WEST BIG HOLE MOUNTAIN LAKE SURVEY, 1981

For

U.S. Dept. of Agriculture
Beaverhead National Forest
Dillon, Montana 59725

By

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BACKGROUND

The West Big Hole Planning Unit contains at least twenty-five high mountain lakes with existing or potential recreational salmonid fisheries. These lake fisheries are an important part of the recreational opportunities available in the West Big Hole Unit. Planting records of the Montana Dept. of Fish, Wildlife and Parks indicate that some lakes in the West Big Hole were planted with trout as early as 1938. Rainbow or cutthroat trout have been planted in many of these lakes from 1938-1981. Brook trout may also have been planted although there are no records supporting this.

Naturally reproducing populations of rainbow, brook and cutthroat trout have been established in several lakes while others require planting to maintain viable populations. In general, cutthroat trout require inlet spawning streams to reproduce successfully while rainbow and brook trout appear to spawn successfully along lake shores or in outlet streams.

Since 1976, the Montana Dept. of Fish, Wildlife and Parks has used the McBride cutthroat trout in high mountain lake management east of the Continental Divide. The McBride fish is from McBride Lake in Yellowstone National Park and appears well adapted to life in alpine lake environments. They appear to grow faster than rainbow trout in alpine lakes and spawn successfully where inlet streams with appropriate gradient and gravel are present. Food habits and growth studies in the lakes of the Beartooth Plateau suggest that McBride cutthroat efficiently utilize the food base of high alpine lakes which consist mostly of zooplankters and the aquatic insect family chironomidae.

Previous survey work by the Montana Dept. of Fish, Wildlife and Parks in 1973 identified species present, spawning potential and presence of inlet or outlet streams in fifteen mountain lakes of the West Big Hole. Water samples were also collected in 1973 and chemical analysis performed by the Montana Dept. of Health and Environmental Sciences.

While there is a certain amount of information available on these lake fisheries, there are currently no management objectives established for the mountain lakes of the West Big Hole. This lack of specific management objectives is even more important in the West Big Hole since the majority of the lakes lie within a proposed wilderness area.

PURPOSE

The purpose of this mountain lake survey is to gather information necessary to formulate management objectives for the majority of the lakes in the West Big Hole.

STUDY AREA

The West Big Hole Unit lies in extreme southwest Montana on the east side of the Bitterroot Mountain Range. The east side of the Bitterroot Range

drains into the Big Hole River, while the west side drains into the Salmon River. This planning unit contains 538,428 acres of National Forest Land. Land uses in this unit include grazing, timber harvest, mineral exploration, mining and recreation.

There are at least twenty-five mountain lakes and numerous streams which support recreational fisheries in the West Big Hole Unit. Game fish species present include cutthroat trout, arctic grayling, rainbow trout and brook trout.

METHODS

Seventeen lakes were surveyed using a Bell 4763B helicopter equipped with inflatable pontoons and depth sounder in 1981. Fifteen lakes were also sampled in 1973.

Fish were sampled with overnight sets of one 125'x6' experimental mesh monofilament gill net. Fish were measured to the nearest 0.1", weighed to the nearest 0.01 pound and scale samples taken from the left side of each fish above the lateral line. Scale impressions were made on slides of clear cellulose acetate. Sampled fish were aged using the scale method when possible.

Lake depths were determined using a Lowrance Depth Sounder mounted on the helicopter.

RESULTS

Water Quality

Selected water quality parameters for mountain lakes sampled in 1973 are given in Table 1. All of the lakes sampled are oligotrophic, calcium bircarbonate waters. Total alkalinity, which may be used as a rough measure of productivity, ranged from 2.0 in Timberline Lake to 17.0 in Upper (North) Rock Island Lake. Calcium was the dominant anion in all the lakes sampled and bicarbonate (HCO_3) the dominant cation. Sulphate (SO_4) was found in relatively high concentrations in Upper and Lower Rock Island, and Upper Miner Lakes.

FISH POPULATIONS

A summary of gill netting data collected during 1970, 1973 and 1981 is presented in Table 2. Data collected and management suggestions will be discussed for each lake individually.

Table 1. Selected water quality parameters for West Big Hole mountain lakes (data taken from Water Quality Bureau, 1973).

Lake	Conductivity (micro-mhos/cm^2	Total Alkalinity ($CaCO_3$)	pH	Major Anions/Cations (Mg/L)						
				Ca	Mg	Na	HCO_3	CO_3	CL	SO_4
Ajax	14.0	7.0	8.4	2.8	0.0	0.3	8.0	0.0	0.1	0.4
Berry	8.0	5.0	7.4	1.2	0.2	0.2	6.0	0.0	0.3	0.0
Hamby	11.0	8.0	8.5	1.6	0.2	0.3	10.0	0.0	0.1	0.0
Jahnke	15.0	9.0	8.5	1.8	0.7	0.4	11.0	0.0	0.3	0.0
Geneva	11.0	7.0	8.1	1.8	0.1	0.2	8.0	0.0	0.4	0.0
Lower Lena	21.0	10.0	8.3	3.2	0.0	0.5	12.0	0.0	0.3	0.8
Lower Little	20.0	10.0	8.4	4.6	0.0	0.2	12.0	0.0	0.3	0.8
Lower Ridge	9.0	5.0	8.2	1.2	0.1	0.3	6.0	0.0	1.0	0.0
Lower Rock Island	33.0	16.0	8.5	6.4	0.0	0.4	19.0	0.0	0.2	2.1
Lower Slag-a-Melt	23.0	10.0	8.5	3.8	0.0	0.6	12.0	0.0	0.2	0.4
Timberline	6.0	2.0	8.6	0.6	0.1	0.1	3.0	0.0	0.7	0.0
Upper Miner	18.0	8.0	8.4	2.2	1.6	0.5	10.0	0.0	0.3	2.1
Upper-Upper Miner	12.0	6.0	8.3	1.4	0.1	0.3	7.0	0.0	0.2	0.0
Upper Rock Island	36.0	17.0	8.7	7.4	0.0	0.4	20.0	0.0	0.3	2.9
Upper Slag-a-Melt	24.0	10.0	8.2	3.4	0.0	0.5	12.0	0.0	0.1	0.0

Table 2. Gill netting data from West Big Hole mountain lakes - 1970, 1973 and 1981.

Lake	Year	No. Nets	Species Caught[1]	No. Caught	Size Range	Mean Length	Lake Elevation	Max. Depth	Spawning Potential[2]	Planted since 1976
Ajax	1970	1	Rb	9	9.8-13.4	11.4	8522	93	Limited, shore and outlet	No
	1973	1	Rb	6	7.3-14.6	11.5				
Berry	1973	1	Ct	6	6.4-14.1	9.7	8700	32	Shore only	Yes - 1976, 1979
	1981	1	Ct	64	6.3-12.1	9.7				
Hamby	1973	1	Eb	17	6.6-12.9	9.8	8092	33	Good, inlet stream	No
			Ct	3	8.8-12.1	10.8				
			Rbxct	2	12.3-13.1	12.7				
			Gr	3	11.2-15.2	13.5				
	1981	1	Eb	28	6.7-12.3	9.0				
			Ct	9	8.0-12.2	10.5				
			Rbxct	1	11.8	11.8				
Hidden	1981	1	Ct	15	6.4-12.0	9.2	8092	23	Limited, inlet, outlet	No
Geneva	1973	1	Ct	3	9.5-11.9	10.3	8500	47	Fair, inlet	No
	1981	1	Ct	10	10.8-15.1	12.5				
Jahnke	1973	1	Ct	9	8.5-12.9	10.6	8650	16	Good, outlet, inlet	No
	1981	1	Ct	23	6.3-14.3	9.3				
Little Joe	1981	1	None	--	--	--	8482	7		
Lower Lena	1973	1	Rb	22	6.2-13.9	9.2	8345	29	Marginal, shore, inlet & outlet	No
	1981	1	Rb	33	6.0-14.1	9.1				
Lower Little	1973	1	None	--	--	--	8750	29	Fair, inlet & outlet	Yes - 1979
	1981	1	Ct	28	8.4-12.9	11.6				

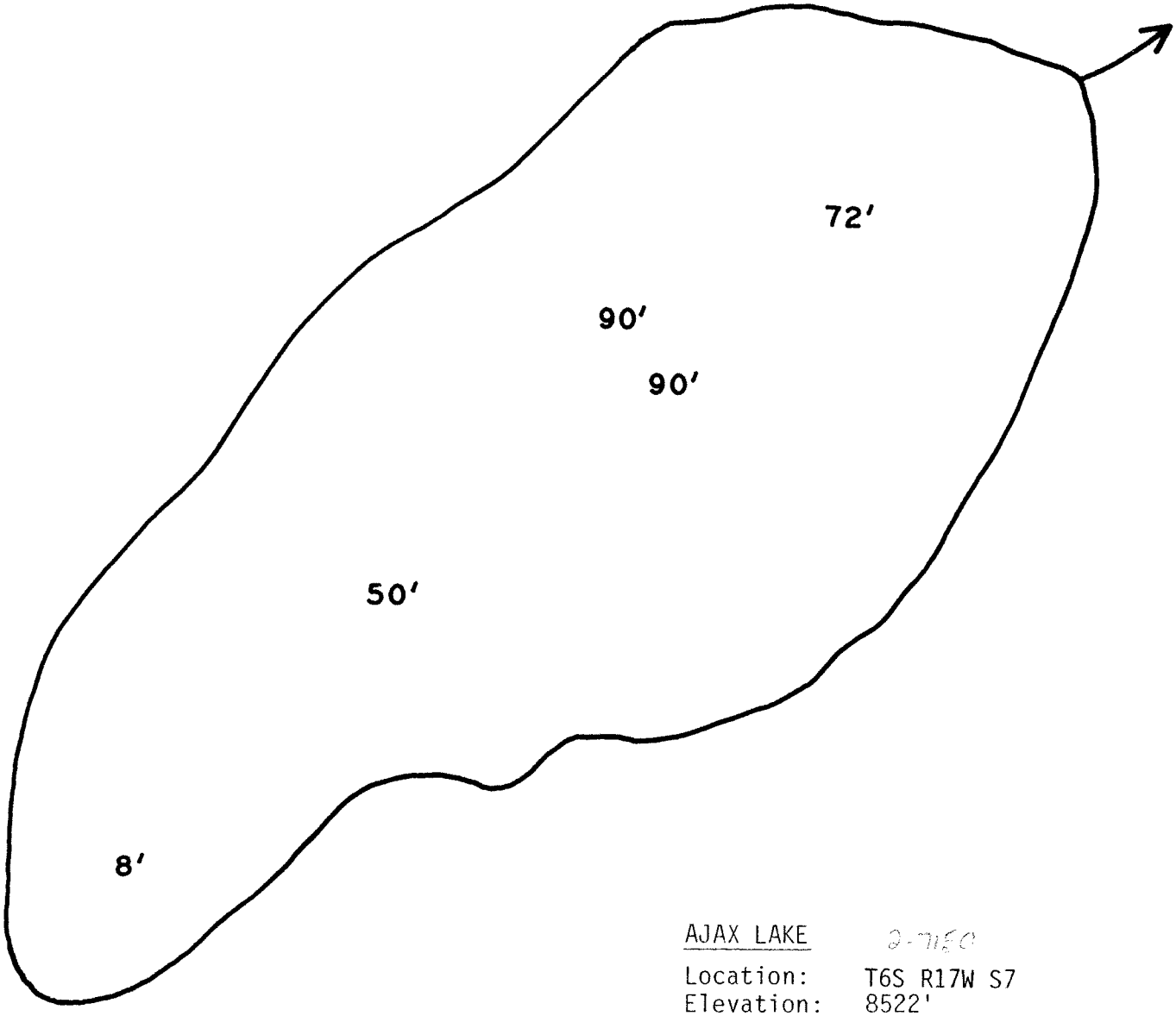
(continued)

