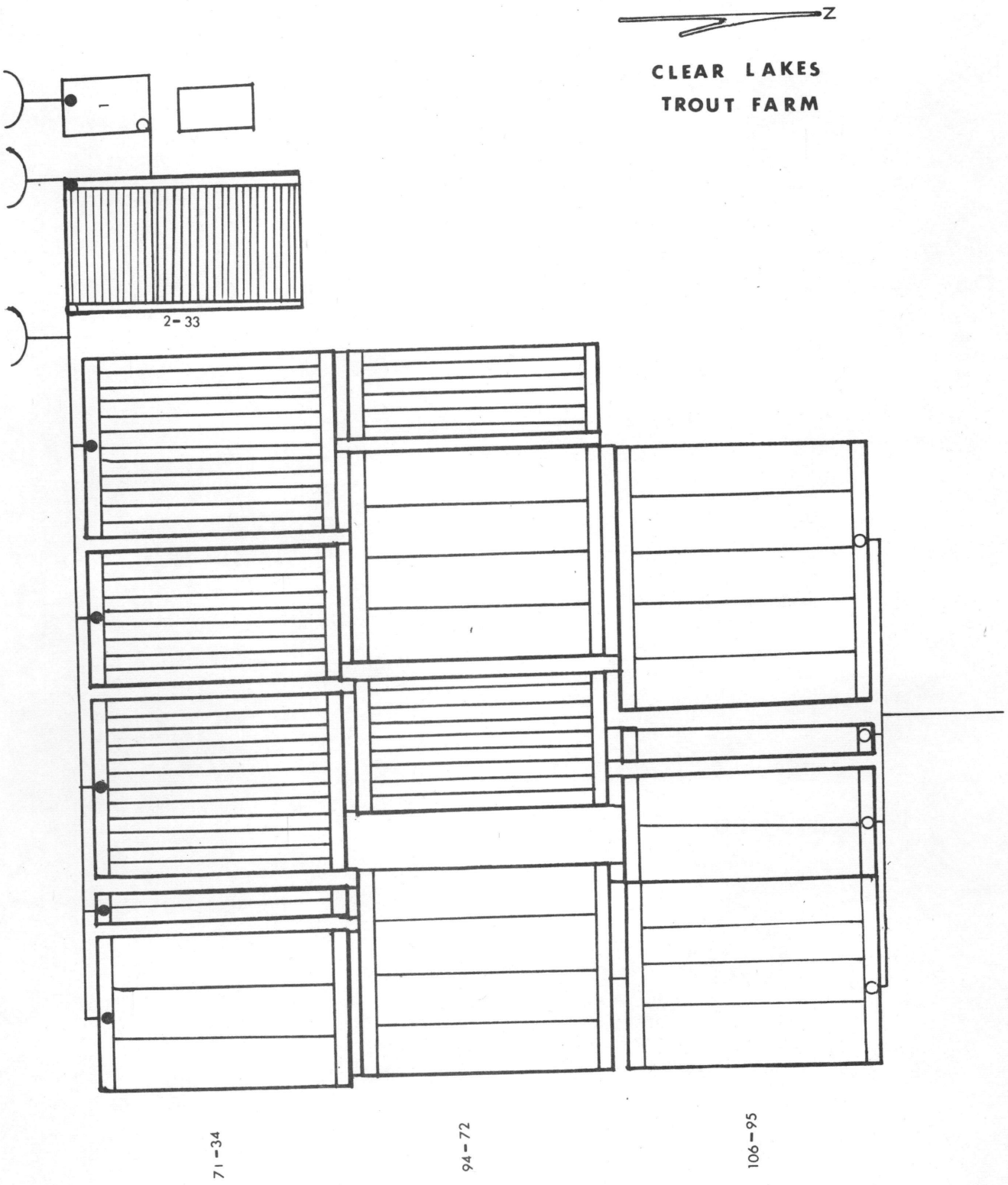
Water Chemistry:

Dissolved Oxygen	9.35 ppm	Alkalinity	171 ppm
pH	8.27	Conductivity	979 µmhos
Nitrate	1.11 ppm	Phosphate	0.18 ppm
Hardness (Calcium)	103 ppm	Hardness (Total)	205 ppm
Calcium	18 ppm	Sodium	30 ppm
Potassium	5.5 ppm	Magnesium	22.5 ppm

Fish Rearing Space: 1,040,900 cubic feet in 101 ponds

Water Replacement Time: 100.2-135.5 minutes

Flow Diagram 14



CANYON TROUT FARM

Idaho Trout Processors, Inc.
1302 Vista Avenue
Boise, Idaho 83705

Started in 1946

Map Location: V-23

Water Source: Seep Tunnel

Water Flow: 15 CFS (Max.)
7 CFS (Min.)

Water Discharge: Rock Creek

Water Temp.: 54°F 12.6°C

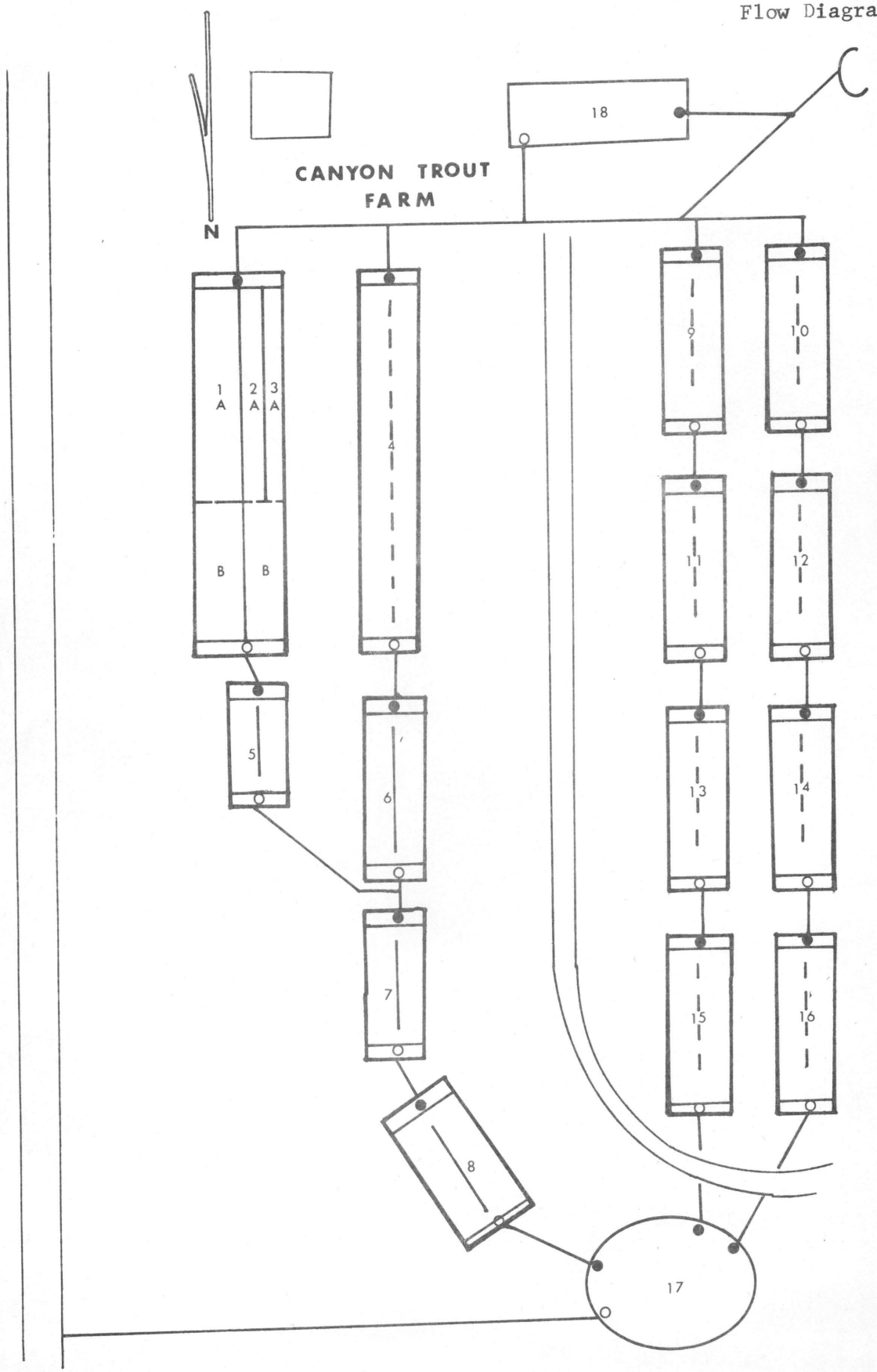
Water Chemistry:

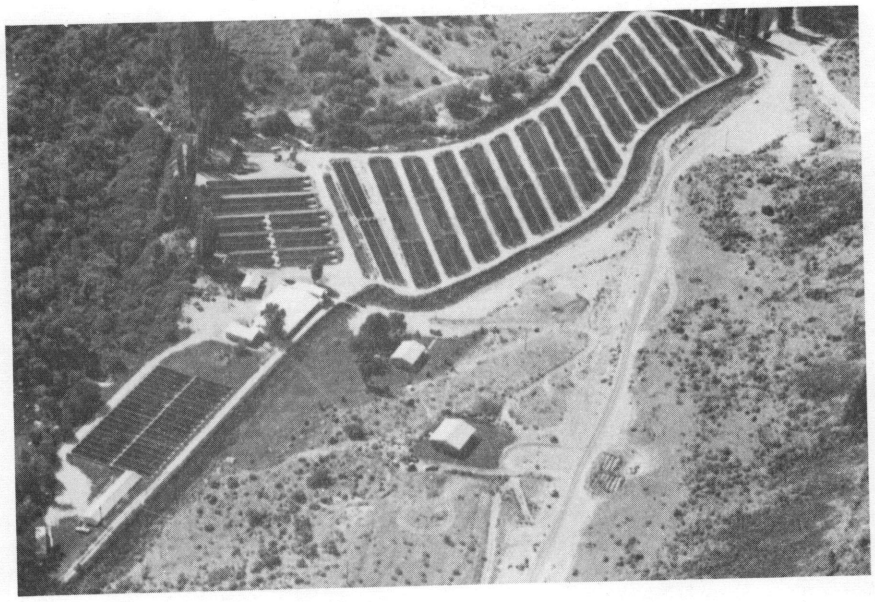
Dissolved Oxygen	9.70 ppm	Alkalinity	308 ppm
pH	7.70	Conductivity	2121 µmhos
Nitrate	3.50 ppm	Phosphate	0.08 ppm
Hardness (Calcium)	257 ppm	Hardness (Total)	428 ppm
Calcium	50 ppm	Sodium	88 ppm
Potassium	7 ppm	Magnesium	51 ppm

Fish Rearing Space: 129,100 cubic feet in 17 ponds

Water Replacement Time: 143.4-307 minutes

Flow Diagram 15





BLUE LAKES TROUT FARM

Blue Lakes Trout Farm, Inc.
P.O. Box 1237
Twin Falls, Idaho 83301

Started in 1956

Map Location: T-25

Water Source: Blue Lake Springs

Water Flow: 194 CFS (Max.)
150 CFS (Min.)

Water Discharge: Snake River

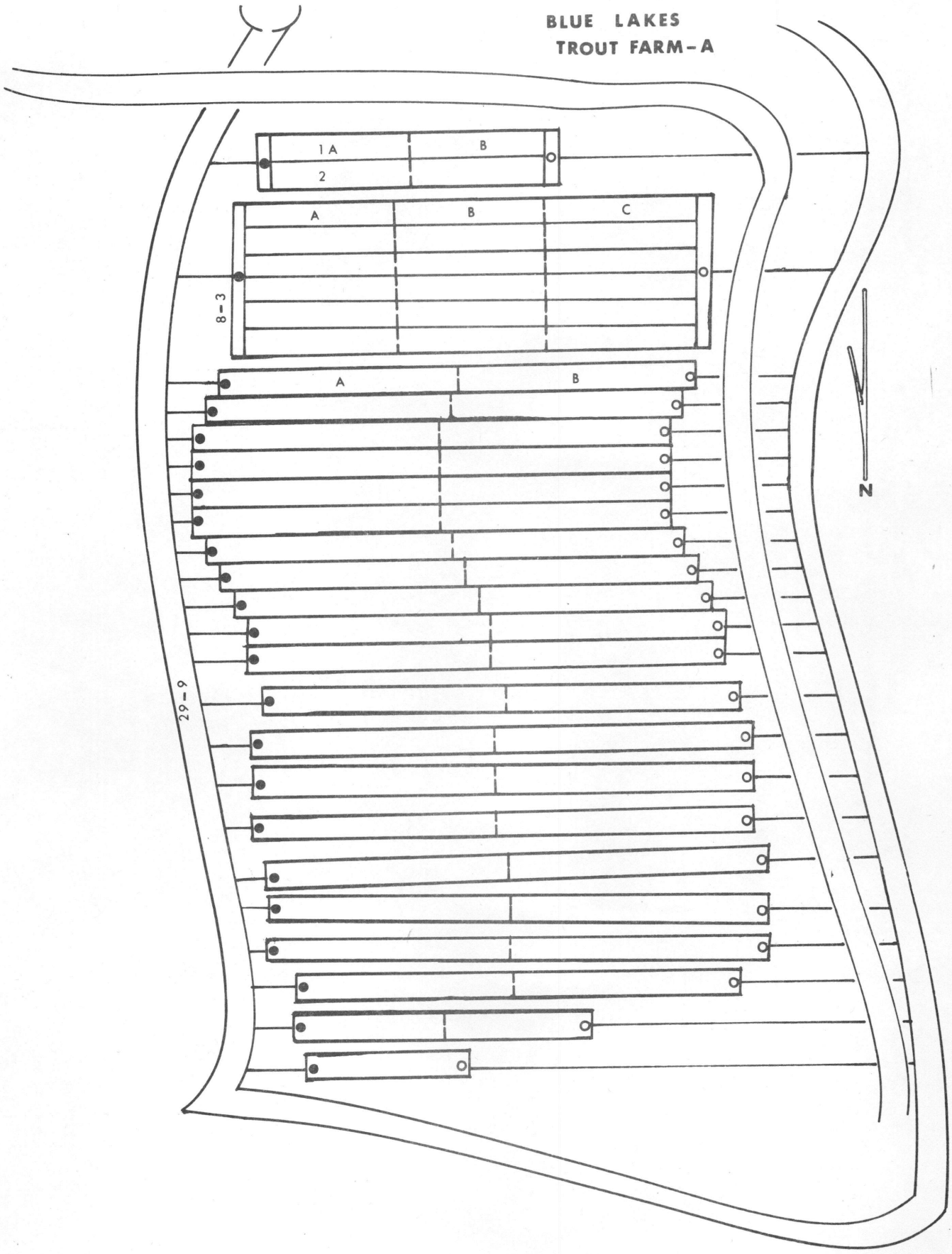
Water Temp.: 58°F 15.8°C

Water Chemistry:

