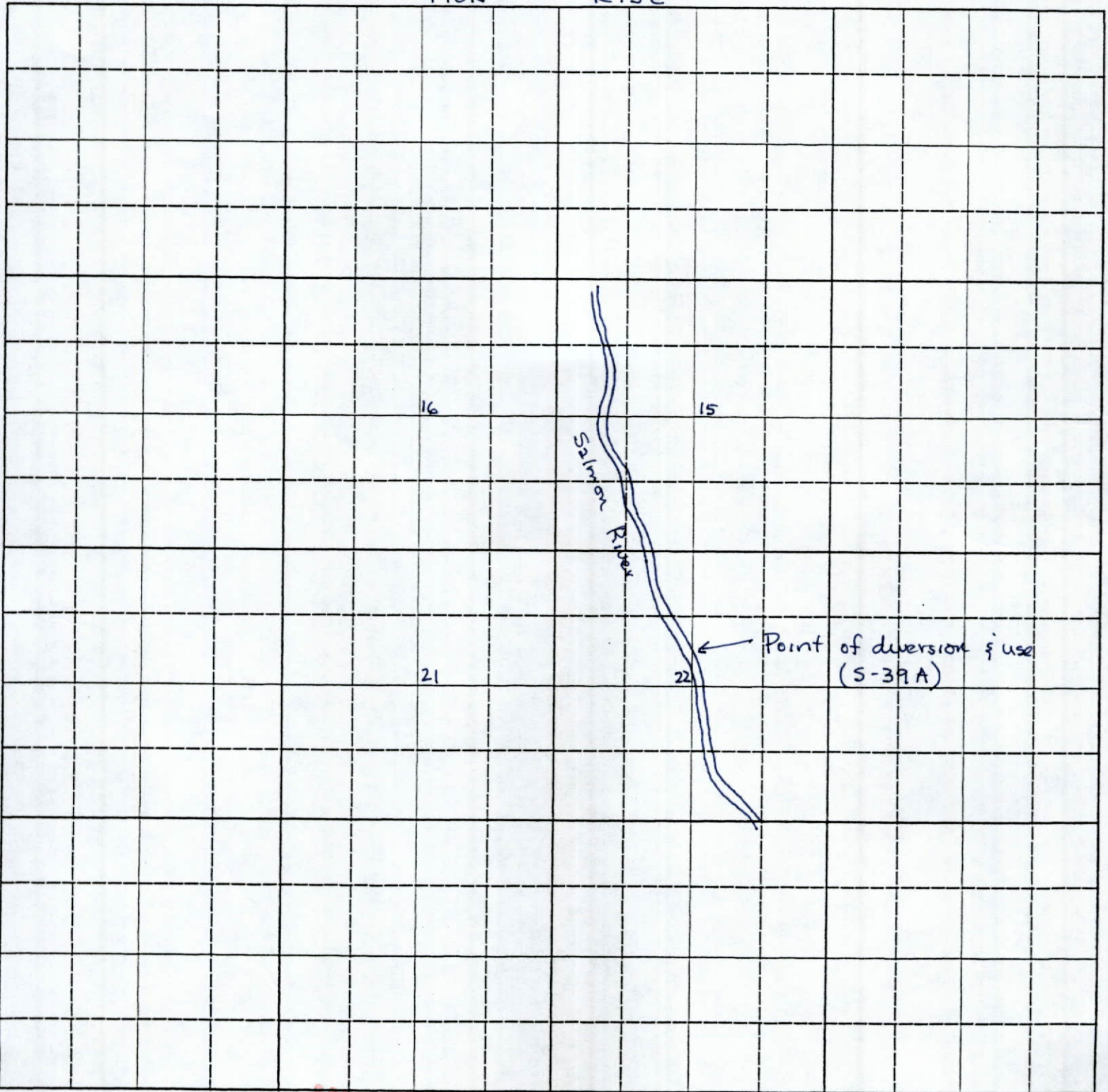


71-7163

13. Map of proposed project: show clearly the proposed point of diversion, place of use, section number, township and range number.