Table 2. Continued.

Lake	Year	No. Nets	Species Caught[1]	No. Caught	Size Range	Mean Length	Lake Elevation	Max. Depth	Spawning Potential[2]	Planted since 1976
Lower Ridge	1973	1	Ct	2	11.4-14.5	13.0	8450	32	Fair, inlet & outlet	Yes - 1979
	1981	1	Ct	14	6.5-16.1	10.3				
Lower Rock Island	1973	1	Rb	20	6.0-12.7	9.1	8350	19	Good, inlet & outlet	No
Lower Slag-a-Melt	1973	1	Eb	34	5.1- 9.0	7.8	8575	17	Shore, outlet	Yes
	1981	Net Stolen								
Pioneer	1981	1	Ct	1	13.5	13.5	8760	13	Marginal	No
Skytop	1981	1	None	--	--	--	9370	37	None	No
Timberline	1973		None	--	--	--	9100	26	None	Yes
	1981	1	Ct	54	6.0-15.8	11.3				
Upper Miner	1973	1	Eb	11	6.4-15.5	11.5	8050	60	Outlet & shore	No
	1981	1	Eb	18	6.5-14.0	10.1				
Upper-Upper Miner	1973	1	Rb	10	6.1-13.9	10.2	8725	99	Shore, outlet	No
	1981	1	Rb	9	8.2-13.3	10.4				
Upper Rock Island	1973	1	Rb	1	11.8	11.8	8350	8	Outlet	No
Upper Slag-a-Melt	1973		None	--	--		8720	75	Marginal, outlet	Yes
	1981	1	Ct	18	8.9-15.6	12.6				

[1] Species abbreviations: Ct = cutthroat trout; Eb = brook trout; Rb = rainbow trout; RbxCt = rainbow x cutthroat hybrids; Gr = arctic grayling

[2] Relative terms based on the fish population and judgement of the investigator.



AJAX LAKE 2-7150

Location:	T6S R17W S7
Elevation:	8522'
Area:	20 acres
Max. Depth:	93'
Drainage:	Big Swamp Creek

AJAX LAKE

Planting History

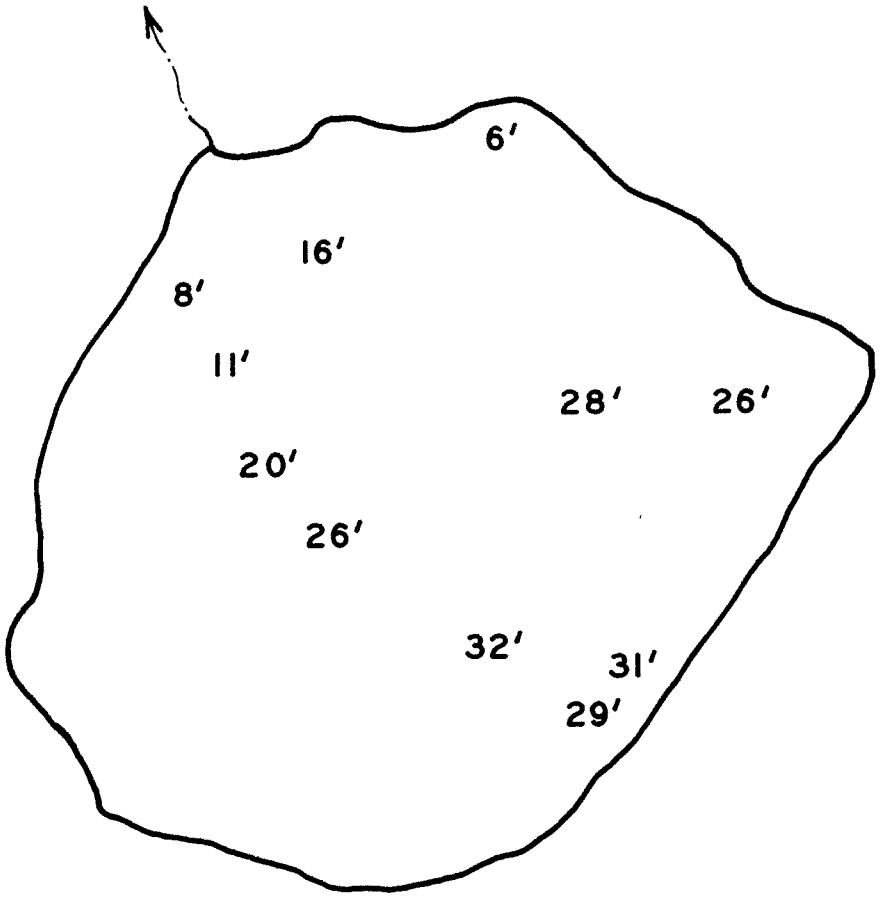
Year	Species	Number	Size
1948	Ct	10,800	2"
1958	Ct	6,615	2"
1959	Rb	10,000	2"

Ajax Lake is one of the larger (20.6 acres) and one of the deepest (93 feet) lakes in the West Big Hole. The lake has no inlet stream, but does have an outlet stream. Ajax Lake appears to be one of the least productive lakes in the West Big Hole with a $CaCO_3$ alkalinity of 7.0. Trout were first introduced to Ajax in 1948 when over 10,000 cutthroat trout fry were planted. An additional 6,600 cutthroat fry were planted in 1958. In 1959, 10,000 rainbow trout fry were planted in Ajax.

Gill netting data from 1970 and 1973 indicated that a naturally reproducing rainbow population exists in Ajax Lake. Cutthroat trout have apparently disappeared, probably due to inability to spawn successfully in the lake itself or its outlet. Rainbow are apparently reproducing successfully along the lake shores or in the outlet stream. Rainbow captured during 1970 and 1973 were in good condition and appear to represent a healthy population.

Management Recommendations

Ajax Lake should be managed as a wild rainbow trout fishery. Rainbow are able to spawn successfully although the magnitude of recruitment to the population is unknown. The trout population should be sampled periodically to monitor the status of this wild trout fishery. Should rainbow disappear from Ajax Lake, it is recommended that McBride cutthroat trout be planted on an every 5 or 6 year basis at a rate of 50-100 fish per acre.



BERRY LAKE

Location:	T7S R17W S24
Elevation:	8700'
Area:	11 acres
Max. Depth:	32'
Drainage:	Berry Creek

BERRY LAKE

Planting History

Year	Species	Number	Size
1966	Ct	1000	3"
1966	Yct	1000	2"
1970	Yct	1000	4"
1972	Yct	1500	3"
1976	Mct	1500	2"
1979	Mct	1000	2"

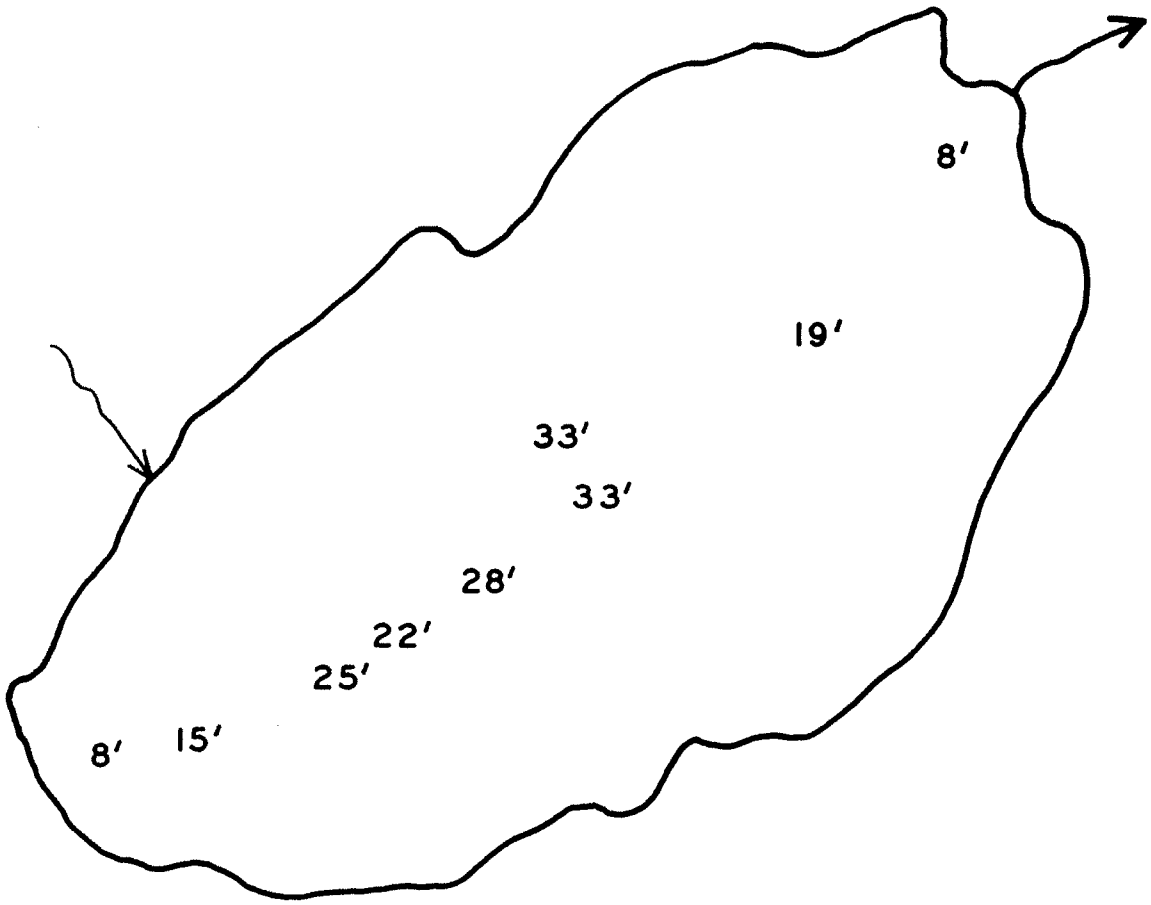
Berry Lake is 14.8 acres in size and has a maximum depth of 32 feet. Berry Lake has an intermittent outlet stream and no inlet stream. It was apparently first planted in 1966 with cutthroat trout and has received additional plants in 1970, 1972, 1976 and 1979. McBride cutthroat were planted in 1976 and 1979.