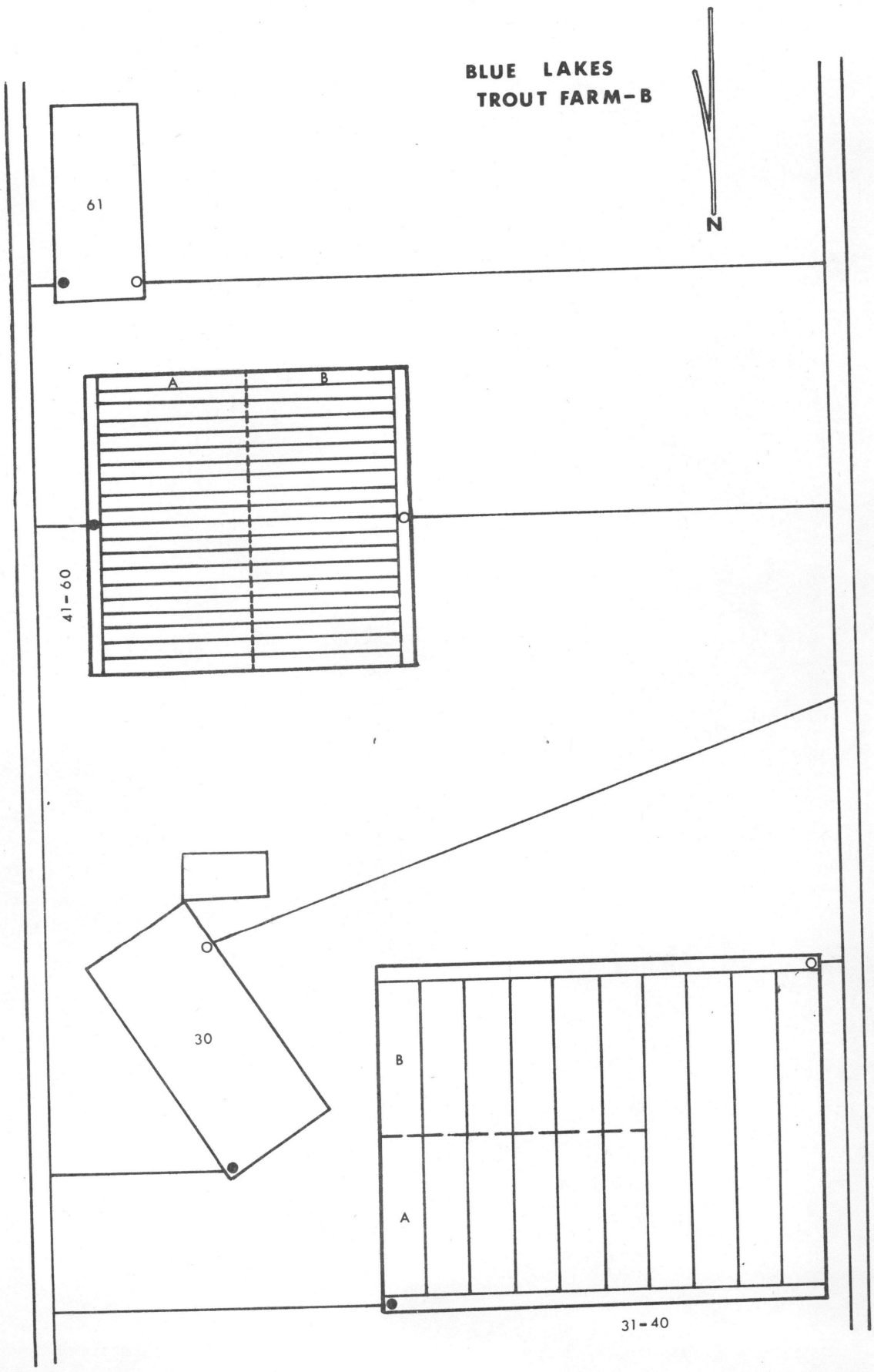
Dissolved Oxygen	9.80 ppm	Alkalinity	188 ppm
pH	8.15	Conductivity	1304 µmhos
Nitrate	1.29 ppm	Phosphate	0.09 ppm
Hardness (Calcium)	154 ppm	Hardness (Total)	257 ppm
Calcium	37.5 ppm	Sodium	51 ppm
Potassium	10 ppm	Magnesium	28 ppm

Fish Rearing Space: 465,000 cubic feet in 60 ponds

Water Replacement Time: 39.9-51.6 minutes


BLUE LAKES
TROUT FARM-A
1A
2
B
A
B
C
8-3
A
B
N
29-9

Flow Diagram 17



GREENE'S TROUT FARM

Blue Lakes Trout Farm, Inc.
P.O. Box 1237
Twin Falls, Idaho 83301

Started in 1935

Map Location: U-27

Water Source: Seep Tunnels and Springs

Water Flow: 28.8 CFS (Max.)
23 CFS (Min.)

Water Discharge: Snake River

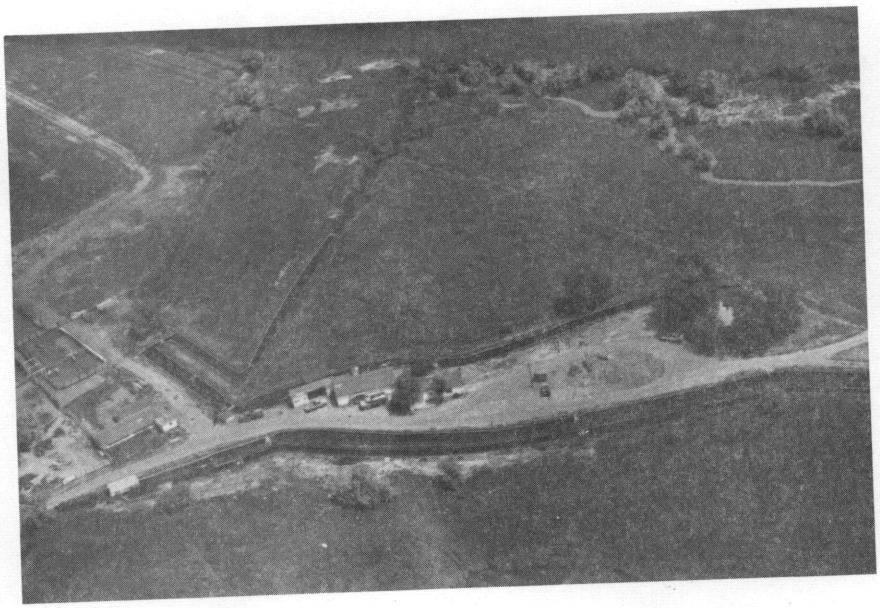
Water Temp.: 52°F 14.2°C

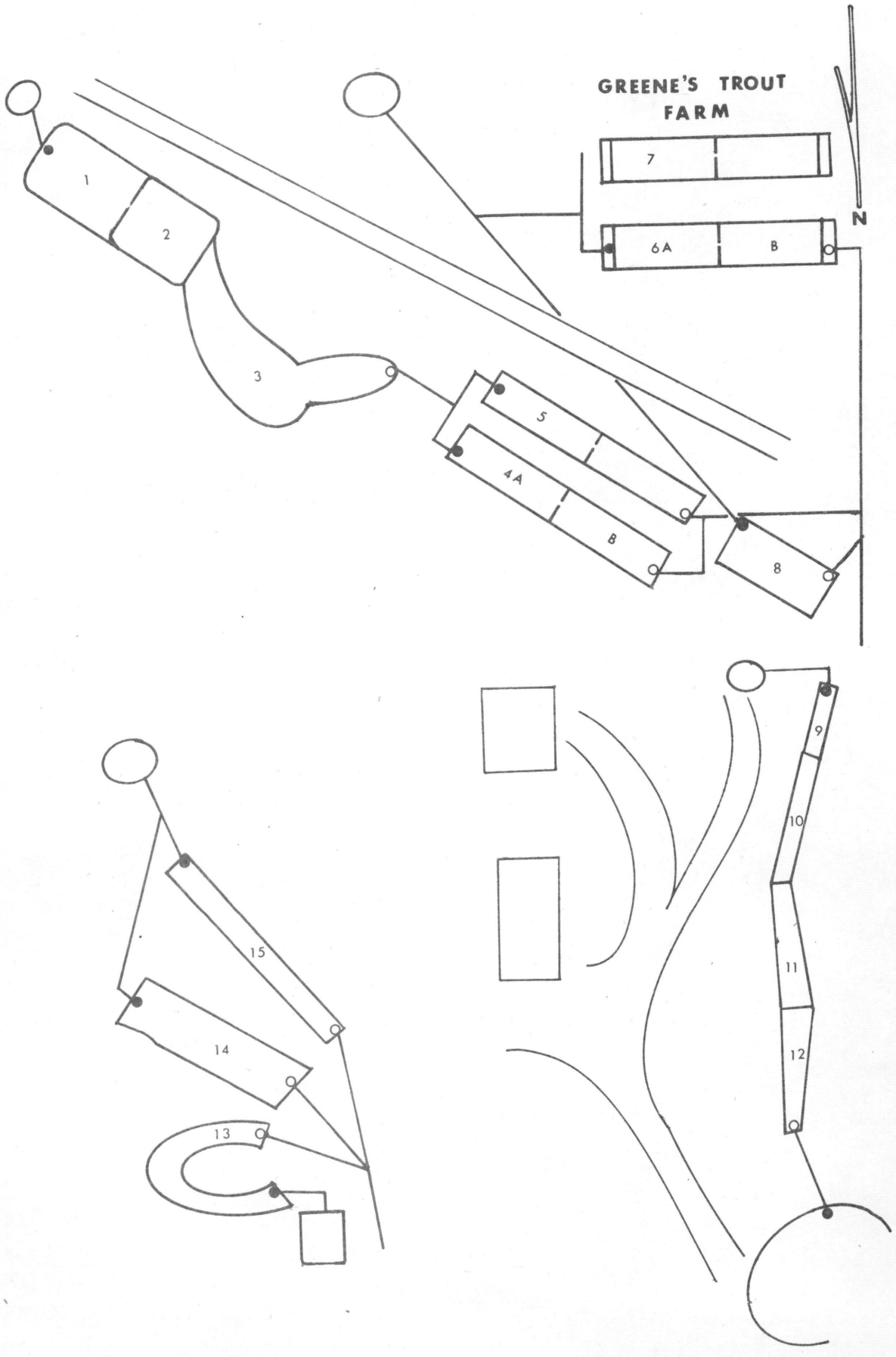
Water Chemistry:

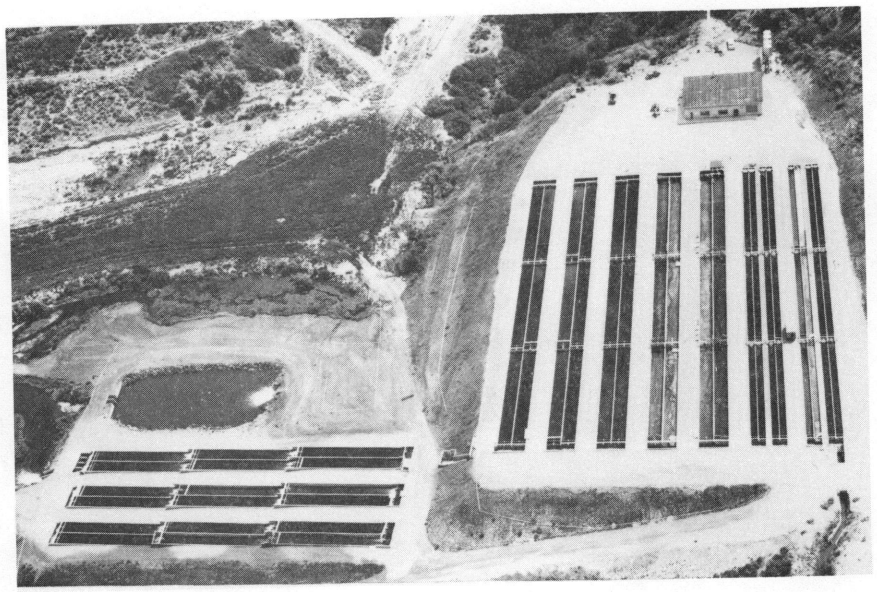
Dissolved Oxygen	10.57 ppm
Alkalinity	308 ppm
pH	7.85
Conductivity	2296 µmhos
Nitrate	4.30 ppm
Phosphate	0.10 ppm
Hardness (Calcium)	257 ppm
Hardness (Total)	428 ppm
Calcium	52 ppm
Sodium	94 ppm
Potassium	7.3 ppm
Magnesium	46 ppm

Fish Rearing Space: 2,676,000 cubic feet in 25 ponds

Water Replacement Time: 1,548-1,939 minutes (includes large pond)




GREENE'S TROUT FARM
N
1
2
3
4A
B
5
6A
B
7
8
9
10
11
12
13
14
15



JONES & SANDY TROUT FARM

Jones & Sandy Livestock Co.
Box 265
Hagerman, Idaho 83332

Started in 1971

Map Location: H-5

Water Source: Three Springs and Weatherby Springs

Water Flow: 72 CFS (Max.)
30 CFS (Min.)

