H. R. Hagemann
P. O. Box 13041
Austin, Texas 78711

January 23, 1988

Jim Vynalek
HC 67 Box 8 C
Pleasanton, Tx 78064

Dear Jim:

Did we stock any fish on the lease. I am one of the hold outs since we didn't know if we were going to stock. I am sending Clem the lease money anyway.

I had lunch with Bill Cobb on Friday, January 22nd. We originally were going to meet with Nick Carter at the Parks and Wildlife Dept. but we didn't get an appointment so we just had lunch and talked about fishing trips. I gave Bill copies of the studies that Mike Ryan gave me.

Enclosed are copies of the studies I received. There was some interest expressed by the board members in getting a copy of the study. You may want to send copies to them. The copies enclosed are not all that great either. When you make copies of copies they just don't look like the master.

I would like to get an opportunity to be on the board of the Texas Chapter of Trout Unlimited. I don't know if anyone would nominate me or if I would be elected but I would like to give it a try.

Good fishing and good luck.

Sincerely Yours,

Howard R. Hagemann

FIGURE 2

FISH CENSUS . . . PARKS AND WILDLIFE DEPARTMENT

LAKE _____ DATE _____ 19____

NAME (OPTIONAL) _____ HOURS FISHED: MORNING _____ AFTERNOON _____

CITY _____ STATE _____ TOTAL HOURS FISHED _____

SPECIES CAUGHT	TOTAL	MARK	BELOW LIST NUMBER FISHED CAUGHT UNDER THEIR NEAREST SIZE																					
			6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	"	"
MARKED TROUT																								
UNMARKED TROUT																								
TAGGED TROUT																								
SUNFISH																								
CATFISH																								
OTHERS																								
TOTAL																								

REMARKS

KIND OF FISHING (CHECK)

BOAT ( ) SHORE ( ) PIER ( ) TROLLING ( )
STILL FISHING ( ) CASTING ( ) FLY FISHING ( )
WADE ( )

NUMBER OF FISH CAUGHT WITH:

PLUGS _____ MINNOWS _____ CUTBAIT _____
SPINNERS _____ CRAYFISH _____ OTHERS? _____
ART. FLIES _____ WORMS _____

FIGURE 2a

NAME _____

ADDRESS _____

NO. TROUT CAUGHT _____ NO. MARKED TROUT _____

NO. HOURS FISHED _____

REMARKS:

FIGURE 3

ECONOMIC INFORMATION FORM FILLED OUT BY CREEL CLERK
ON EVERY TENTH FISHERMAN

Economic Information

State_____ City_____

Main reason for trip_____

Boat: Type_____Length_____Motor (hp)_____

Rental fees: Boat $_____Motor $_____Launching $_____

License: Yes _____ No _____

Gas and oil purchased for boat: Gallons _____ Cost $_____

Meals purchased today: Number _____ Cost $_____

Light refreshments purchased for today: Cost $_____

Ice for today's trip: Pounds _____ Cost $_____

Lodgingplace last night _____ Cost $_____

Bait and tackle purchased for today's trip:

Natural bait $_____ Artificial lures $_____ Hooks $ _____

Sinkers $ _____ Line $_____ Floats $_____

Swivels $ _____ Dip net $_____ Stringer $_____

Other $ _____

Miles traveled today _____

Mileage cost (caluclated) _____

License cost $ _____

Total trip expenditure $_____

Remarks: _____

_____

_____

_____

Q = hours use derived from fishermen not returning post cards

The total harvest estimate was obtained by the regression method described by Leslie and Davis (1939) which is based on the principle that population size can be estimated from the day to day decline in catch per unit of effort as the population size decreases. In the application of this method, daily catch per man hour (Y axis) has been plotted against cumulative catch (X axis) of marked fish.

The projected catch of trout on weekends was calculated to be 2,330. Data and compilations for this projection are given in Tables 1, 1a, and Graph 1.