Berry Lake is one of the least productive lakes in the West Big Hole with a total alkalinity as $CaCO_3$ of only 5.0.

Comparisons of 1973 and 1981 gill netting data are depicted in Table 2. Six cutthroat ranging in size from 6.4-14.1" were captured in 1973 and 64 cutthroat ranging from 6.3" to 12.1" were captured in 1981. It appears that Berry Lake has been overplanted. Fish captured in 1981 represent survivors of plants made in 1976 and 1979. In 1981, fish planted in 1976 averaged 10.8 inches as five year olds and fish planted in 1979 averaged 7.4 inches as two year olds.

Management Suggestions

Berry Lake must be planted to provide a fishery. However, it has been overstocked in recent years resulting in poor growth rates and poor condition of fish. Berry Lake should not be planted again until 1986 and then on an every six year basis with 50 fish per acre. Fishermen should be encouraged to visit this lake and harvest their limits. A large annual harvest of fish should result in more rapid growth and better conditions for the surviving fish.



HAMBY LAKE

Location:	T7S R17W S1
Elevation:	8092'
Area:	38.8 acres
Max. Depth:	33'
Drainage:	Hamby Creek

HAMBY LAKE

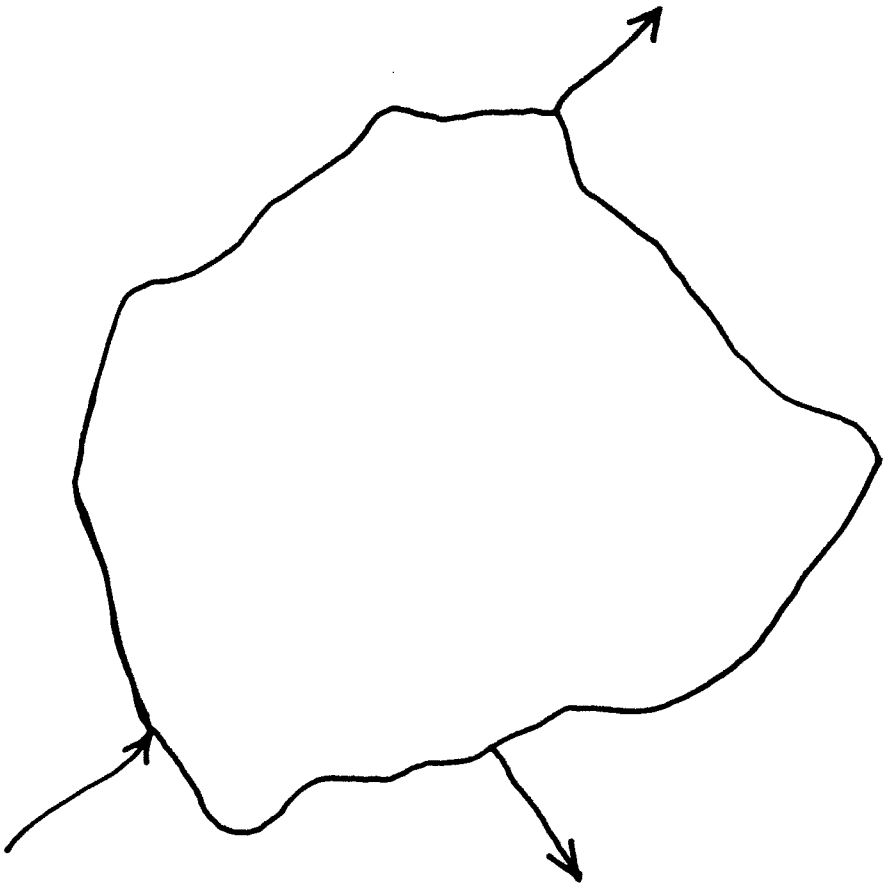
Hamby is one of the largest (38.8 acres) lakes in the West Big Hole. It has a maximum depth of 33 feet. There is an inlet stream entering from the north that provides stream spawning habitat. There are no records of fish being planted in Hamby Lake. Hampy appears to be somewhat intermediate in productivity when compared with other West Big Hole lakes with a $CaCO_3$ alkalinity of 8.0.

Gill netting data from 1973 and 1981 (Table 2) indicate that Hamby Lake supports reproducing populations of cutthroat trout, rainbow x cutthroat hybrid trout and brook trout. Grayling were captured in 1973 but not in 1981. Cutthroat trout were aged in 1981 and age II fish averaged 8.7", age III 10.6" and age IV 12.3".

Management Suggestions

This fishery should be managed as a wild fishery. Reproduction appears sufficient to provide a recreational fishery for pan-size brook trout and cutthroat. Grayling may still be present, although their numbers probably reduced since 1973.

Anglers should be encouraged to harvest brook trout rather than cutthroat trout and grayling.



HIDDEN LAKE

Location:	T6S R17W S4
Elevation:	8092
Area:	8 acres
Max. Depth:	23'
Drainage:	Big Swamp Creek

HIDDEN LAKE

Planting History

None

Hidden Lake is a small (8 acre) lake with a maximum depth of 23'. There is no water quality data available for Hidden Lake. There is also no indication that Hidden Lake has been planted by the Montana Dept. of Fish, Wildlife and Parks. The lake has a small inlet stream and two outlet streams. Gill netting data from 1981 (Table 2), however, indicated that Hidden Lake supports a naturally reproducing population of cutthroat trout. Fifteen fish were captured ranging in size from 6.4"-12.0". Age II fish averaged 7.9", age III 9.9" and age IV and older 11.9".

Management Suggestions

This fishery should be managed for wild cutthroat trout. Reproduction appears to be sufficient in the small inlet stream to provide a viable fishery. Growth rates are fairly low but this lake should provide a good pan-size fishery for cutthroat trout.

LAKE GENEVA

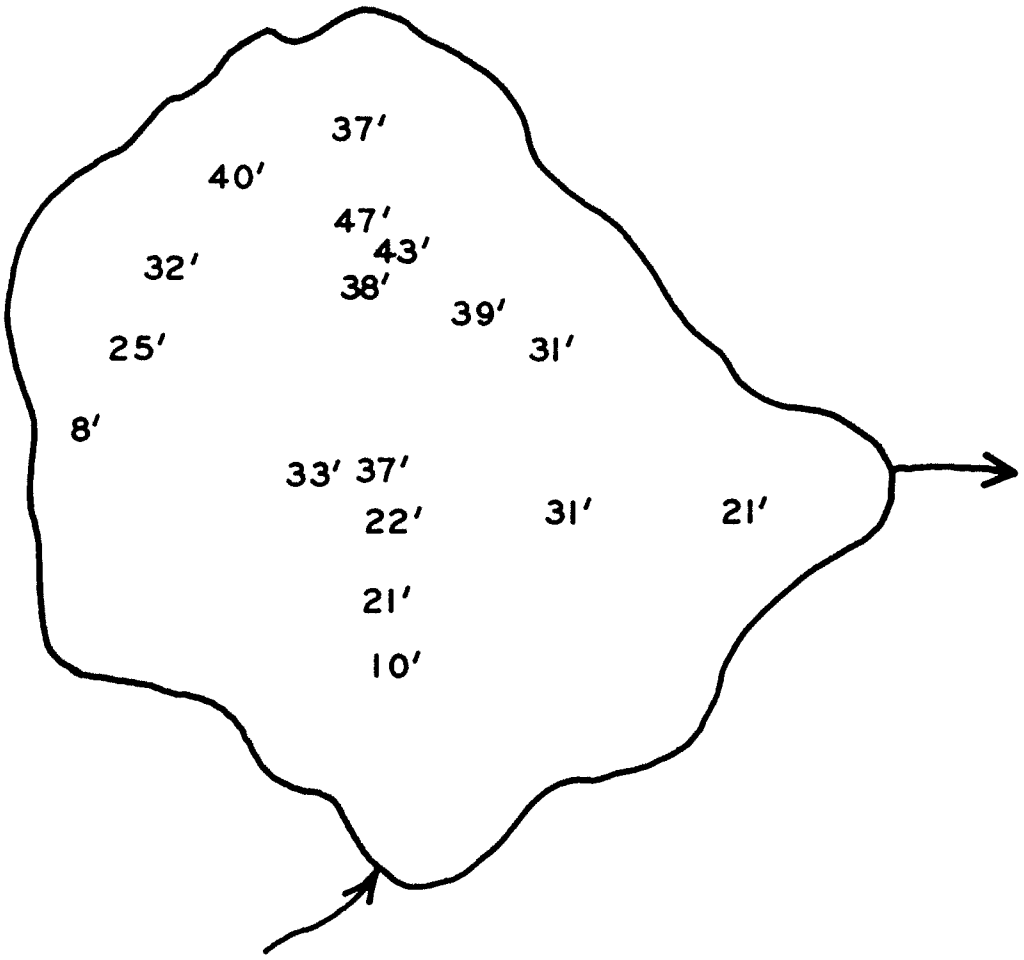
Planting History

Year	Species	Number	Size
1966	Ct	1000	3"

Lake Geneva is a small lake of eight acres with a maximum depth of 47'. It has a good inlet stream that appears to have limited spawning areas. Lake Geneva is somewhat intermediate in productivity (Table 1) when compared to the other West Big Hole lakes with a $CaCO_3$ alkalinity of 7.0. Gill netting data from 1973 and 1981 (Table 2) indicate that Lake Geneva supports a reproducing population of cutthroat trout. Fish captured in 1973 ranged in size from 9.5-11.9" and in 1981 from 10.8-15.1". Fish captured in 1981 were in excellent condition with 14" fish weighing over one pound.