TION R13E



Scale: 2 inches equal 1 mile.

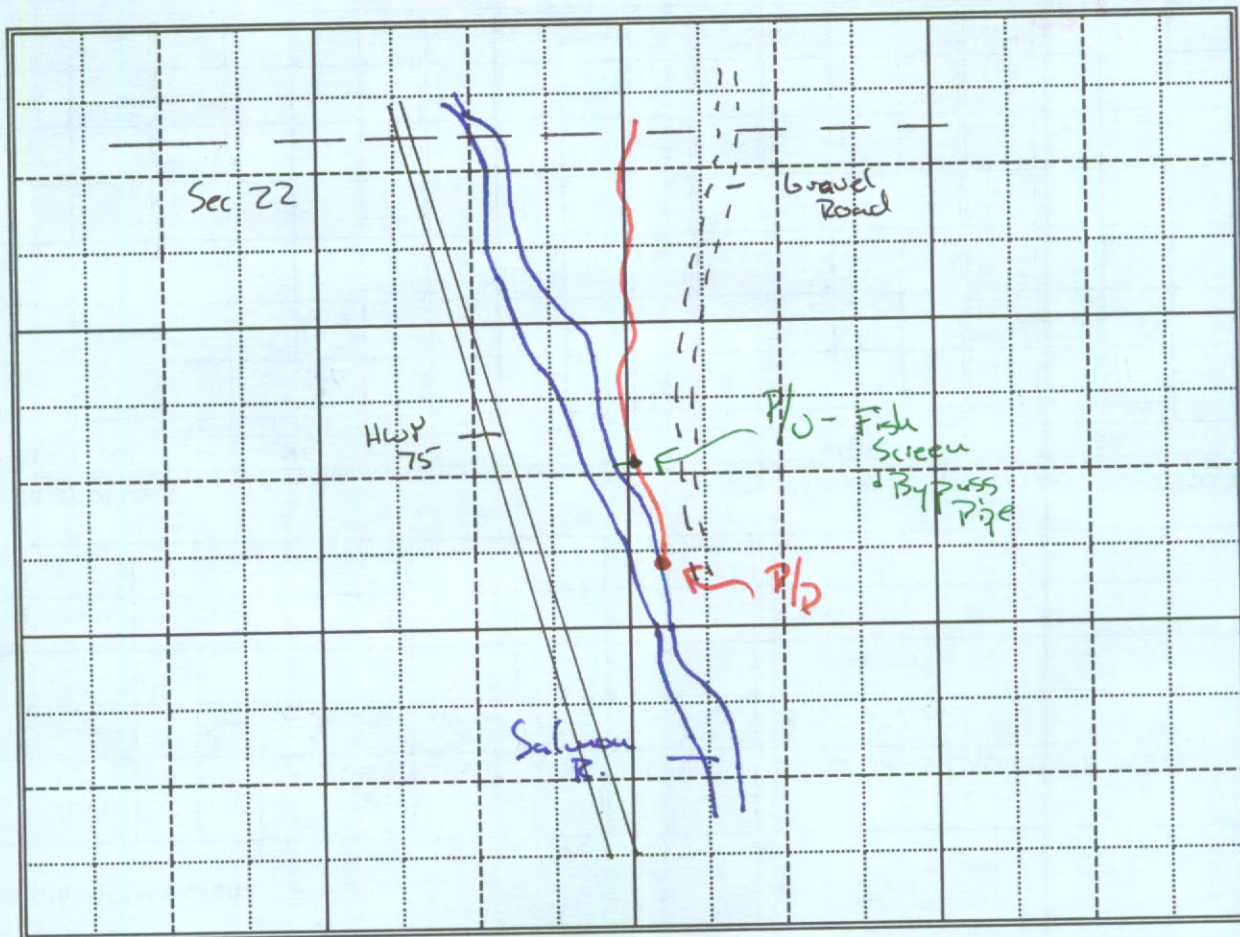
BE IT KNOWN that the undersigned hereby makes application for permit to appropriate the public waters of the State of Idaho as herein set forth.