The projected catch of trout on weekdays was calculated to be 1,219. Data and compilations for this projection are given in Tables 2, 2a, and Graph 2.

The sum of these 2 projections, 3,549 fish, reveals an angler harvest of 59 per cent of the 6,000 fish stocked in March 1967. These trout contributed to the fishery approximately 7 months, with some limited catches being recorded as late as September 1967. The decrease in fishing pressure was directly proportional to the increase in days following the stocking. Fly fishermen had fairly uniform success throughout the 7-month period.

The average catch per man hour for the census period was determined by using data from fishermen who had returned the post card. The average catch per man hour for weekends and weekdays was 0.52 and 1.03 respectively. The catch per man hour, similar to the fishing pressure, decreased steadily over the next 5 months.

During the census period, weekend fishermen spent an average of 4.00 hours per trip and harvested 2.12 fish, while the weekday angler averaged 4.22 trout and 4.10 hours per trip. It should be noted that the weekday census covered the 2 weeks immediately following the drop, and harvest was at its maximum. These figures were also obtained from fishermen for whom both the creel card and post card were available.

The data used in the total harvest estimates were that collected through May 1967, but the census was continued into August 1967. In the regression method employed, it is necessary to use the data which decreases in a rather uniform manner, and for this reason, the data collected from March through May was used.

During the period from March through September 1967 there were approximately 1,600 fishermen censused with an economic sheet filled out on every tenth one. The fishermen spent an average of $3.94 per fishing trip. This figure did not include the cost of gasoline used in making the trip, but rather represents only what the angler spent in the immediate area for bait, tackle, food, ice, etc. Since the census was run on an every other weekend basis, it would be valid to assume that the total number of anglers would approximate 2,500 over this period. This represents an economic boost to the area of approximately $10,000 by the trout program.

Table 1

Weekend Trout Creel Census Summary

Date	Seen on census			Expanded from use counts			
		Catch					
	Hours Fished	Total Trout	Catch Per Angler Hour	Use Hours	Total Angler Hours	Total Daily Catch	Mean Daily Cumulative Catch
March 11	428	450	1.05	177	605	635	318
March 12	342	237	0.69	176	518	357	813
March 18	387	229	0.59	159	546	322	1,153
March 19	343	195	0.57	148	491	280	1,454
April 1	242	97	0.40	89	331	132	1,660
April 2	260	61	0.23	92	352	89	1,770
April 15	115	46	0.40	39	145	58	1,844
April 16	108	15	0.14	23	131	18	1,882
April 29	125	34	0.27	105	230	62	1,922
April 30	109	17	0.16	75	184	29	1,967
May 13	139	14	0.10	46	185	18	1,991
May 14	38	3	0.08	37	75	6	2,003
Totals	2,636				3,793	2,006	

Table 1a

Mean Daily Cumulative Catch	X^2	Catch Per Hour = Y	XY
318	101,124	1.05	333.90
813	660,969	0.69	560.97
1,153	1,329,409	0.59	680.27
1,454	2,114,116	0.57	828.78
1,660	2,755,600	0.40	664.00
1,770	3,132,900	0.23	407.10
1,844	3,400,366	0.40	737.60
1,882	3,541,924	0.14	263.48
1,922	3,694,084	0.27	518.94
1,967	3,869,089	0.16	314.72
1,991	3,964,081	0.10	199.10
2,003	4,012,009	0.08	160.24

$\Sigma X = 18,777$ $\Sigma X^2 = 32,575,641$ $\Sigma Y = 4.68$ $\Sigma XY = 5,669.10$