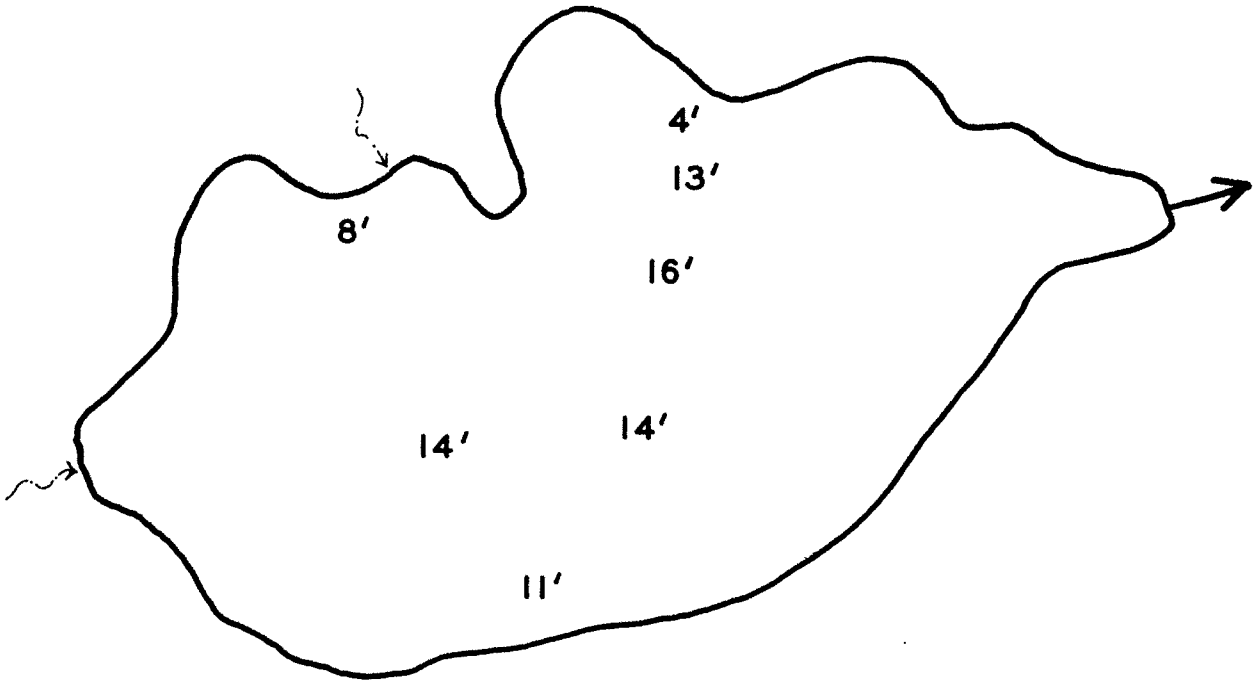
Management Suggestions

This fishery should be managed for wild cutthroat trout. Reproduction is sufficient to maintain a viable fishery for cutthroat trout in the 12-15 inch range.



LAKE GENEVA

Location:	T7S R17W S2
Elevation:	8451
Area:	8 acres
Max. Depth:	47'
Drainage:	Hamby Creek



JAHNKE LAKE

Location:	T7S R16W S29
Elevation:	8760'
Area:	11 acres
Max. Depth:	16'
Drainage:	Jahnke Creek

JAHNKE LAKE

Planting History

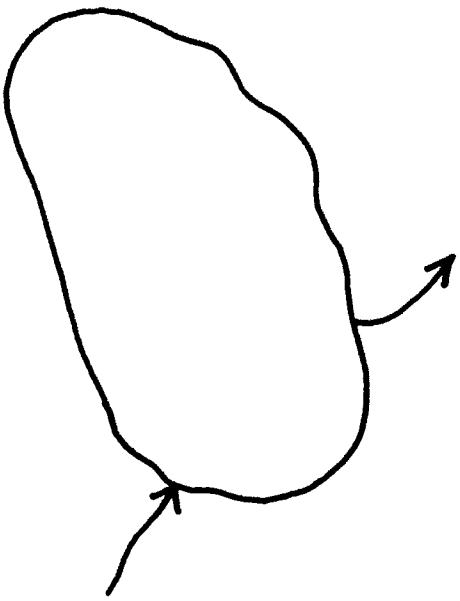
Year	Species	Number	Size
1958	Ct	5250	1"
1959	Ct	5000	1"

Jahnke Lake is 11.2 acres in size and has a maximum depth of 16 feet. The lake has two intermittent inlet streams and a perennial outlet stream.

Cutthroat trout were planted in the lake in 1958 and 1959. Gill netting data from 1973 and 1981 (Table 2) indicate that these plants created a self-sustaining population of cutthroat trout. Spawning evidently takes place in the inlet or outlet streams. In 1973, nine cutthroat from 8.5-12.9" were captured and in 1981, twenty-three cutthroat from 6.3-14.3" were captured. In 1981, age II fish averaged 7.2", age III 11.6", age IV 12.6" and age V fish averaged 13.4".

Management Suggestions

Jahnke Lake should be managed as a wild cutthroat trout fishery. Reproduction and recruitment to the population appear sufficient to maintain a good population of cutthroat trout. This lake should provide pan-size fish and smaller numbers of trout in the 12-15" range.



LITTLE JOE LAKE

Location:	T6S R17W S8
Elevation:	8482'
Area:	4 acres
Max. Depth:	6'
Drainage:	Big Swamp Creek

LITTLE JOE LAKE

Planting History

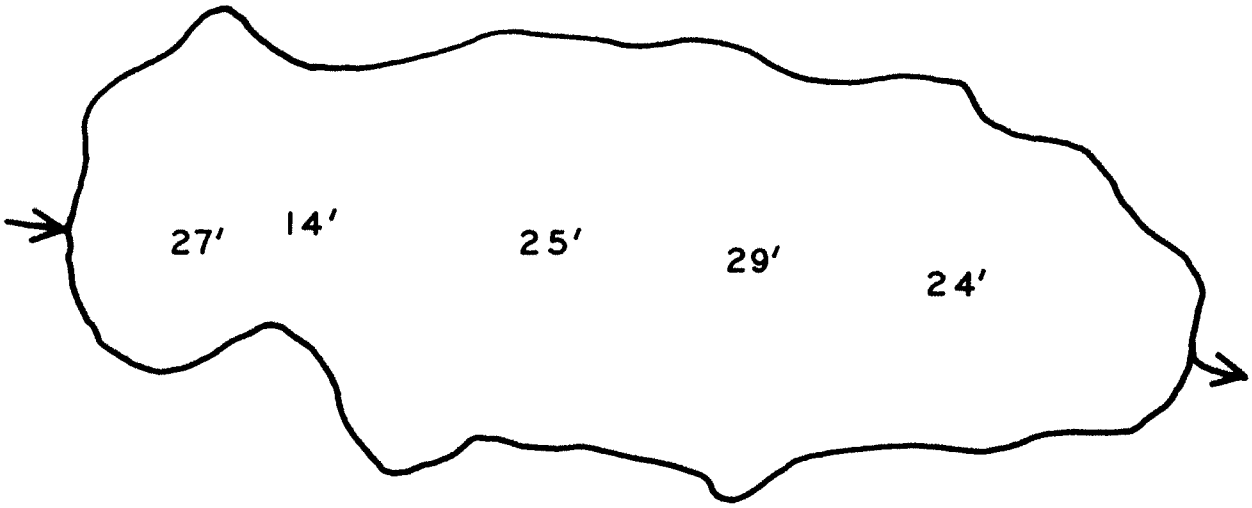
None

Little Joe Lake is a small (4 acres) lake with a maximum depth of only six feet. It has a short inlet stream and an outlet stream. Spawning potential appears to be fair in the inlet stream. There is no record of fish being planted in Little Joe Lake.

Gill netting data (Table 2) indicates that Little Joe Lake is barren.

Management Suggestions

Little Joe Lake is too shallow to support a viable population of trout.



LOWER LENA LAKE

Location:	T5S R17W S32
Elevation:	8345'
Area:	26.8 acres
Max. Depth:	29'
Drainage:	Big Swamp Creek