Water Discharge: Billingsley Creek

Water Temp.: 58°F 15.5°C

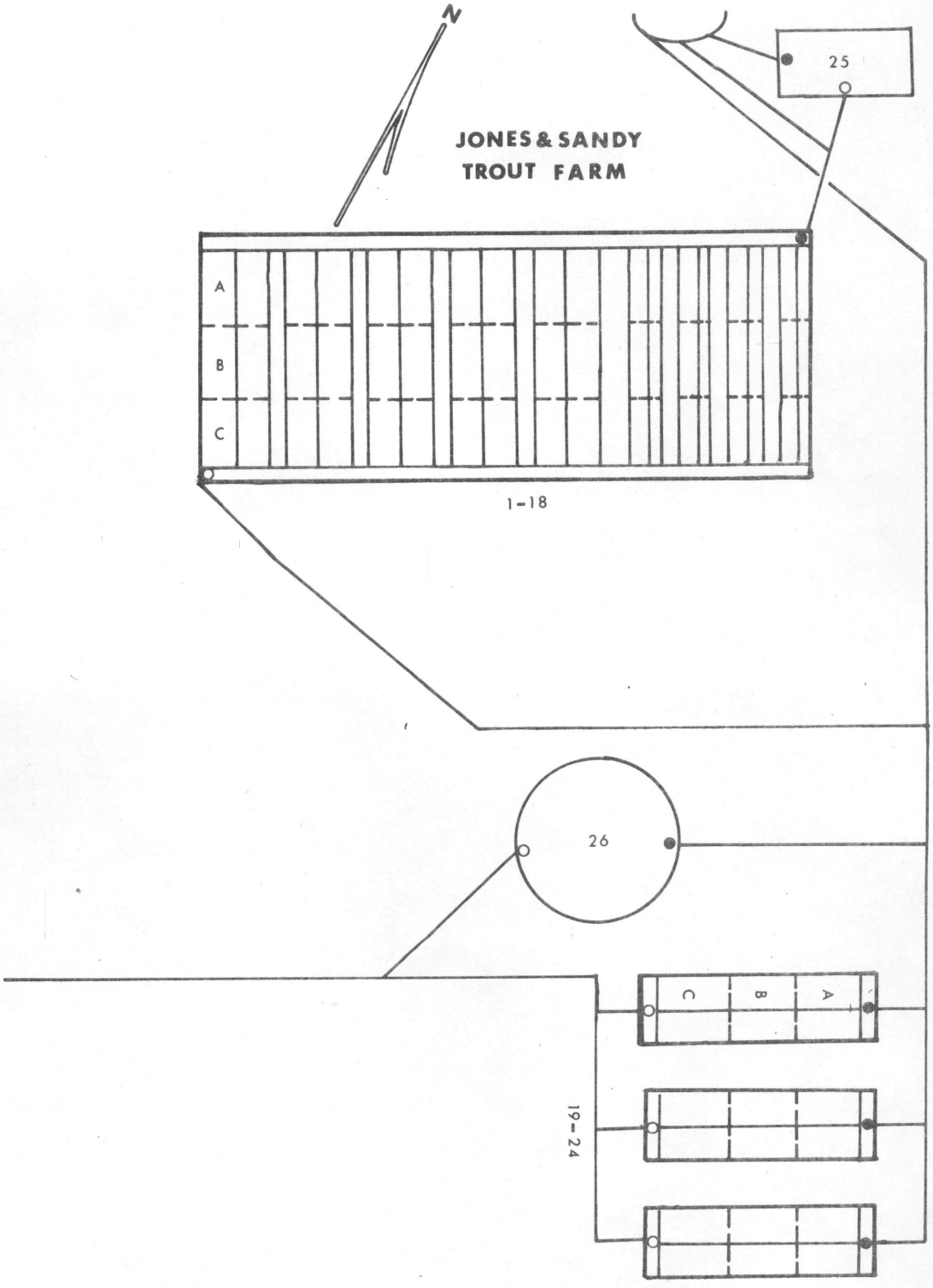
Water Chemistry:

Dissolved Oxygen	9.30 ppm	Alkalinity	154 ppm
pH	8.18	Conductivity	770 µmhos
Nitrate	0.87 ppm	Phosphate	0.16 ppm
Hardness (Calcium)	86 ppm	Hardness (Total)	171 ppm
Calcium	17.5 ppm	Sodium	30 ppm
Potassium	7.3 ppm	Magnesium	22.5 ppm

Fish Rearing Space: 145,900 cubic feet in 72 ponds

Water Replacement Time: 33.7-81.0 minutes

Flow Diagram 19



FISH BREEDERS OF IDAHO

Fish Breeders of Idaho
2914 Alta Vista Drive
Twin Falls, Idaho 83301

Started in 1972

Map Location: P-7

Water Source: Wells, Seepage, Irrigation Overflow

Water Discharge: Snake River

Water Flow: 13 CFS (Max.)
6 CFS (Min.)

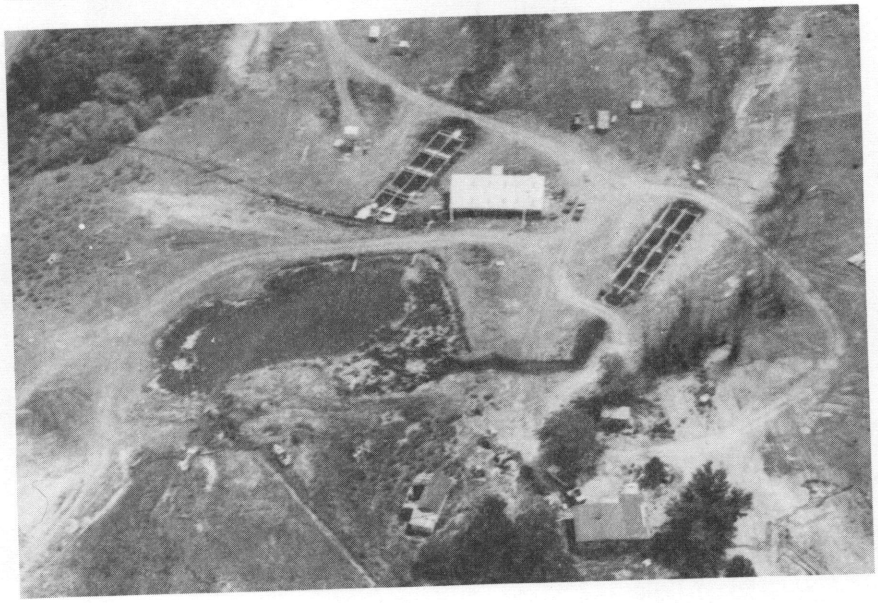
Water Temp.: 60-95°F 29°C

Water Chemistry:

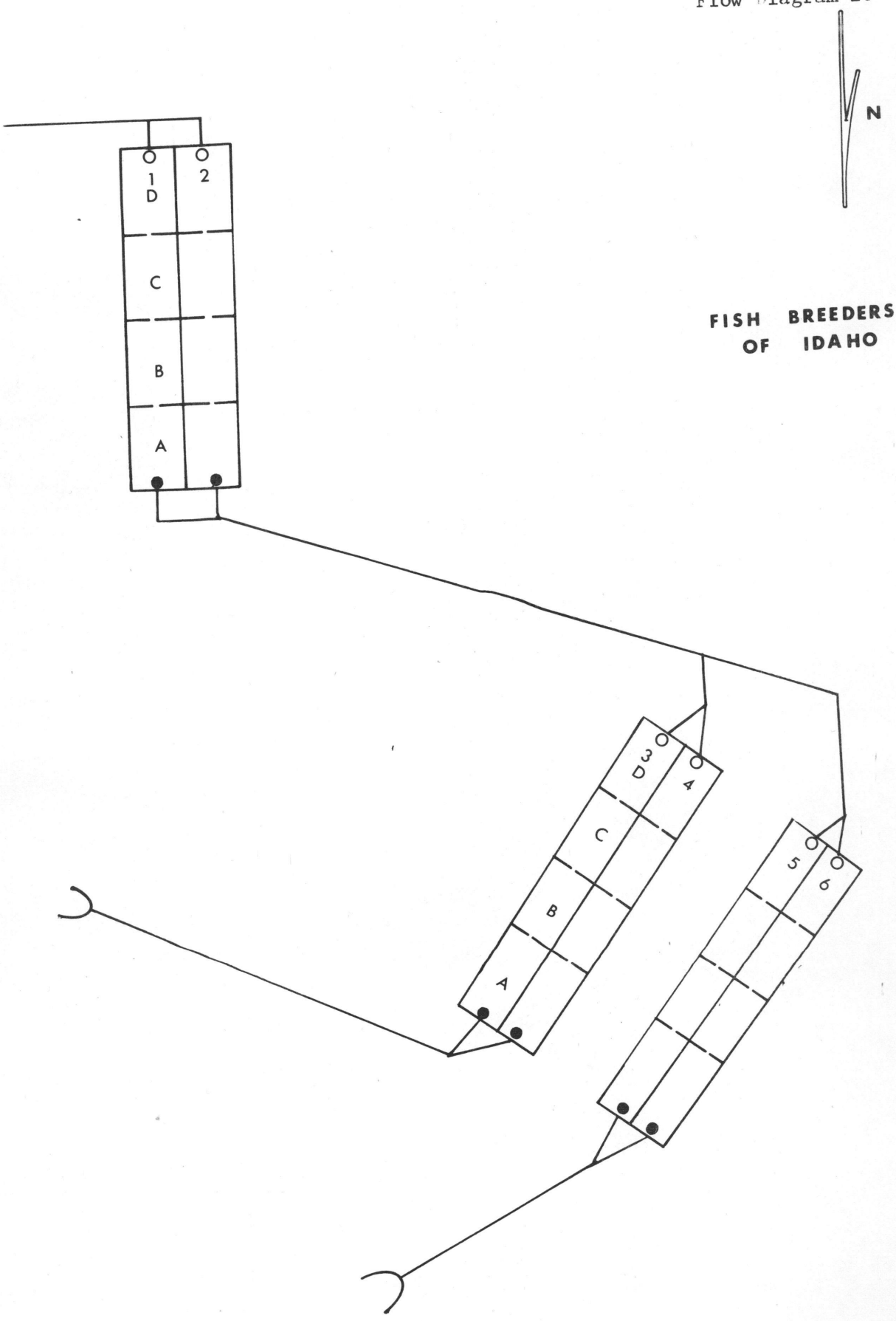
Dissolved Oxygen	6.80-5.60 ppm
Alkalinity	188-205 ppm
pH	8.45-8.50
Conductivity	936-988 µmhos
Nitrate	0.39-0.50 ppm
Phosphate	0.38 ppm
Hardness (Calcium)	86-103 ppm
Hardness (Total)	154-171 ppm
Calcium	16.5 ppm
Sodium	69.25 ppm
Potassium	5.5 ppm
Magnesium	16.5 ppm

Fish Rearing Space: 19,200 cubic feet in 20 ponds

Water Replacement Time: 24.6-53 minutes



Flow Diagram 20



ROYAL CATFISH INDUSTRIES

Royal Catfish Industries
P.O. Box 757
Twin Falls, Idaho 83301

Map Location: S-25

Started in 1929
Out of Business

Water Source: Springs and wells and tailwater from Blue Lakes

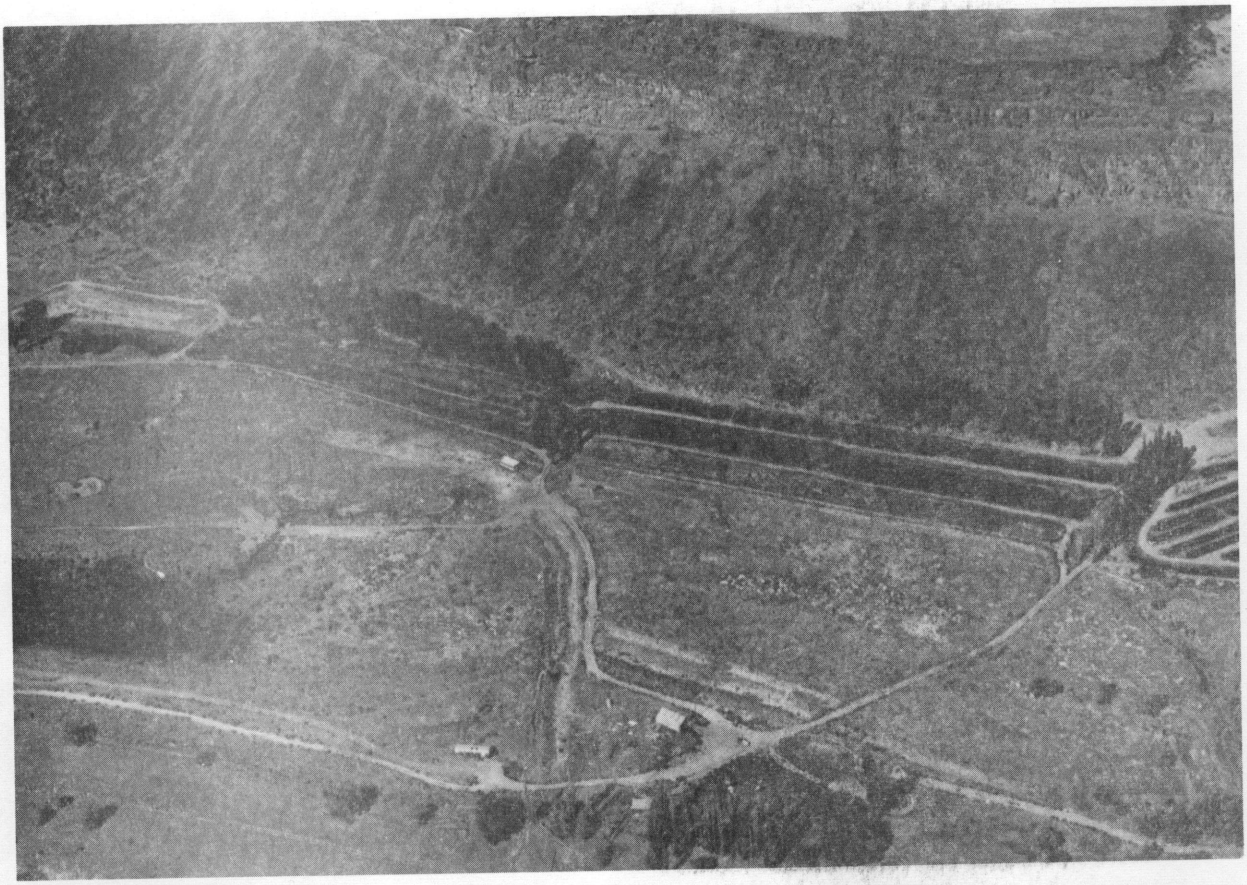
Water Discharge: Snake River

Water Flow: 44 CFS (Max.)
35 CFS (Min.)