$(\Sigma X)^2 = (18,777)^2 = 352,575,729$ $N = 12$

$(\Sigma X)(\Sigma Y) = (18,777)(4.68) = 87,876.36$

$$\text{Slope of line} = b = \frac{\Sigma XY - \frac{(\Sigma X)(\Sigma Y)}{N}}{\Sigma X^2 - \frac{(\Sigma X)^2}{N}}$$

$$= \frac{5,669.10 - \frac{87,876.36}{12}}{35,575,641 - \frac{352,575,729}{12}}$$

$$= \frac{-1,653.93}{3,194,331}$$

$$= -0.00051777$$

In the formula $Y = a + bX$, we now have b and can find a by substituting the average values for X and Y in the formula:

$$\bar{X} = \frac{X}{N} = \frac{18,777}{12} = 1,576.65 \qquad \bar{Y} = \frac{Y}{N} = \frac{4.68}{12} = 0.39$$

Table 1a (continued)

$\bar{Y} = a + bX$ or $0.39 = a + (-0.000517770)\ (1,576.65)$
or $0.39 = a + (-0.8163420705)$
or $a = 1.206342$

The equation of the line is : $Y = 1.3622167290 + (-0.000517770)\ (X)$
If we set Y (catch per hour) = 0 (which it theoretically will become only when no more fish are to be caught), then:

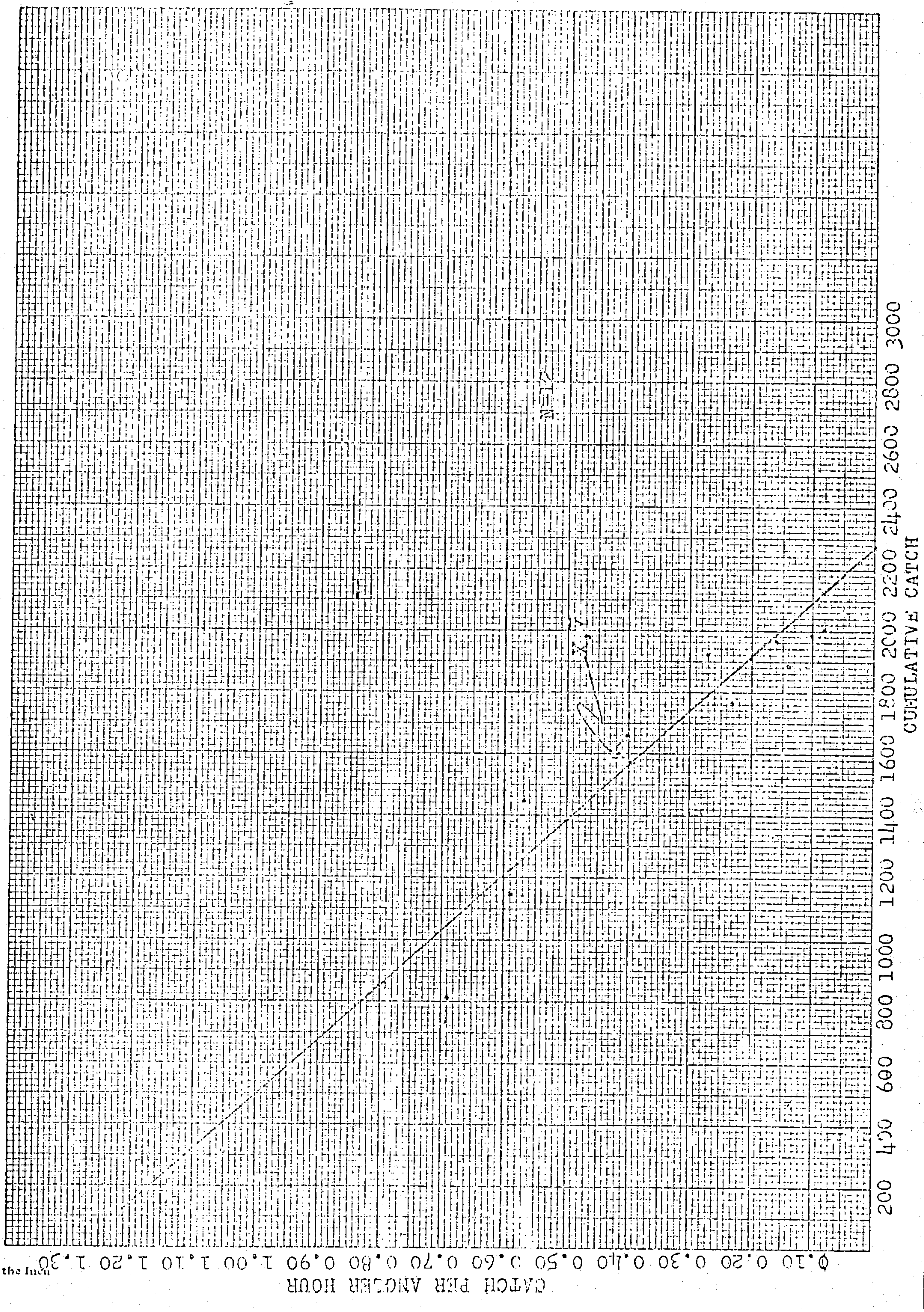
$0 = 1,3622167290 + (-0.000517770)\ (X)$ then,