LOWER LENA LAKE

Planting History

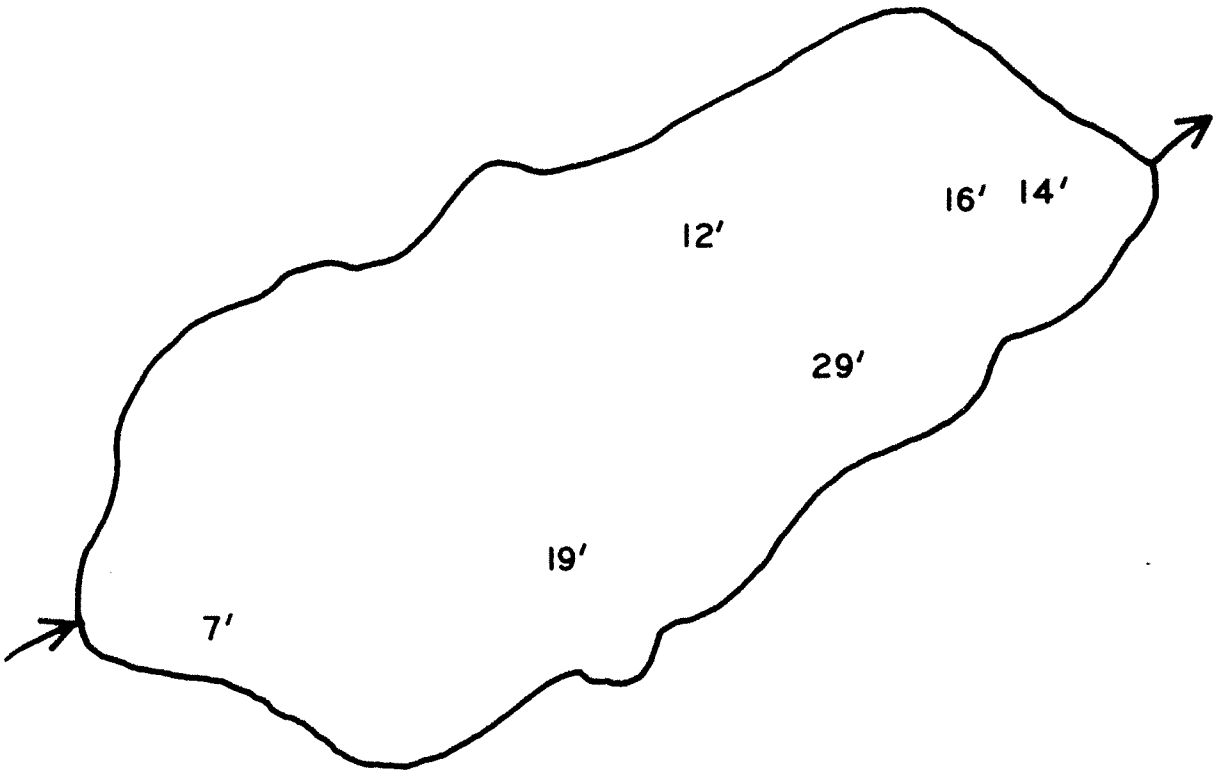
Year	Species	Number	Size
1942	Rb	4800	2"
1948	Ct	4320	Fry
1958	Rb	2700	1"

Lower Lena Lake is a 26.8 acre lake with a maximum depth of 29 feet. Lena is a fairly productive lake when compared with the other West Big Hole Lakes (Table 1) with a $CaCO_3$ alkalinity of 10.0. There is a short inlet stream and an outlet stream. Stream reproductive potential appears to be marginal.

Lower Lena Lake was planted with rainbow trout in 1942, cutthroat trout in 1948 and rainbow again in 1958. Gill netting data from 1973 and 1981 (Table 2) indicate a reproducing population of rainbow trout. Captured fish in 1973 ranged from 6.2-13.9" and 6.0-14.1" in 1981.

Management Suggestions

This fishery should be managed as a wild rainbow fishery. Reproduction, probably along the shore or in the outlet stream, appears sufficient to provide a good pan-size fishery for rainbow with the opportunity of catching fish up to 14". Growth rates are quite low and fishermen should be encouraged to harvest their limits.



LOWER LITTLE LAKE

Location:	T6S R17W S21
Elevation:	8730'
Area:	13.1 acres
Max. Depth:	29'
Drainage:	Little Lake Creek

LOWER LITTLE LAKE

Planting History

Year	Species	Number	Size
1979	Mct	1000	2"

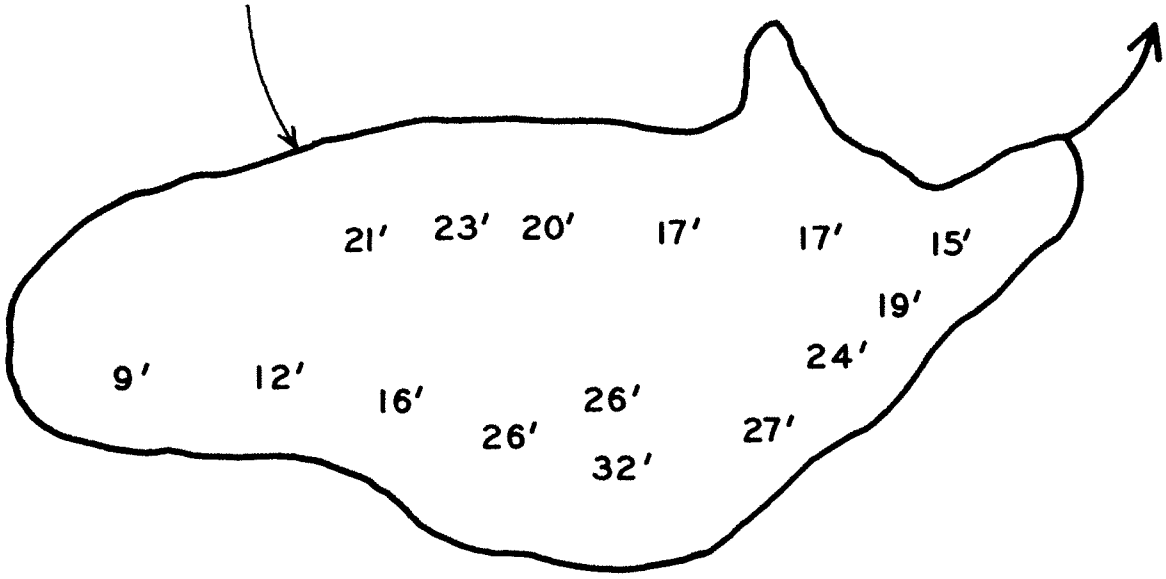
Lower Little Lake is 13.1 acres in size with a maximum depth of 29 feet. It is has a $CaCO_3$ alkalinity of 10.0 (Table 1) which is higher than most of the lakes of the West Big Hole. The lake has a small inlet stream and a larger outlet stream. Spawning potential appears to be fair in these streams.

Gill netting data (Table 2) indicate that Lower Little Lake was barren in 1973. In 1979, 1000 McBride cutthroat were planted. In 1981, 28 of these fish were gill netted. They ranged in size from 8.4-12.9 inches and averaged 11.6 inches as age II fish. These fish were in excellent condition with 12 inch fish averaging 0.75 pounds.

Management Suggestions

This fishery may prove to be self-sustaining in the future. There appears to be some spawning potential in the inlet and outlet streams. If reproduction is not sufficient to provide a viable fishery, the lake should be planted on an every six year basis with 50 fish per acre beginning in 1985.

This fishery should provide the opportunity of catching larger cutthroat in the 14-18" range by 1983.



LOWER RIDGE LAKE

Location:	T6S R17W S26
Elevation:	8449'
Area:	9 acres
Max. Depth:	32'
Drainage:	Miner Creek

LOWER RIDGE LAKE

Planting History

Year	Species	Number	Size
1960	Ct	2000	1"
1966	Ct	1000	3"
1970	Yct	1000	4"
1976	Mct	1000	2"

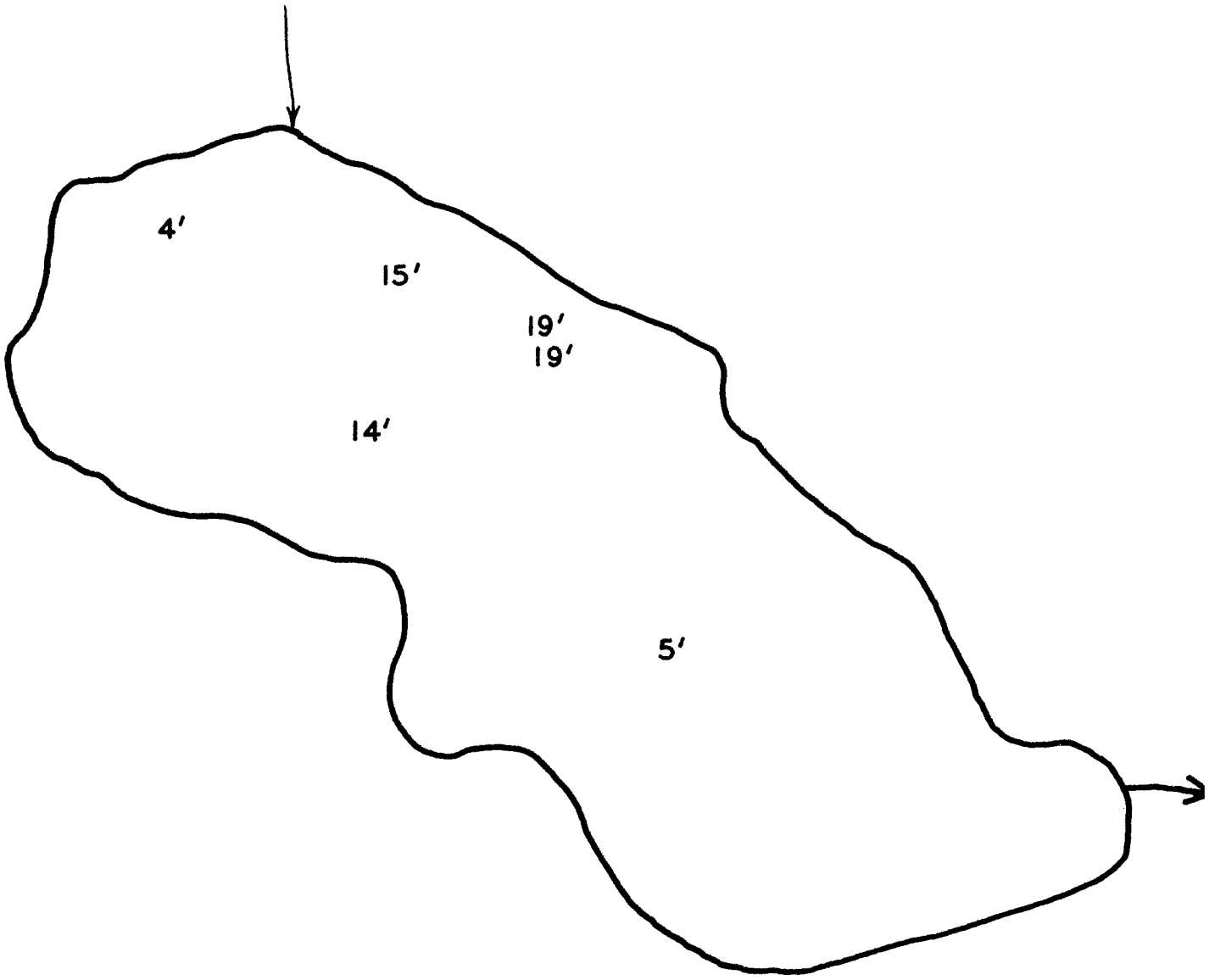
Lower Ridge Lake is small (9.4 acres) with a maximum depth of 32 feet. It has a small inlet stream and an intermittent outlet. Spawning potential of the inlet stream appears to be marginal. Lower Ridge Lake appears to be one of the least productive lakes in the West Big Hole as indicated by a $CaCO_3$ alkalinity of 5.0 (Table 1).