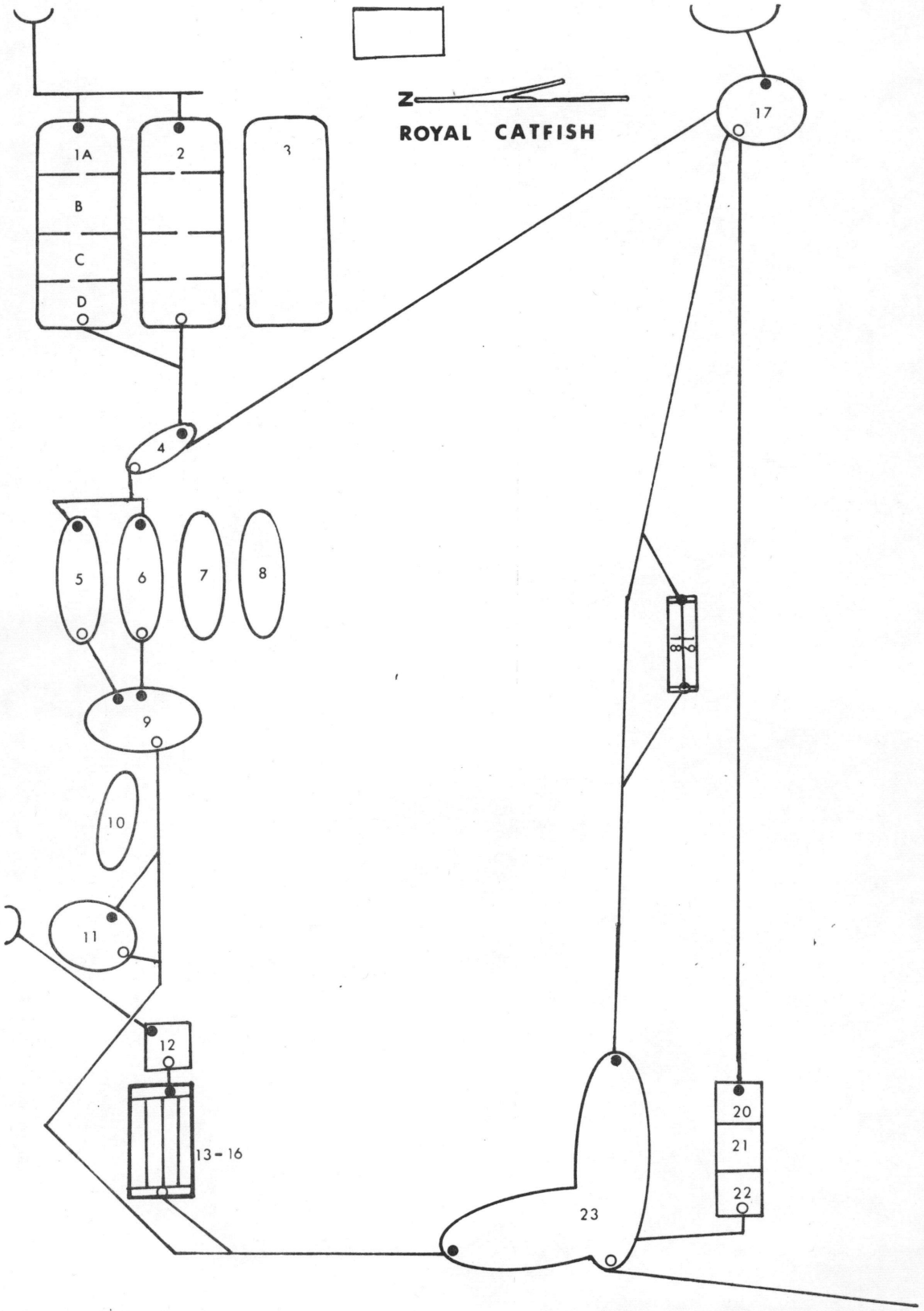
Water Chemistry: Not Sampled

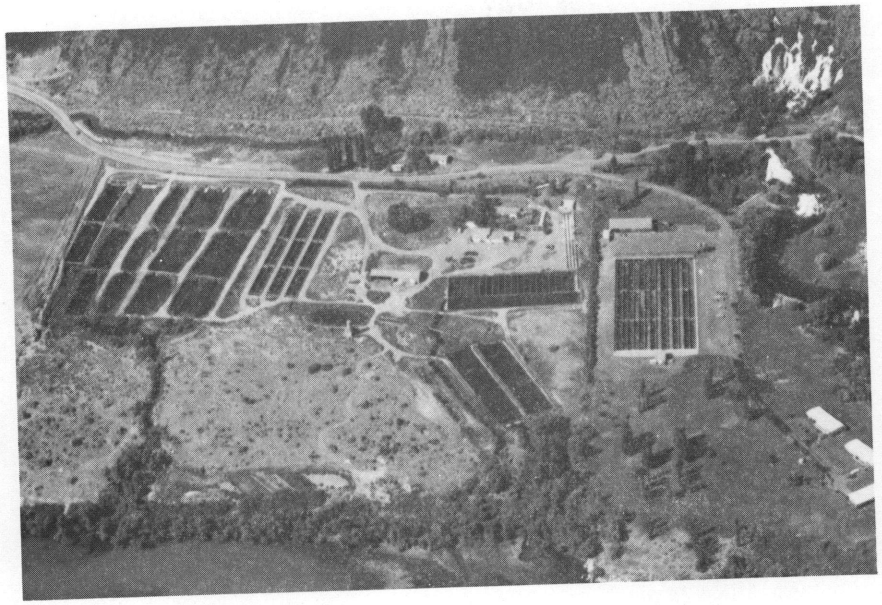
Fish Rearing Space: 434,200 cubic feet in 30 ponds

Water Replacement Time: 164.4-206.6 minutes



Flow Diagram 21





RIMVIEW TROUT FARM

Rimview Trout Co., Inc.
P.O. Box 7503
Boise, Idaho 83705

Started in 1951

Map Location: P-15

Water Source: Niagra Springs

Water Flow: 130 CFS (Max.)
95.3 CFS (Min.)

Water Discharge: Snake River

Water Temp.: 56-58°F 14.1°C

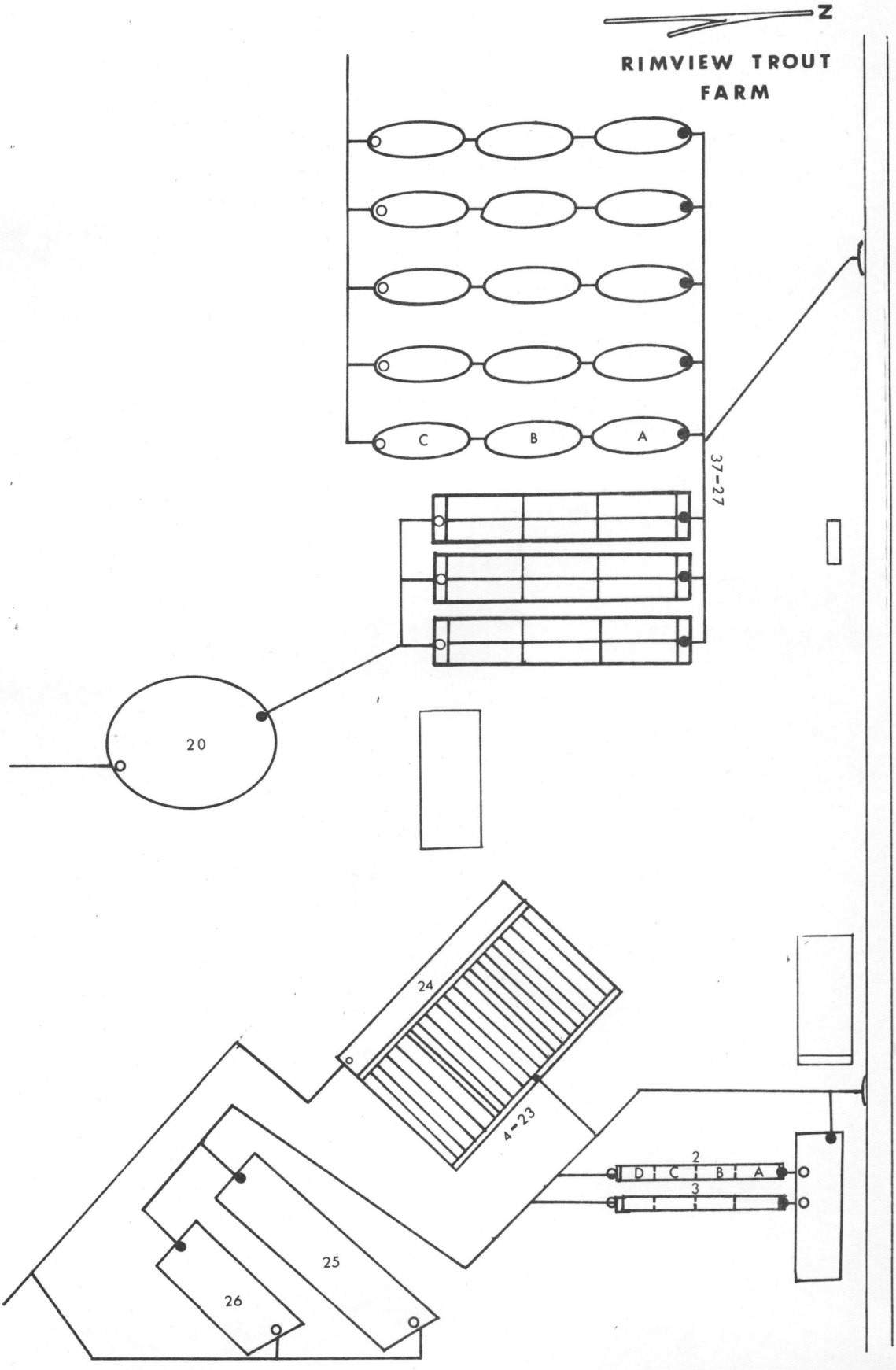
Water Chemistry:

Dissolved Oxygen	9.80 ppm	Alkalinity	-171 ppm
pH	-8.05	Conductivity	-1419 µmhos
Nitrate	-1.09 ppm	Phosphate	0.21 ppm
Hardness (Calcium)	-137 ppm	Hardness (Total)	-222 ppm
Calcium	34 ppm	Sodium	34 ppm
Potassium	7 ppm	Magnesium	26 ppm

Fish Rearing Space: 360,000 cubic feet in 63 ponds

Water Replacement Time: 46.1-62.9 minutes

Flow Diagram 22



CARIBOU TROUT RANCH

Caribou Trout Ranch
P.O. Box 57
Soda Springs, Idaho 83276

Started in 1938

Map Location: Caribou County

Water Source: Springs

Water Flow: 30 CFS (Max.)
22.7 CFS (Min.)

Water Discharge: Fish Hatchery Creek

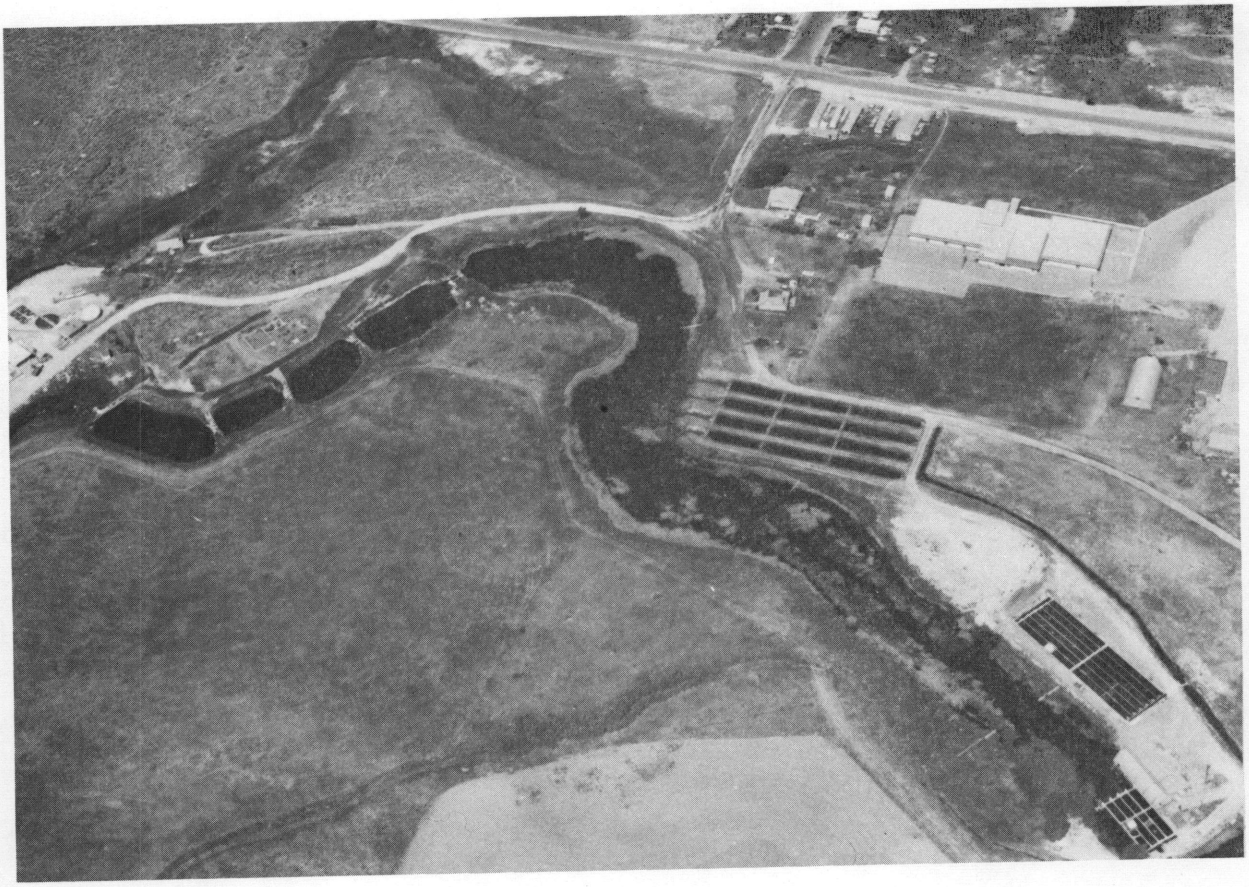
Water Temp.: 47-57°F 9.2°C

Water Chemistry:

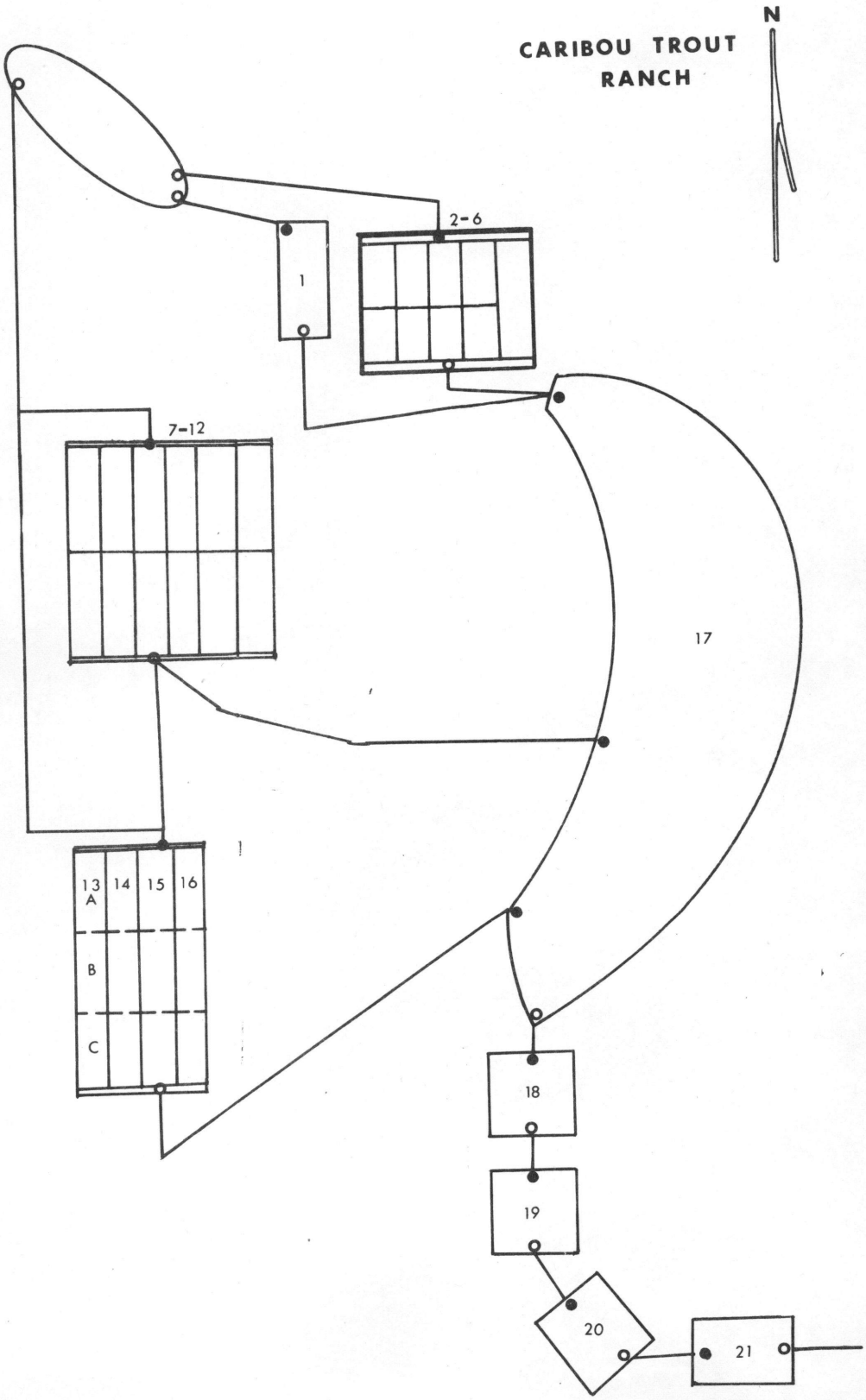
Dissolved Oxygen	-5.20 ppm	Alkalinity	-394 ppm
pH	-7.25	Conductivity	-2024 µmhos
Nitrate	-0.50 ppm	Phosphate	-0.35 ppm
Hardness (Calcium)	-257 ppm	Hardness (Total)	428 ppm
Calcium	102.5 ppm	Sodium	37 ppm
Potassium	4.75 ppm	Magnesium	71 ppm

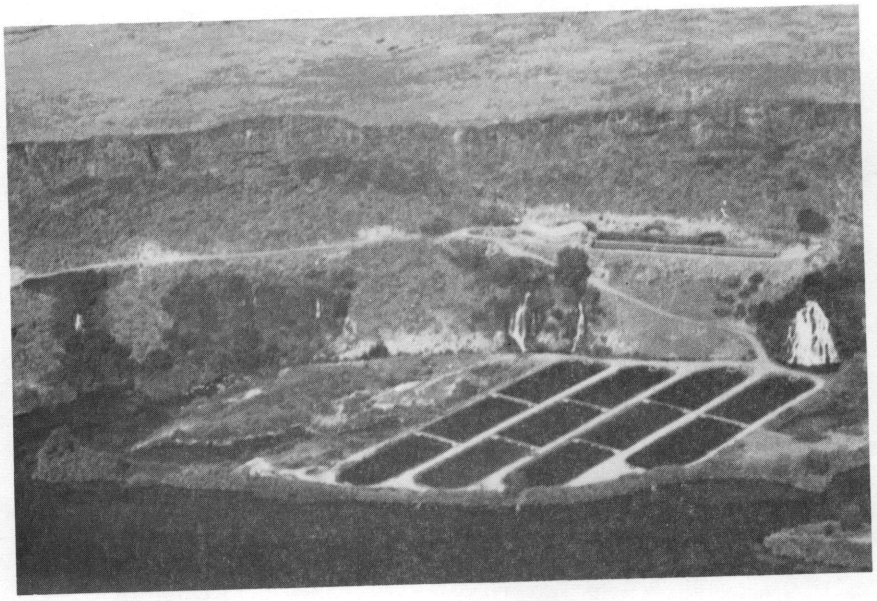
Fish Rearing Space: 1,666,300 cubic feet in 35 ponds

Water Replacement Time: 925.7-1,223 minutes (includes large pond)



Flow Diagram 23





MAGIC SPRINGS TROUT FARM

Magic Springs Trout Farm
P.O. Box 326
Hagerman, Idaho 83332

Started in 1969

Map Location: J-5

Water Source: Magic Springs

Water Flow: 215 CFS (Max.)
200 CFS (Min.)

Water Discharge: Snake River

Water Temp.: 58°F 15.2°C

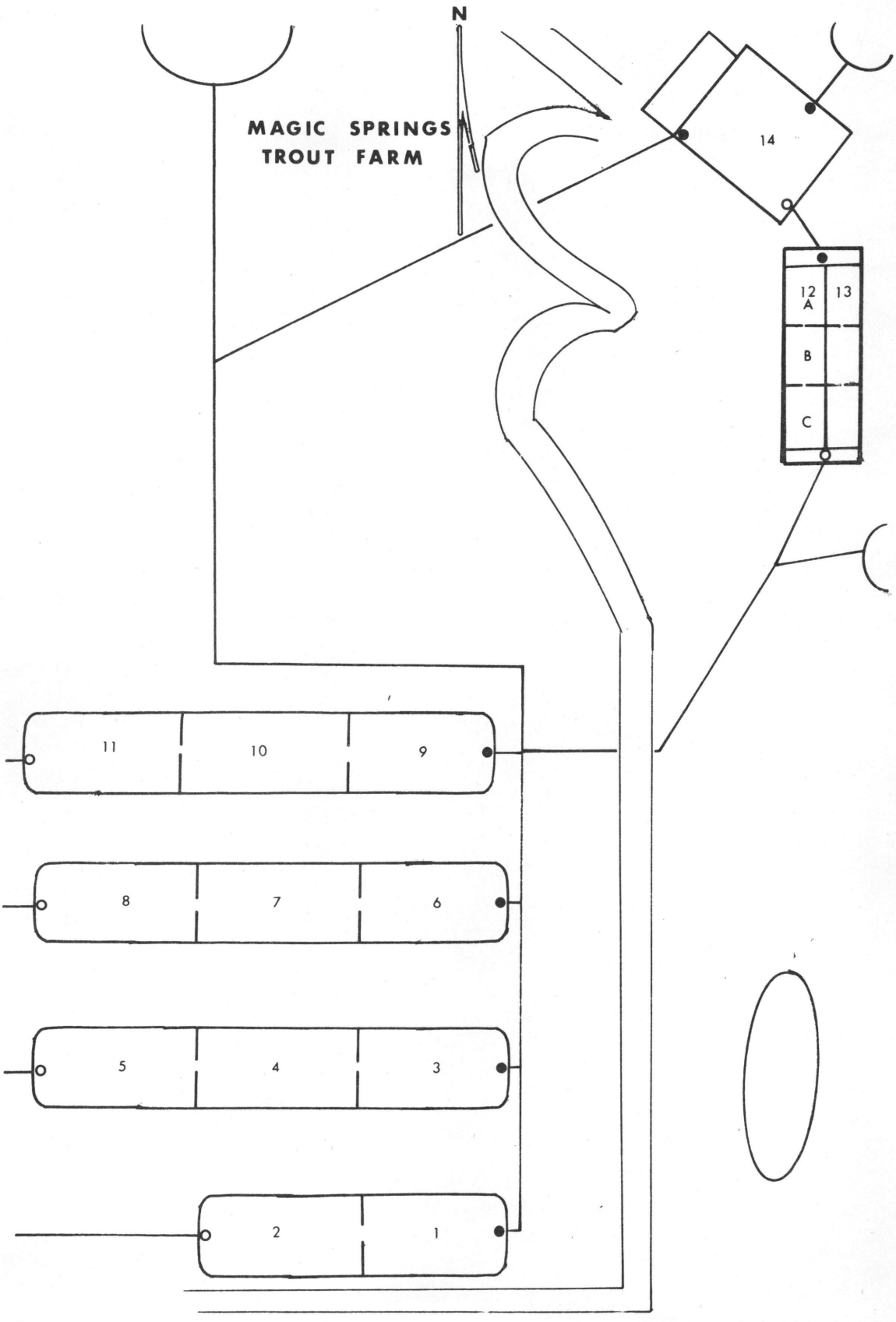
Water Chemistry:

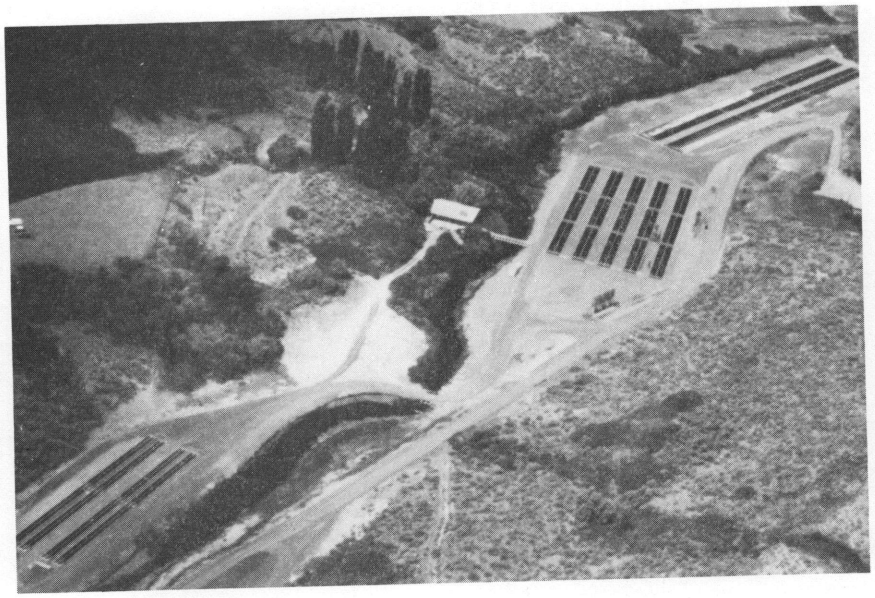
Dissolved Oxygen	8.80 ppm	Alkalinity	120 ppm
pH	8.30	Conductivity	683 µmhos
Nitrate	0.62 ppm	Phosphate	0.14 ppm
Hardness (Calcium)	86 ppm	Hardness (Total)	171 ppm
Calcium	10 ppm	Sodium	27 ppm
Potassium	8 ppm	Magnesium	21 ppm

Fish Rearing Space: 994,800 cubic feet in 17 ponds

Water Replacement Time: 77.1-82.9 minutes

Flow Diagram 24





RANGEN'S TROUT RESEARCH HATCHERY

Rangen's Trout Research Hatchery
Hagerman, Idaho 83332

Started in 1962

Map Location: H-6

Water Source: Curran Tunnel

Water Flow: 50 CFS (Max.)
35 CFS (Min.)

Water Discharge: Billingsley Creek

Water Temp.: 59°F 15.3°C

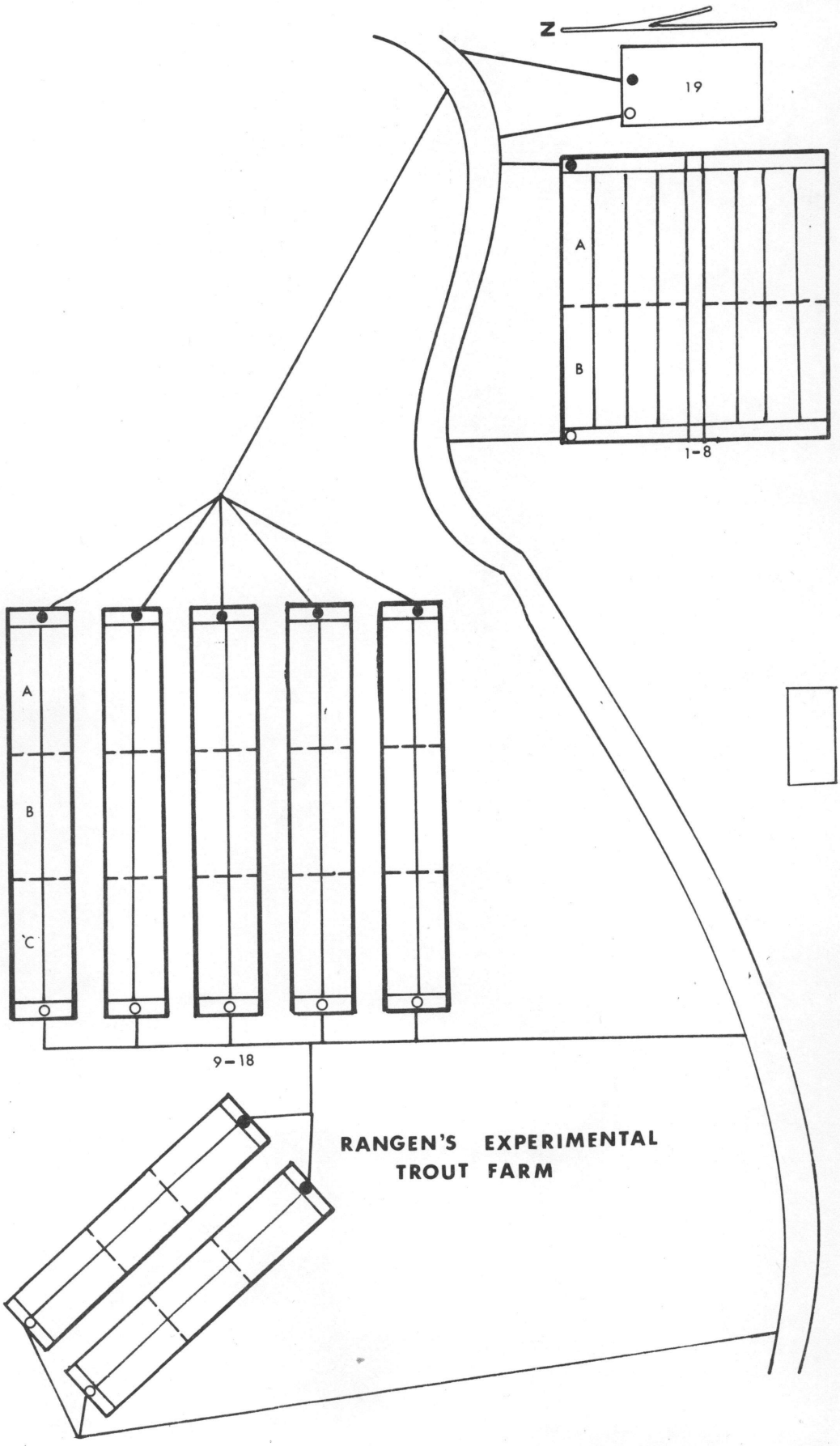
Water Chemistry:

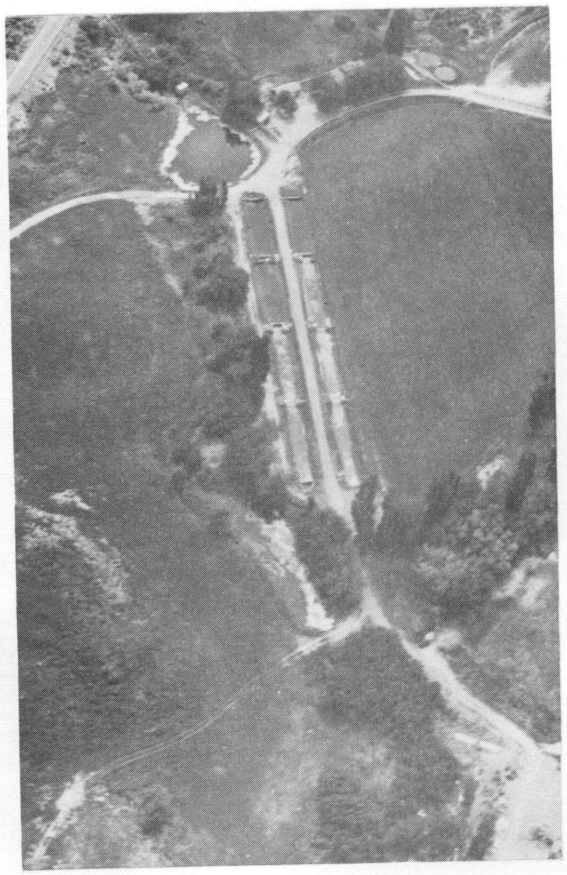
Dissolved Oxygen	9.80 ppm	Alkalinity	154 ppm
pH	8.15	Conductivity	791 µmhos
Nitrate	0.92 ppm	Phosphate	0.08 ppm
Hardness (Calcium)	103 ppm	Hardness (Total)	171 ppm
Calcium	10 ppm	Sodium	22.5 ppm
Potassium	4.5 ppm	Magnesium	19 ppm

Fish Rearing Space: 81,600 cubic feet in 58 ponds

Water Replacement Time: 27.2-38.8 minutes

Flow Diagram 25





WHITEWATER TROUT FARM

Whitewater Trout Farm
Hagerman, Idaho 83332

Started in 1966

Map Location: A-2

Water Source: Springs

Water Flow: 18 CFS (Max.)
8 CFS (Min.)

Water Discharge: Stoddard Creek

Water Temp.: 58°F 15.5°C

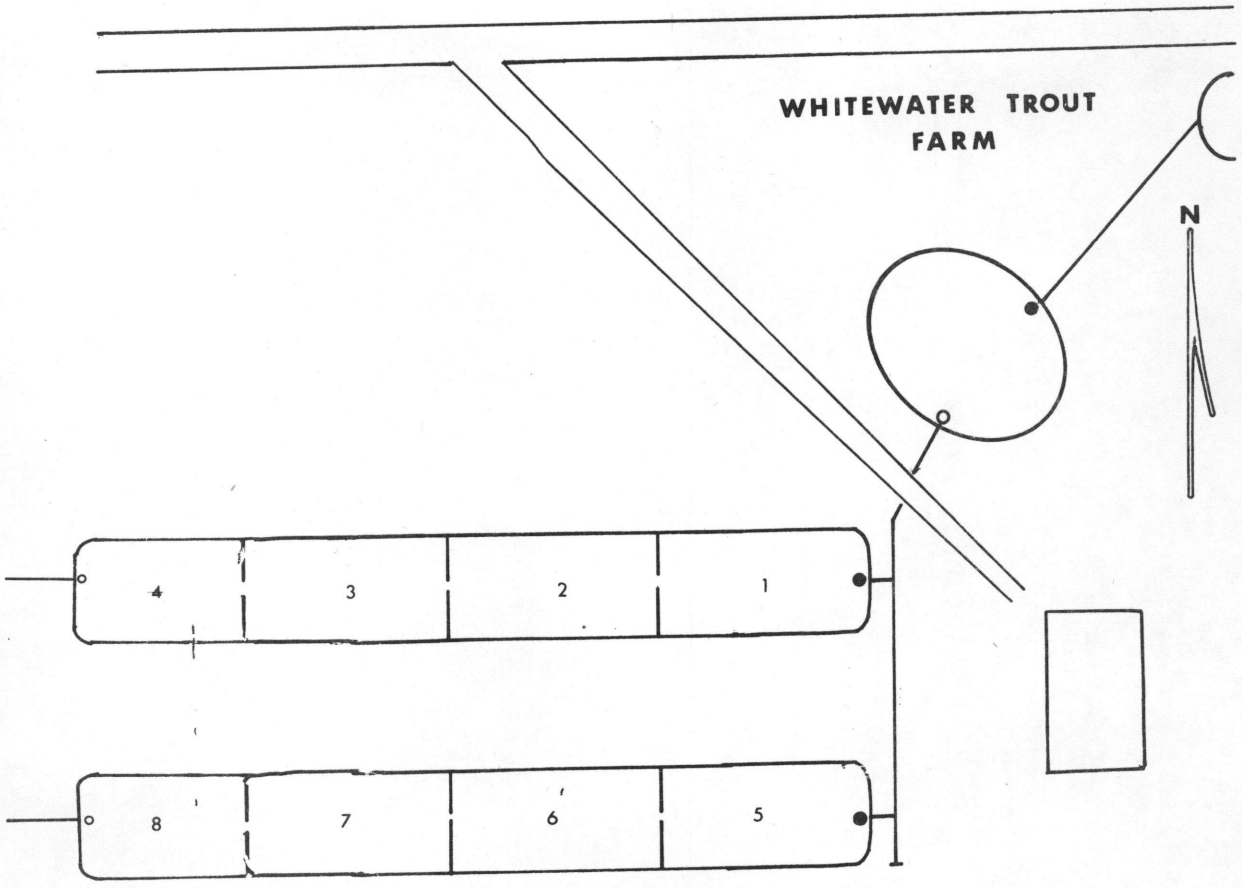
Water Chemistry:

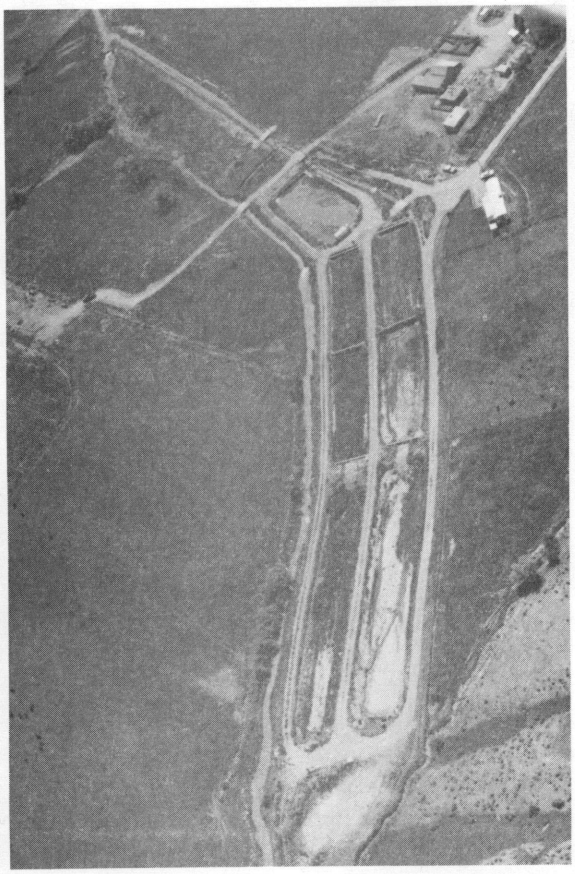
Dissolved oxygen	8.55 ppm	Alkalinity	274 ppm
pH	8.12	Conductivity	1310 µmhos
Nitrate	1.82 ppm	Phosphate	0.32 ppm
Hardness (Calcium)	171 ppm	Hardness (Total)	274 ppm
Calcium	50 ppm	Sodium	64 ppm
Potassium	12 ppm	Magnesium	39 ppm

Fish Rearing Space: 112,000 cubic feet in 8 ponds

Water Replacement Time: 103.7-233.3 minutes

Flow Diagram 26





VALLEY TROUT FARM, #1

Valley Trout Farms, Inc.
Route 2
Buhl, Idaho 83316

Started in 1974 - Not In Operation

Map Location: T-7

Water Source: Irrigation Overflow

Water Flow: 15 CFS (Max.)
15 CFS (Min.) (est.)

Water Discharge: Irrigation Canal

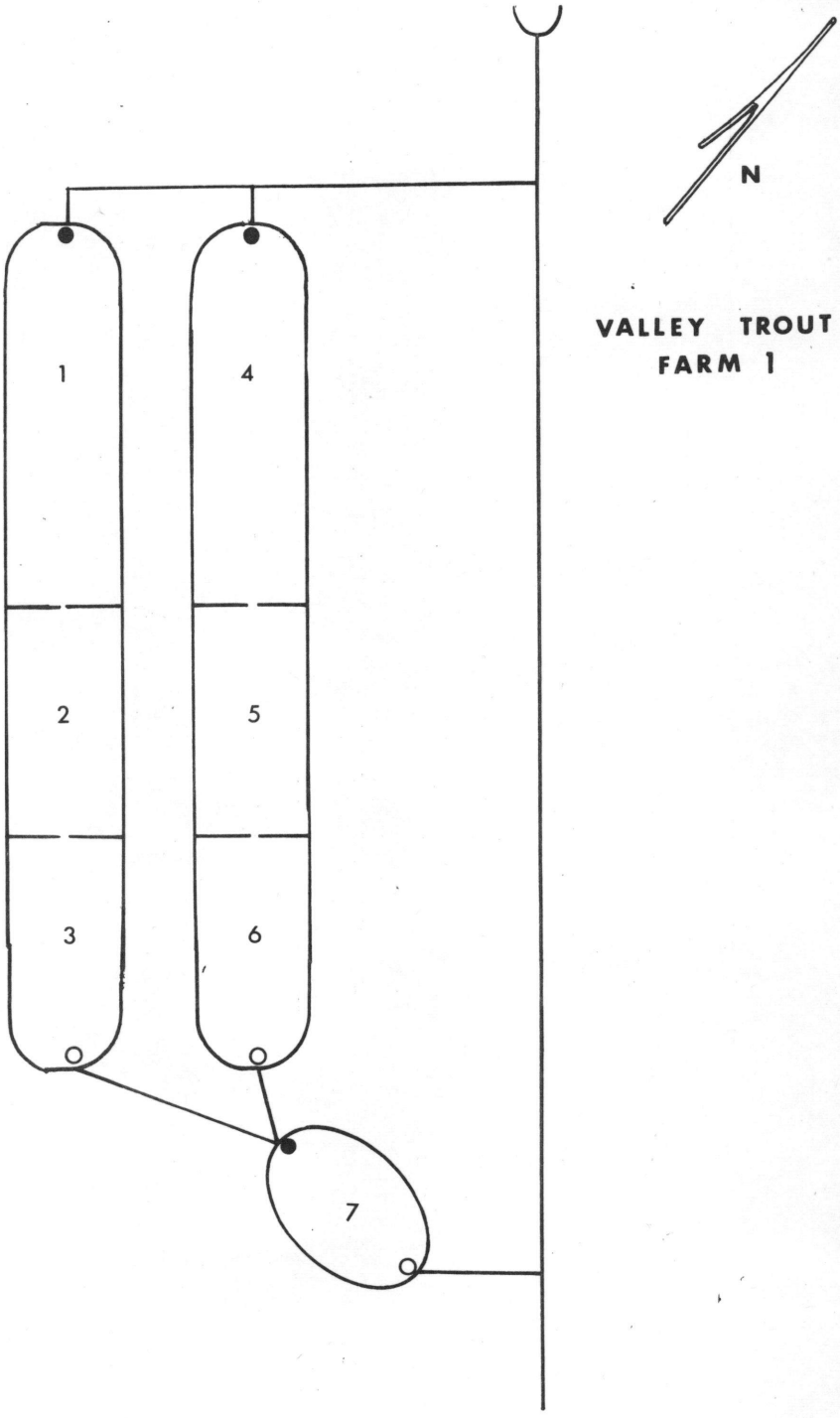
Water Temp.: 46-61°F 15.1°C

Water Chemistry: Not Sampled

Fish Rearing Space: 27,800 cubic feet in 7 ponds

Water Replacement Time: 30.8 minutes (est.)

Flow Diagram 27



VALLEY TROUT
FARM 1

VALLEY TROUT FARM, #2

Valley Trout Farms, Inc.
Route 2
Buhl, Idaho 83316

Started in 1974 - Not In Operation

Map Location: W-7

Water Source: Irrigation Overflow

Water Flow: 25 CFS (Max.)
25 CFS (Min.)