$$X = \frac{1.206342}{0.000517770} = 2,330$$

Or $X = 2,330$ = estimated eventual return of marked fish on weekends.

Graph 1. Weekend Projected Catch.

Graph 1. Regression Line of catch per hour plotted against cumulative catch.



20 Squares to the Inch

Table 2

Weekday Trout Creel Census Summary

Date	Seen on Census			Expanded from use counts			
		Catch					
	Hours Fished	Total Trout	Catch Per Angler Hour	Use Hours	Total Angler Hours	Total Daily Catch	Mean Daily Cumulative Catch
March 6	50	109	2.18	27	77	168	84
March 7	80	72	0.90	95	175	140	238
March 8	51	32	0.63	10	61	38	327
March 9	27	50	1.85	16	43	80	386
March 10	133	129	0.97	84	217	210	531
March 13	52	74	1.42	52	104	148	710
March 14	55	79	1.44	17	72	104	836
March 15	58	52	0.90	39	97	87	932
March 16	56	32	0.57	40	96	54	1,002
March 17	95	47	0.49	10	105	51	1,055
Totals	657				1,047	1,080	

Table 2a

Meal Daily Cumulative Catch = X	X^2	Catch Per Hour = Y	XY
710	504,100	1.42	1,008.20
836	698,896	1.44	1,203.84
932	868,624	0.90	838.80
1,002	1,004,004	0.57	571.14
1,055	1,113,025	0.49	516.95
$\Sigma X = 4,535$	$\Sigma X^2 = 4,188,649$	$\Sigma Y = 4.82$	$\Sigma XY = 4,138.93$

$(\Sigma X)^2 = (4,535)^2 = 20,566,225$

$(\Sigma X)(\Sigma Y) = (4,535)(4.82) = 21,858.70$

$$\text{Slope of line} = \frac{\Sigma XY - \frac{(\Sigma X)(\Sigma Y)}{N}}{\Sigma X^2 - \frac{(\Sigma X)^2}{N}}$$

$$b = \text{slope} = \frac{4,138.93 - \frac{21,858.70}{5}}{4,188,649 - \frac{20,556,225}{5}} = \frac{4,138.93 - 4,371.60}{4,188,649 - 4,113,245} = \frac{-232.67}{75,404}$$

$b = -0.0030856$

In the formula $Y = a = bX$ we now have b and can find a by substituting the average values for X and Y in the formula:

$$\bar{X} = \frac{X}{N} = \frac{4,535}{5} = 907 \qquad \bar{Y} = \frac{Y}{N} = \frac{4.82}{5} = 0.964$$

$\bar{Y} = a + b\bar{X}$ or $0.964 = a + (-0.0030856)(907)$
or $0.964 = -2.7986392 + a$
or $a = 3.76264$

The equation of the line is: $Y = 3.76264 - 0.0030856X$

If we set Y (catch per hour) = 0 (which it theoretically will become only when no more fish are to be caught, then:

$0 = 3.7626392 - 0.0030856X$
or $X = 1,219$

Graph 2. Weekday projected catch.