Lower Ridge Lake was planted with cutthroat trout in 1960, 1966 and 1970. McBride cutthroat were planted in 1976 and appear to have been planted accidently by air in 1979.

Gill netting data from 1973 and 1981 (Table 2) suggest that this fishery is not self-sustaining. Two cutthroat were captured in 1973 and ranged from 11.5-14.5". In 1981, fourteen cutthroat were captured and ranged from 6.5-16.1". Two year classes of fish were captured in 1981. Age II fish averaged 7.5" and age V fish averaged 14.8".

Management Suggestions

This fishery should be managed by planting on an every 6 or 7 year basis with 50 fish per acre. This fishery should provide the opportunity of catching both pan-size cutthroat and cutthroat in the 14-18" range.



LOWER ROCK ISLAND LAKE

Location:	T6S R17W S22
Elevation:	8325'
Area:	20 acres
Max. Depth:	19'
Drainage:	Miner Creek

LOWER ROCK ISLAND LAKE

Planting History

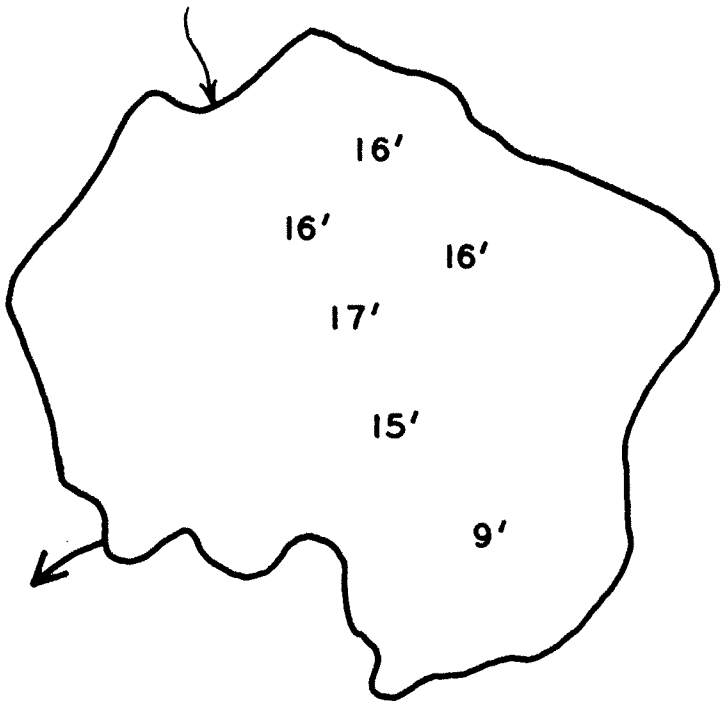
Year	Species	Number	Size
1938	Rb	9,000	Fry
1941	Rb	15,000	Fry
1960	Rb	2,500	1"

Lower Rock Island Lake is a fairly large lake (20 acres) with a maximum depth of 19 feet. It is apparently one of the more productive lakes in the West Big Hole with a $CaCO_3$ alkalinity of 16.0. The lake has both inlet and outlet streams. Spawning potential appears good in both inlet and outlet streams.

Rainbow trout were planted in 1938, 1941 and 1960. Gill netting data (Table 2) from 1973 indicate that rainbow are successfully reproducing. Twenty rainbow from 6.0-12.7" were netted in 1973. Age II fish averaged 7.6", age III fish 9.8" and age IV fish 11.3".

Management Suggestions

This fishery should be managed for wild rainbow trout. The population should be sampled again in the next few years to assess growth rates and relative abundance. Based on 1973 information, the fishery provides the opportunity of catching pan-size rainbow trout.



LOWER SLAG-A-MELT LAKE 2-9185

Location: T5S R17W S33
Elevation: 8316'
Area: 7.5 acres
Max. Depth: 17'
Drainage: Slag-a-Melt Creek

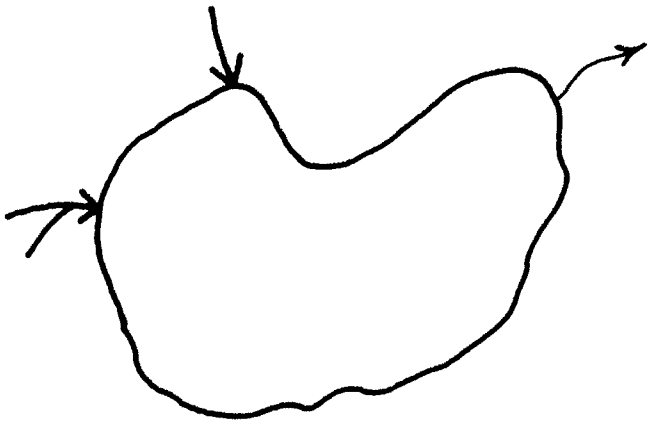
LOWER SLAG-A-MELT LAKE

Lower Slag-a-Melt Lake is a small (7.5 acres) lake with a maximum depth of 17'. The lake has an inlet stream and an intermittent outlet stream. Spawning potential in the inlet stream appears to be good. Chemically, the lake appears to be fairly productive with a $CaCO_3$ alkalinity of 10.0.

Gill netting data from (Table 2) 1973 indicate that Lower Slag-a-Melt Lake has a wild population of brook trout. In 1973, 34 brook trout from 5.1-9.0 inches were captured. The net set in 1981 was stolen.

Management Suggestions

Lower Slag-a-Melt Lake appears to have an overpopulation of brook trout. Growth rates appear to be poor due to overpopulation. Fishermen should be encouraged to harvest as many brook trout as the ten pound limit allows.



PIONEER LAKE

Location:	T7S R16W S29
Elevation:	8760'
Area:	4 acres
Max. Depth:	13'
Drainage:	Pioneer Creek

PIONEER LAKE

Planting History

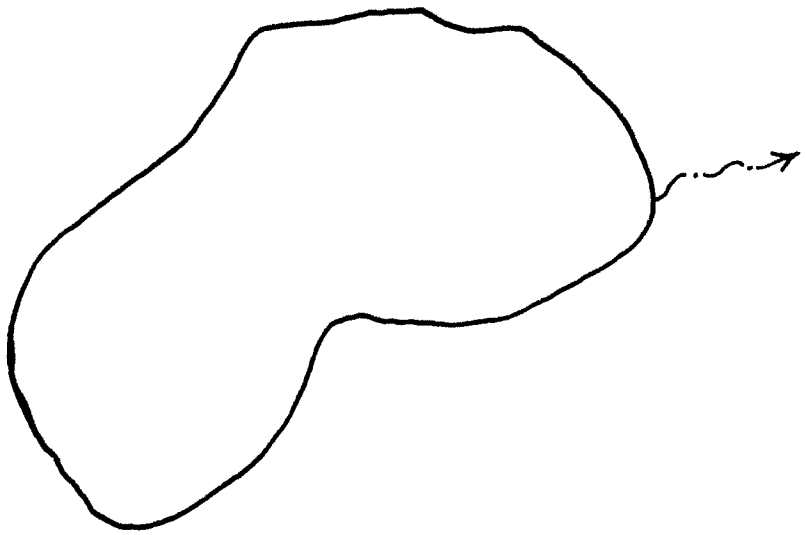
None

Pioneer Lake is a small lake (4 acres) with a maximum depth of only thirteen feet. It has two small inlet streams and an intermittent outlet stream. Spawning potential appears to be poor in the outlet stream. There are no records indicating Pioneer Lake has ever been planted.

Gill netting data from 1981 (Table 2) suggest that there may be a small population of cutthroat trout in Pioneer Lake.

Management Suggestions

Pioneer Lake is probably too shallow to sustain a fishable trout population. However, a small plant of 50 McBride cutthroat trout per acre might be considered in the future and the survival of these fish monitored.



SKYTOP LAKE 2-9160

Location:	T7S R16W S30
Elevation:	9370'
Area:	5 acres
Max. Depth:	38'
Drainage:	Pioneer Creek

SKYTOP LAKE

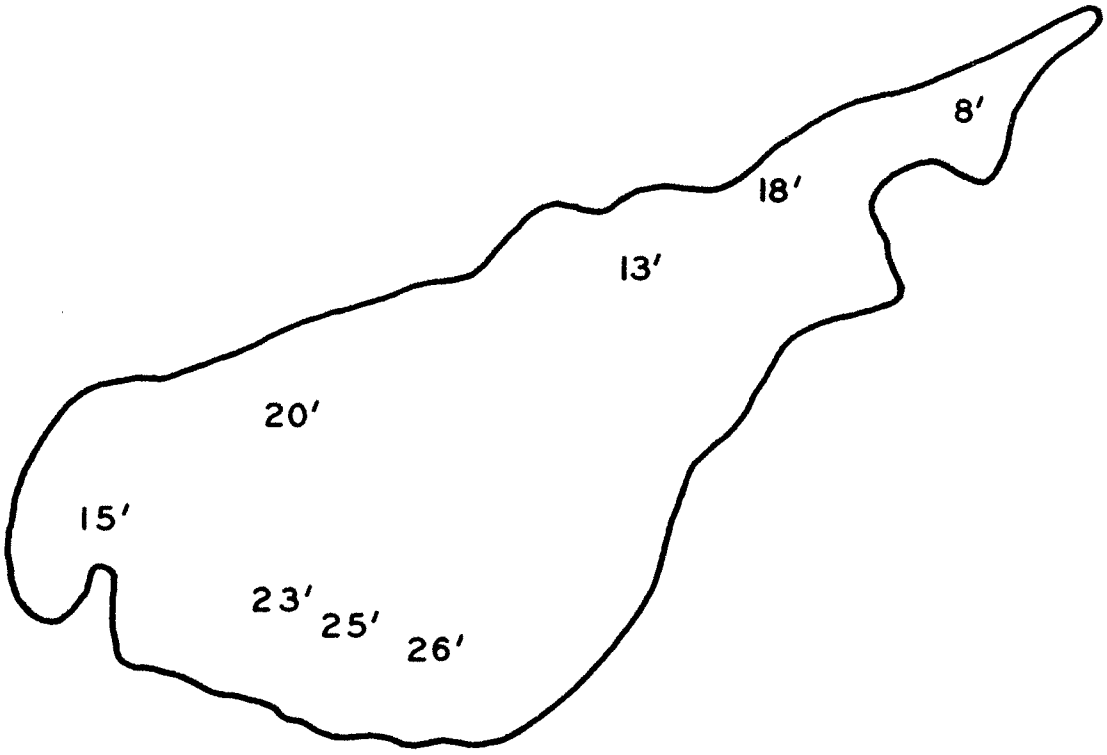
Planting History

None

Skytop Lake is five acres in size and has maximum depth of 38 feet. It has no inlet stream and an intermittent outlet stream. Spawning potential appears to be poor in the outlet stream. Gill netting data from 1981 (Table 2) indicate the lake to be barren of fish.