Water Discharge: Irrigation Canal

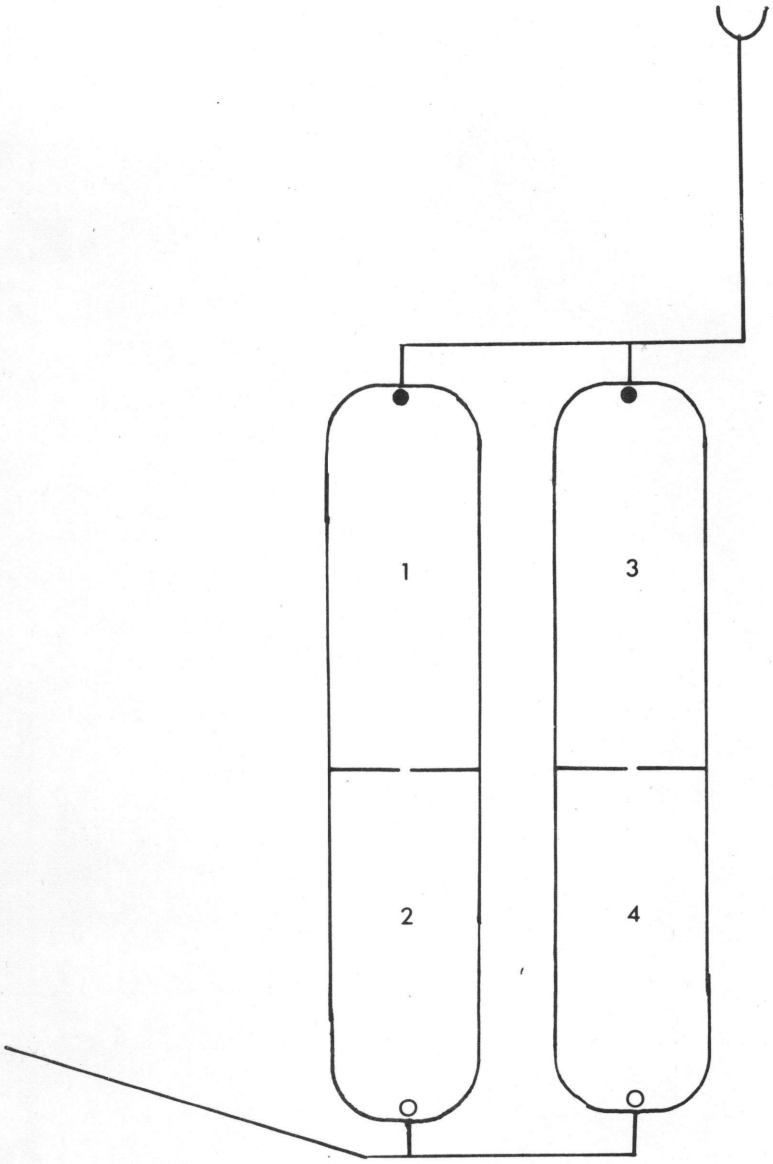
Water Temp.: 52-56°F 15.7°C

Water Chemistry: Not Sampled

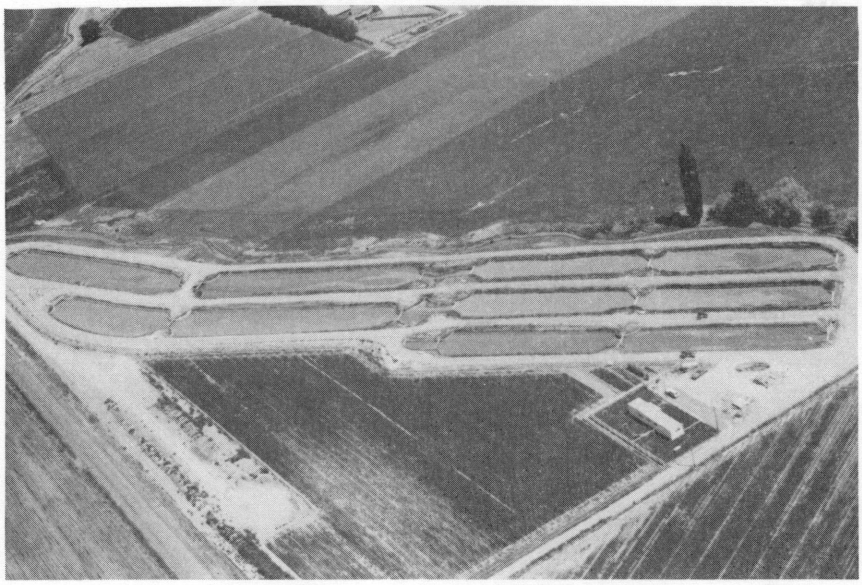
Fish Rearing Space: 300,000 cubic feet in 4 ponds

Water Replacement Time: 200 minutes (est.)

Flow Diagram 28



VALLEY TROUT FARM 2



VALLEY TROUT FARM, #3

Valley Trout Farms, Inc.
Route 2
Buhl, Idaho 83316

Started in 1972

Map Location: U-16

Water Source: Irrigation Overflow

Water Flow: 140 CFS (Max.)
49 CFS (Min.)

Water Discharge: Irrigation Canal

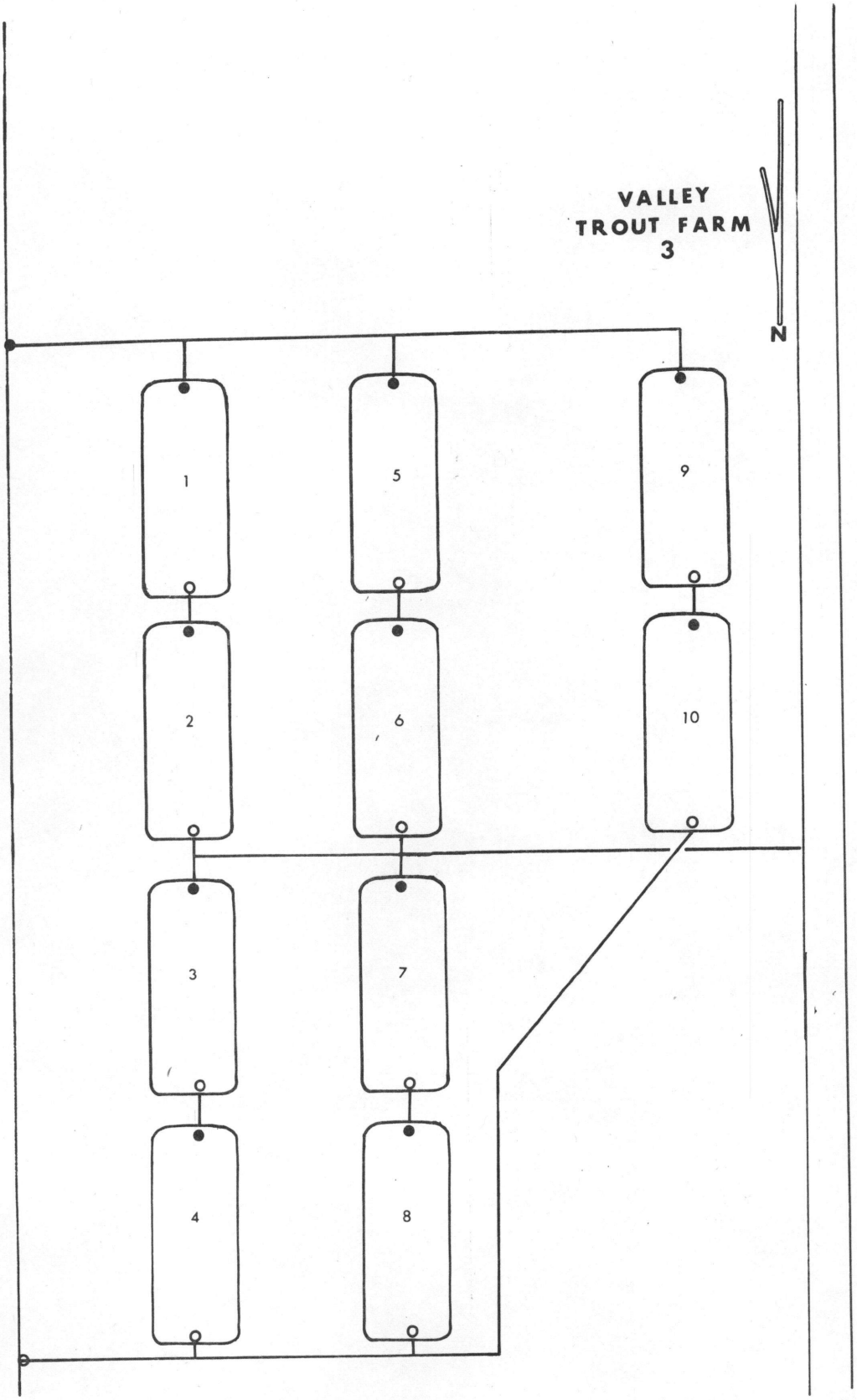
Water Temp.: 49-61°F 17.1°C

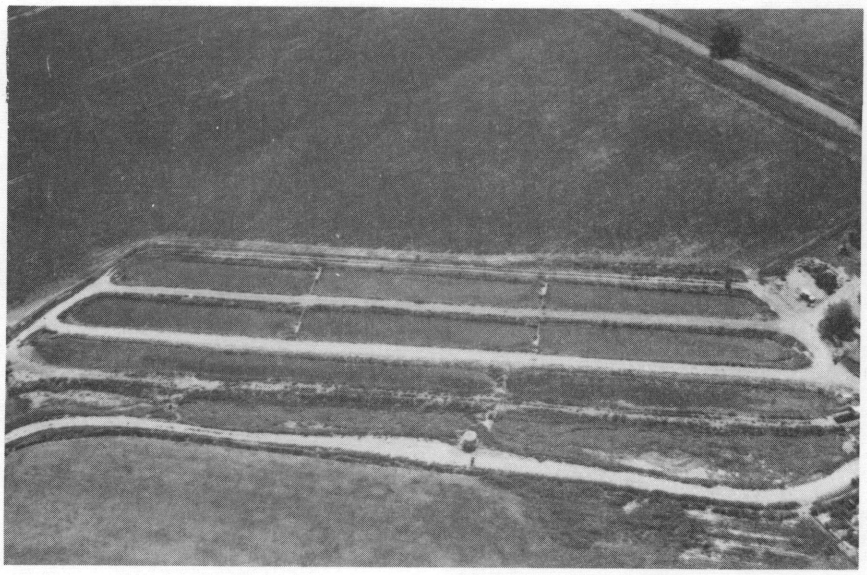
Water Chemistry:

Dissolved Oxygen	8.10 ppm	Alkalinity	240 ppm
pH	8.13	Conductivity	1291 µmhos
Nitrate	1.60 ppm	Phosphate	0.90 ppm
Hardness (Calcium)	120 ppm	Hardness (Total)	274 ppm
Calcium	57 ppm	Sodium	60 ppm
Potassium	7.5 ppm	Magnesium	39 ppm

Fish Rearing Space: 300,000 cubic feet in 10 ponds

Water Replacement Time: 35.7-102 minutes


VALLEY
TROUT FARM
3
N
1
2
3
4
5
6
7
8
9
10



VALLEY TROUT FARM, #4

Valley Trout Farms, Inc.
Route 2
Buhl, Idaho 83316

Started in 1974 - Not In Operation

Map Location: T-13

Water Source: Seep Tunnel

Water Flow: 20 CFS (Max.)
20 CFS (Min.)

Water Discharge: Irrigation Overflow

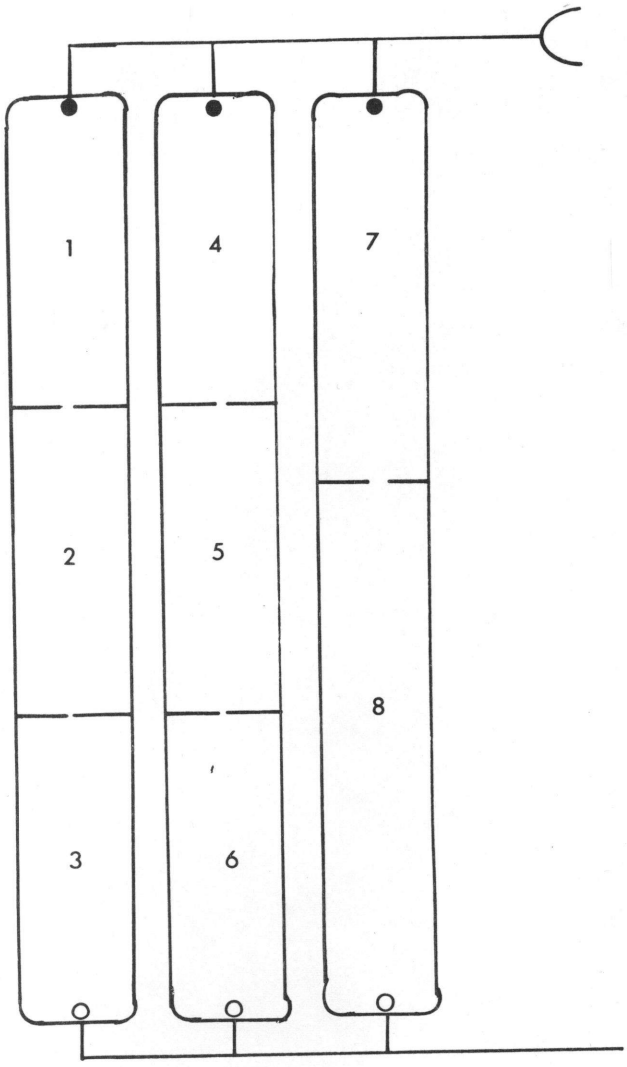
Water Temp.: 52-56°F 15.5°C

Water Chemistry: Not Sampled

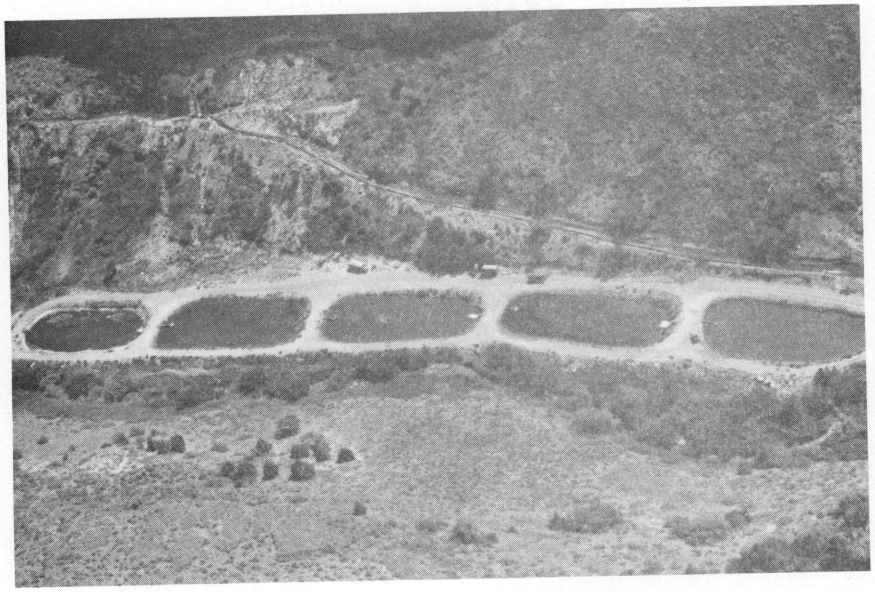
Fish Rearing Space: 288 cubic feet in 8 ponds

Water Replacement Time: 240 minutes

Flow Diagram 30



VALLEY TROUT FARM 4



BLIND CANYON TROUT FARM

Blind Canyon Trout Farm
Route 1
Wendell, Idaho 83331

Started in 1971

Map Location: N-8

Water Source: Blind Canyon Springs

Water Flow: 10 CFS (Max.)
7 CFS (Min.)