Management Suggestions

This lake should be planted with either McBride cutthroat trout or Golden trout. These populations would have to be sustained by planting on an every 5-6 year basis at a rate of 50 fish per acre.



TIMBERLINE LAKE 2-9305

Location:	T7S R17W S24
Elevation:	9180'
Area:	7.5 acres
Max. Depth:	26'
Drainage:	Berry Creek

TIMBERLINE LAKE

Planting History

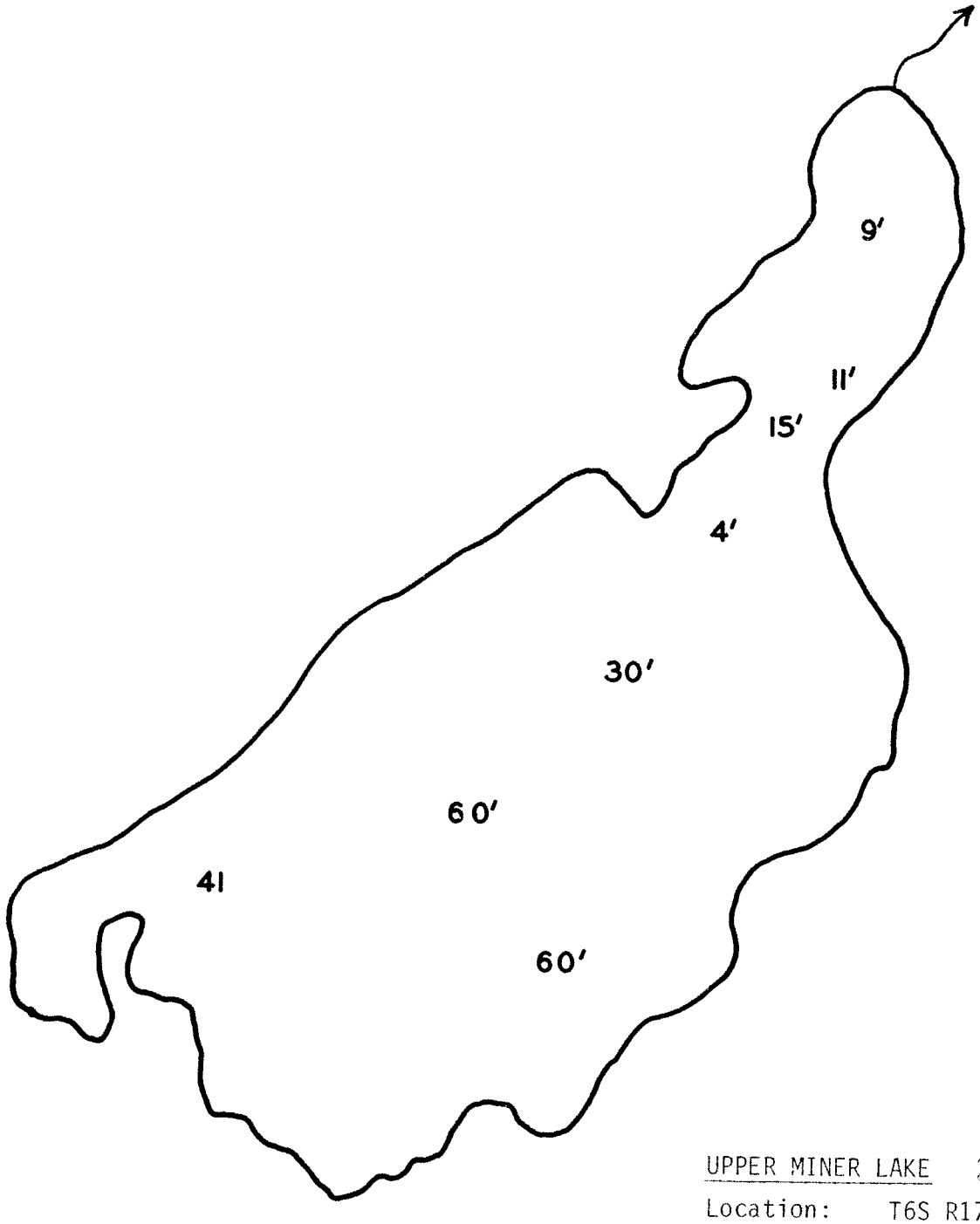
Year	Species	Number	Size
1976	Mct	1000	2"
1979	Mct	1000	2"

Timberline Lake is a small (7.5 acres) lake with a maximum depth of 26'. It has no inlet or outlet stream. Timberline had the lowest $CaCO_3$ alkalinity (2.0) of any lake measured in 1973 (Table 1).

Gill netting data (Table 2) indicated the lake to be barren in 1973. It was planted with McBride cutthroat in 1976 and again in 1979. In 1981, 54 McBride cutthroat ranging in size from 6.0-15.8" were captured. These fish represented age II fish from the 1979 plant and age V fish from the 1976 plant. Age II fish averaged only 6.8" and age V fish averaged 13.7".

Management Suggestions

This lake has been overplanted. Timberline Lake had the lowest total alkalinity (2.0) of any of the lakes surveyed and is not capable of providing a food base that will allow rapid growth of large numbers of fish. This fishery should be managed by planting on an every five or six year basis with 50 fish per acre beginning in 1986. Under this management, Timberline Lake should provide the opportunity to catching both pan-size cutthroat and cutthroat in the 14-16" range.



UPPER MINER LAKE 2-9475

Location:	T6S R17W S34
Elevation:	8029'
Area:	42 acres
Max. Depth:	60'
Drainage:	Miner Creek

UPPER MINER LAKE

Planting History

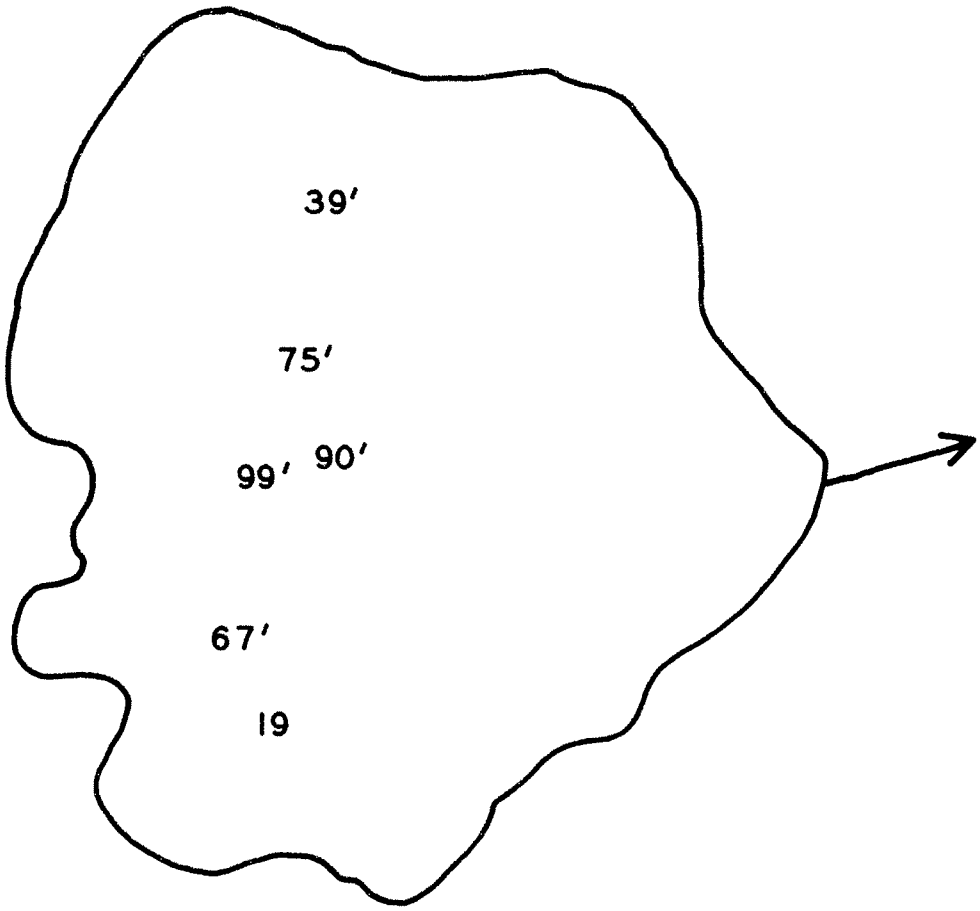
Year	Species	Number	Size
1959	Ct	1500	1"
1960	Ct	1500	1"

Upper Miner Lake is a large (42 acres) lake with a maximum depth of 60 feet. It has no inlet stream but has a good outlet stream. Spawning potential in the outlet is marginal. Upper Miner Lake has a total $CaCO_3$ alkalinity of 8.0 which is about average for the high mountain lakes of the West Big Hole.

Upper Miner Lake was planted with cutthroat trout in 1959 and 1960. However, gill netting data from 1973 and 1981 (Table 2) indicate that cutthroat were unable to reproduce in this lake. The fishery of Upper Miner Lake today consists of brook trout which probably entered the lake from the outlet stream. Brook trout are evidently able to reproduce along the lake shore or in the outlet stream. In 1973, eleven brook trout ranging from 6.4-14.0" were netted and in 1981, eighteen brook trout ranging in size from 6.5-14.0" were netted. These fish were all in good condition with 14" fish weighing over a pound.

Management Suggestions

Upper Miner Lake should be managed as a wild brook trout fishery. It will provide good angling opportunities for pan-size brook trout and for some brook trout in the 12-15" range.



UPPER-UPPER MINER LAKE

Location: T6S R17W S34
Elevation: 8749'
Area: 12 acres
Max. Depth: 99'
Drainage: Miner Creek

UPPER-UPPER MINER LAKE

Planting History

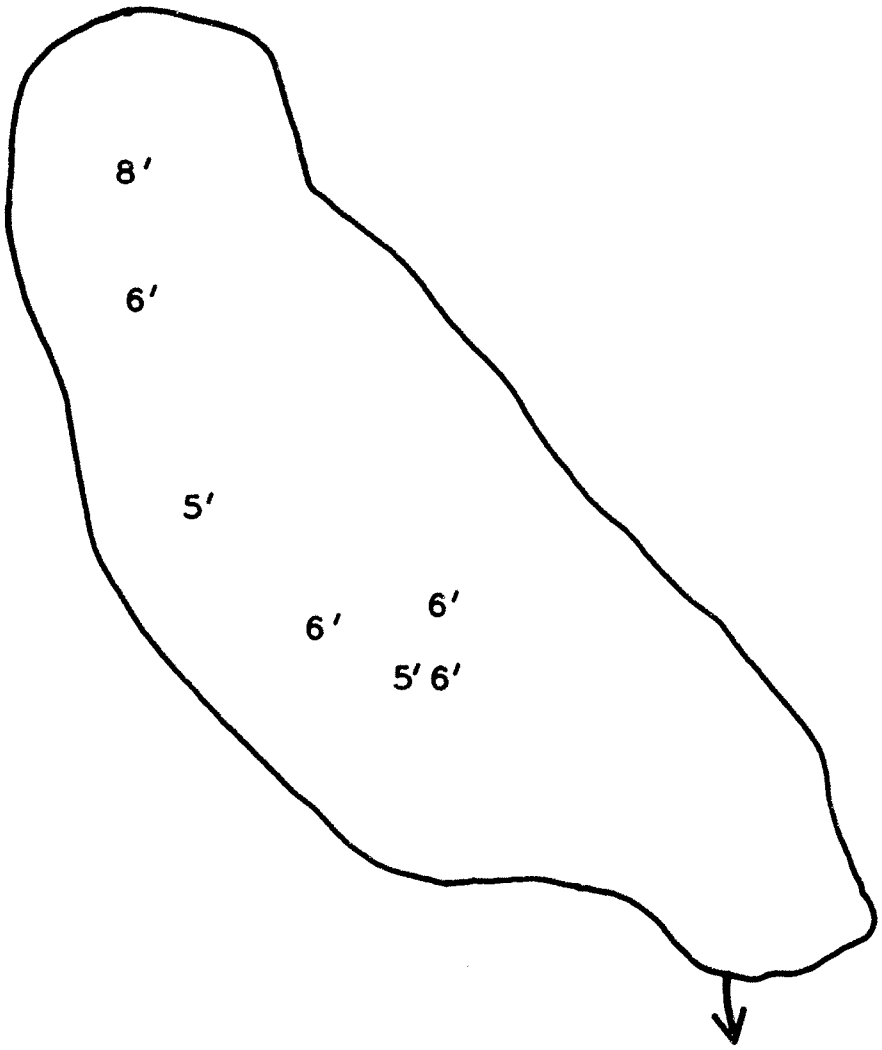
Year	Species	Number	Size
1959	Ct	1500	1"
1960	Ct	1500	1"

Upper-Upper Miner Lake is a 12 acre deep lake with a maximum depth of 99 feet. It has no inlet stream and an intermittent outlet stream. Spawning potential is marginal and limited to the lake shoreline. The lake has a $CaCO_3$ total alkalinity of 6.0 or somewhat less than Upper Miner Lake.

Upper-Upper Miner Lake was planted with cutthroat trout in 1959 and 1960. However, netting data from 1973 and 1981 indicate that they were unable to reproduce in the lake. The fishery today consists of wild rainbow trout, the source of which is unknown. Apparently, this rainbow population is sustained by shoreline reproduction. In 1973, ten rainbow from 6.1-13.9" were captured, and in 1981, nine rainbow from 8.2-13.3" were captured.

Management Suggestions

This fishery should be managed for wild rainbow trout. The present population is not a large one but does provide the opportunity for catching pan-size rainbow trout. Should this population disappear in the future, McBride cutthroat should be planted on an every 5 or 6 year basis at a rate of 50 per acre.



UPPER ROCK ISLAND LAKE D-8725

Location:	T6S R17W S22
Elevation:	8350'
Area:	10 acres
Max. Depth:	8 feet
Drainage:	Miner Creek

UPPER ROCK ISLAND LAKE

Planting History

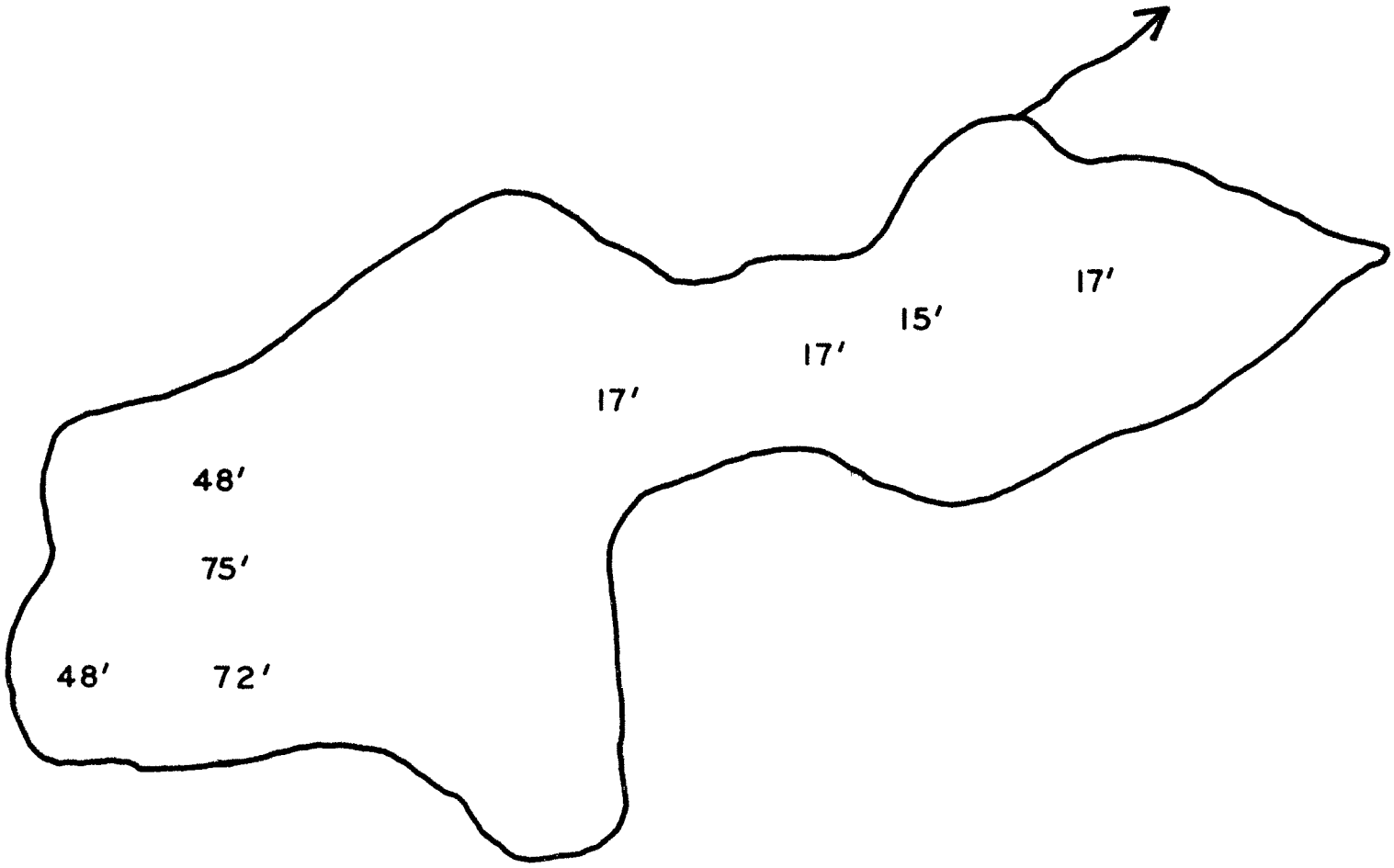
Year	Species	Number	Size
1938	Rb	9,000	Fry
1941	Rb	15,000	Fry
1960	Rb	2,500	1"

Upper Rock Island Lake is a small (10 acres) lake with a maximum depth of only eight feet. Chemically, it is one of the more productive lakes in the West Big Hole with a $CaCO_3$ alkalinity of 17.0. The lake has no inlet stream but does have an outlet stream. Spawning potential in the outlet stream appears marginal.

Rainbow trout were planted in 1938, 1941 and 1960. Gill netting data (Table 2) from 1973 suggest a very small population of rainbow remained in 1973. One rainbow 11.8" long was captured in 1973.

Management Suggestions

This lake is probably too shallow to manage for a viable fishery. However, since it is apparently productive, a plant of 50 McBride cutthroat trout per acre should be made and their survival and growth rates monitored.



UPPER SLAG-A-MELT LAKE

Location: T5S R17W S32
Elevation: 8740'
Area: 16 acres
Max. Depth: 75'
Drainage: Slag-a-Melt Creek

UPPER SLAG-A-MELT LAKE

Planting History

Year	Species	Number	Size
1976	Mct	1500	2"
1979	Mct	1000	2"

Upper Slag-a-Melt Lake is 16.2 acres in size with a maximum depth of 75'. The lake has no inlet stream and a small outlet stream. Spawning potential in the outlet stream appears marginal. Chemically, the lake is fairly productive compared to other lakes of the West Big Hole with a $CaCO_3$ alkalinity of 10.0.

Gill netting data from 1973 (Table 2) indicated the lake to be barren. McBride cutthroat trout were planted in 1976 and 1979. In 1981, eighteen cutthroat from 8.9-15.6" were captured (Table 2). These fish represented age II fish planted in 1979 and age V fish planted in 1976. Age II fish averaged 10.4" and age V fish averaged 14.8".

Management Suggestions

This lake should be planted with McBride cutthroat trout on an every 5 or 6 year basis with 50 fish per acre. Growth rates appear to be good and this lake will provide good opportunities of catching 14-16" cutthroat if not overplanted.