Water Discharge: Snake River

Water Temp.: 58°F 14.3°C

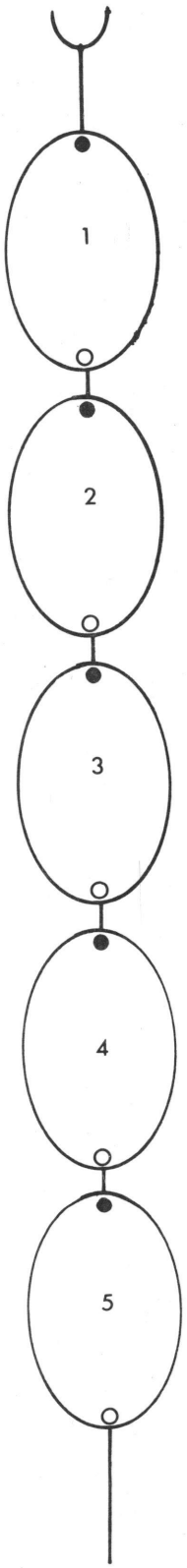
Water Chemistry:

Dissolved Oxygen	9.35 ppm	Alkalinity	154 ppm
pH	7.85	Conductivity	659 µmhos
Nitrate	0.74 ppm	Phosphate	0.18 ppm
Hardness (Calcium)	103 ppm	Hardness (Total)	188 ppm
Calcium	18 ppm	Sodium	30 ppm
Potassium	5.5 ppm	Magnesium	22.5 ppm

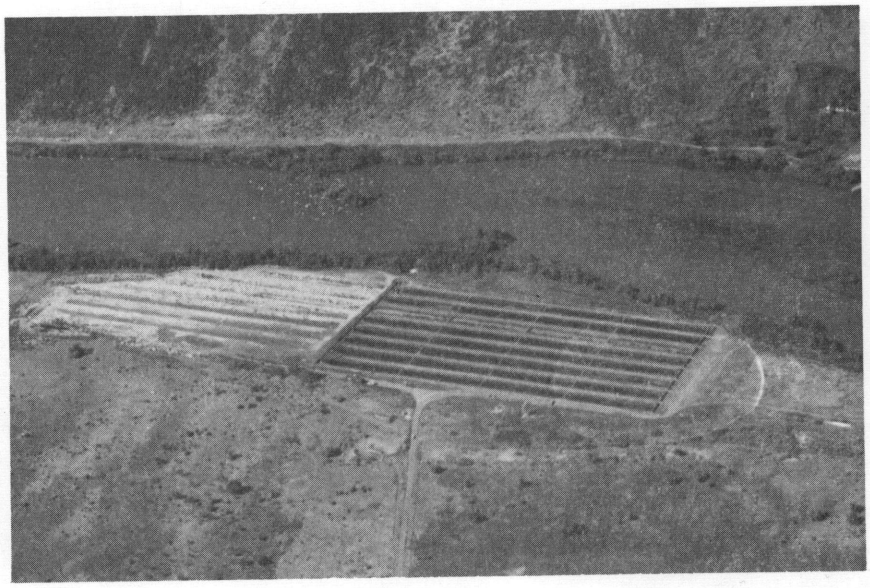
Fish Rearing Space: 90,000 cubic feet in 5 ponds

Water Replacement Time: 150-214 minutes

Flow Diagram 31



BLIND CANYON TROUT FARM



CRYSTAL SPRINGS RANCH, INC.

Crystal Springs Ranch, Inc.
Box 109
Buhl, Idaho 83316

Started in 1973

Map Location: Q-16

Water Source: Crystal Springs

Water Flow: 100 CFS (Max.)
50 CFS (Min.)

Water Discharge: Snake River

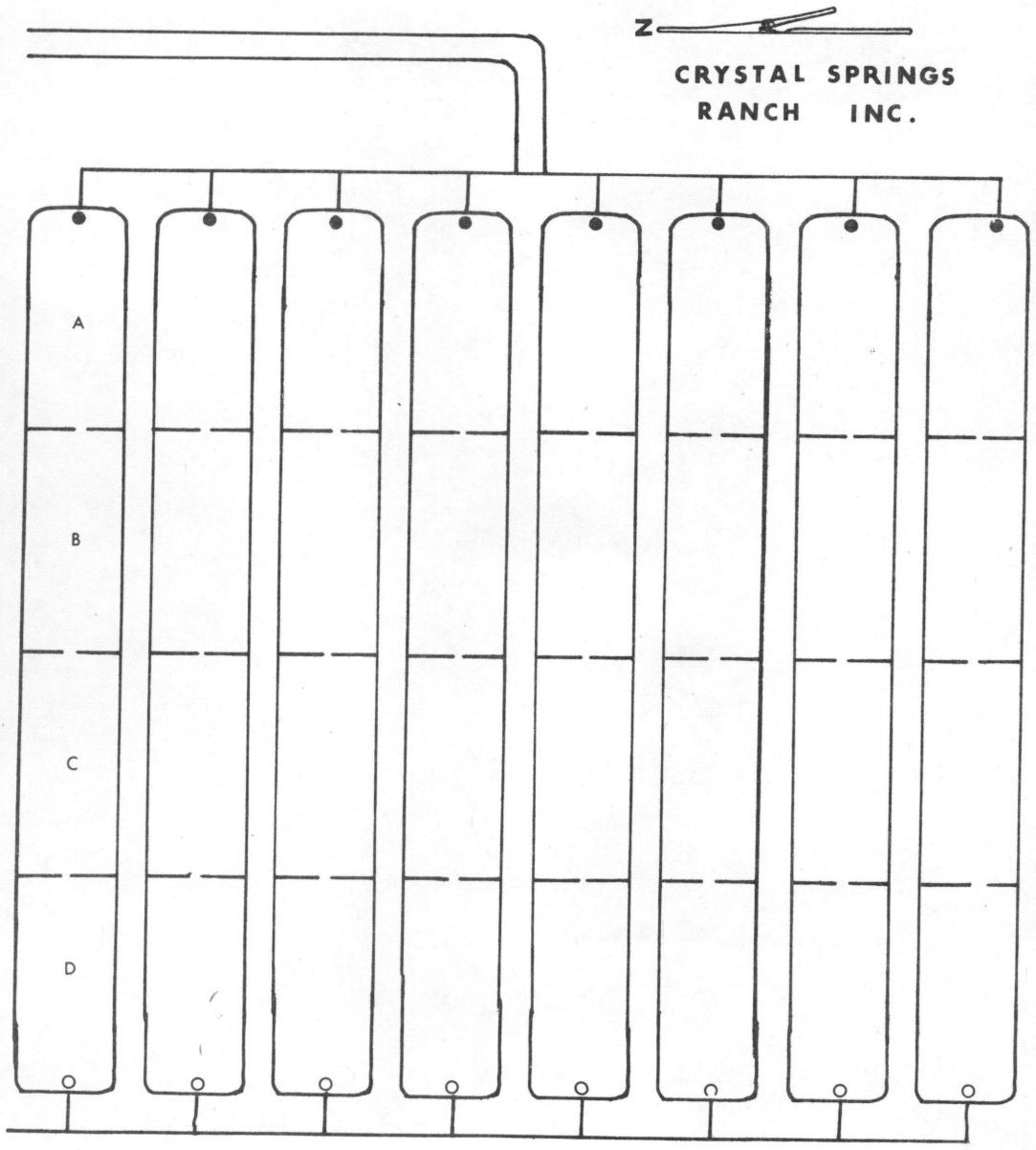
Water Temp.: 59°F 14.5°C

Water Chemistry:

Dissolved Oxygen	11.15 ppm	Alkalinity	188 ppm
pH	8.00	Conductivity	1252 µmhos
Nitrate	1.34 ppm	Phosphate	16 ppm
Hardness (Calcium)	137 ppm	Hardness (Total)	274 ppm
Calcium	35 ppm	Sodium	43 ppm
Potassium	7.3 ppm	Magnesium	31 ppm

Fish Rearing Space: 384,000 cubic feet in 32 ponds

Water Replacement Time: 64-128 minutes


Z
CRYSTAL SPRINGS
RANCH INC.
A
B
C
D

1973 Idaho Aquaculture Survey

File No. _____

Facility Name: _____

Address: _____

Map Locator: _____

County: _____

Phone No: _____ Year Started: _____

Manager: _____ Original? (If not-who?) _____

No. staff: _____ _____

_____

_____

Function:

Brood stock: In-state sales: _____

Out-of-state sales: _____

States: _____

_____

_____

_____

Fingerlings: Source: _____

In-state sales: _____

States: _____

_____

_____

_____

Catchables: Source: _____

In-state dist: _____

Out-of-state dist: _____

States: _____

_____

_____

_____

File No. _____

Processed:

Processor: _____

Source: _____
Processor: _____
Supplier: _____
Packaging: _____
_____
_____
No. employees: _____
PH Insp.: _____

Fish raising units:

	No.	Size	Const.
Raceways			
Ponds			
Vats			
Troughs			
Incubators			

Water supply:

Source _____

Flow _____

Use _____

Temp. (daily av.)

Jan _____		July _____
Feb _____		Aug _____
Mar _____		Sept _____
Apr _____		Oct _____
May _____		Nov _____
June _____		Dec _____

D.O. intake - _____ outfall - _____

NH_3 intake - _____ outfall - _____

NO_2 NO_3 _____ Alkalinity _____

Production:

Species: _____

_____

No. fish on hand: _____

No. fish prod. ann.: _____

 File No. _____

Lbs. fish prod. ann.: Less than 100,000 _____
200,000-500,000 _____
500,000-1,000,000 _____
1,000,000-3,000,000 _____
3,000,000-7,000,000 _____
more than 7,000,000 _____

Nutrition:

Brand: _____ Cost: _____

Storage: _____

Feeding techniques: _____

Management:

Temperature records _____

Feed records _____

Mortality records _____

Inventory frequency _____

Production cost/lb to processor: _____

Feed cost/lb: _____

Labor cost/lb: _____

Utilities cost/lb: _____

Lbs/produced/man year: _____

Loss-of-production potential:

Fry mortality:

3"-6" mortality:

6"-12" mortality:

Additional comments: _____

_____

_____

_____

_____

_____

_____

_____

_____

 File No. _____

Disease History

Most serious problems: (disease, age of fish, % mortality, treatment, time of year)

Viral: _____

_____

_____

_____

Bacterial: _____

_____

_____

_____

_____

_____

Parasitic: _____

_____

_____

_____

_____

Environmental: _____

_____

_____

_____

Nuisance problems: _____

_____

_____

_____

_____

Certification: _____ Dates: _____

Comments: _____ Biologists: _____

_____

_____

_____

_____

_____

File No. _____

Fish Examined: Date: _____ Number: _____ Age: __

External: _____

_____

Internal: _____

_____

Gram stain: _____

_____

Additional comments: _____

 File No. _____

Have the following diseases ever occurred in this facility? If so, when? approx. mortality, age of fish, treatment (drug, dosage, efficacy)?

Bacterial Gill Disease _____

Ceratomyxa _____

Channel Catfish Virus Disease _____

Columnaris Disease _____

Furunculosis _____

Henneguya _____

Ichthyophonus _____

IHN _____

IPN _____

Bacterial Kidney Disease _____

Redmouth - Aeromonad _____

- Hagerman _____

Sore Back _____

Strawberry Disease _____

 File No. _____

What are your opinions on:

Federal Fish Disease Legislation?

What diseases do you think ought to be checked for fish and/or eggs entering Idaho?

The formation of a state commission for food fish farmers in Idaho?

1974 Idaho Aquaculture Survey

Date: _____ File No. _____

Name of Facility: _____

Address: _____

_____ Year Started: _____

Owner: _____

Number of Employees: (FT) _____ (PT) _____

Water Source:

Flow: (permit) _____ Max.: _____ Min.: _____

Temperature:

Jan	_____	July	_____
Feb	_____	Aug	_____
Mar	_____	Sept	_____
Apr	_____	Oct	_____
May	_____	Nov	_____
June	_____	Dec	_____

Dissolved Oxygen: _____ Alkalinity: _____

Suspended Solids: _____ Conductivity: _____

pH: _____ Total Organics: _____

CO_2: _____ NO_3: _____

Total Hardness: _____

Water Discharge Site:

Fish Raised:

Species: _____ % _____

_____ % _____

_____ % _____

_____ % _____

On Hand:

Eggs _____

1"-3" _____

3"-6" _____

6"-9" _____

9"-12" _____

12" _____

*How are loadings determined: _____

_____

1973 Production _____

1974 Production (estimated) _____

*If the 1973 and the 1974 production figures are quite different, what is this due to? (circle one)

1) Increase/decrease in pond numbers

2) Increase/decrease in pond loadings

3) Increase/decrease in work force

4) Reorganization/no change in managerial personnel

1973 cost of production: _____¢/lb

Comments: _____

_____

_____

_____

_____

_____

_____

_____

_____

Feed:

Brand(s): _____

_____

Storage: _____

Annual Consumption: _____

Conversion: _____

1"-3" _____

3"-6" _____

6"-9" _____

9"-12" _____

12" _____

Method of Feeding: _____

Average Mortalities (1973):

Egg _____

1"-3" _____

3"-6" _____

6"-9" _____

9"-12" _____

12" _____

Infectious disease/noninfectious disease ratio: _____

Management Procedures:

Incubation method(s): _____

Annual number of eggs (1973): _____

Grading:

Method: _____

Frequency: _____

Records:

Feed (daily): _____ Growth: _____

Mortalities (daily by pond): _____ (daily by lot): _____

*Cause determined?

Pond Loadings: _____

Future Plans:

1980 - Fish _____

Ponds _____

Water _____

Nutrition _____

Management _____

1990 - Fish _____

Ponds _____

Water _____

Nutrition _____

Management _____

2000 - Fish _____

Ponds _____

Water _____

Nutrition _____

Management _____