MICROFILMED

NOV 27 1992

Cynthia Robertson IDFG
(Applicant)

3. **Delivery System Diagram:** Indicate all major components and distances between components. Indicate weir size/ditch size/pipe i.d. as applicable.



Scale: $\bar{r}$ = Not to Scale

☒ Copy of USGS Quadrangle Attached Showing location(s) of point(s) of diversion and place(s) of use (required).

☐ Aerial Photo Attached (required for irrigation of 10+ acres)

☒ Photo of Diversion and System Attached

4.

Well or Diversion Identification No.*	Motor Make	Hp	Motor Serial No.	Pump Make	Pump Serial No. or Discharge Size
W/1					

*Code to correspond with No. on map and aerial photo

D. FLOW MEASUREMENTS

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date
WWE						

2. Measurements: H_2O Depth to Middle of Inlet = 1.18'

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P71-07163

Prepared by Brett Barry
on 9-3-93

145. **Orifice Relationships.**—Formulas (45) and (46) can be used to develop a formula for flow through an orifice (a hole in the side or bottom of a container of water (fig. 107)). To find the velocity of flow in the orifice, use formula (46), $v = \sqrt{2gh}$. Then using the size or area of the hole, the quantity of water being discharged, Q , can be determined using formula

310 WATER MEASUREMENT MANUAL

(45), $Q = Av$. This can be accomplished in one step, however, if the two formulas are combined.

Inserting the value $\sqrt{2gh}$ for v in $Q = Av$ gives

$$Q = A\sqrt{2gh}, \quad (47)$$

the formula for the *theoretical* discharge through an orifice. This formula assumes that the water is frictionless and is an ideal fluid. Since water is not an ideal fluid, a correction must be made.

The jet of water, after passing through the orifice, continues to contract, and if the orifice edges are sharp, the jet will appear as shown in figure 108. The maximum jet contraction occurs at a distance of one-half the orifice diameter, or $d/2$, downstream from the sharp edge, and the cross-sectional area of the jet will be only about six-tenths of the area of the orifice. Accordingly, formula (47) must contain a coefficient, C , to accurately determine the quantity of water being discharged. Thus, in actual practice,

$$Q = CA\sqrt{2gh} \quad (48)$$

For a sharp-edged orifice where full contraction occurs, the coefficient is about 0.61, and the formula becomes

$$Q = 0.61A\sqrt{2gh}$$

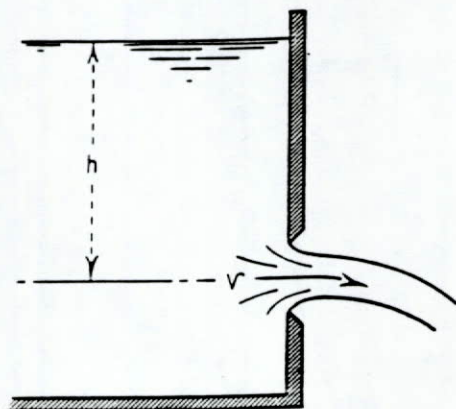


Figure 107.—Orifice flow. 103-D-986.

Water Measurement
Manual

United States Department of Interior
Bureau of Reclamation Denver 1967 pgs 309-310

TUBES, CULVERTS, AND SIPHONS

Cylindrical Tubes. A short cylindrical tube $2\frac{1}{2}$ to 3 diameters in length with sharp upstream corners (Fig. 43) is called a *standard short tube*. The sharp corner causes the jet to contract, but it soon expands and fills the tube. The space s surrounding the contracted jet is filled with air and eddying water. Since the velocity at m in the contracted

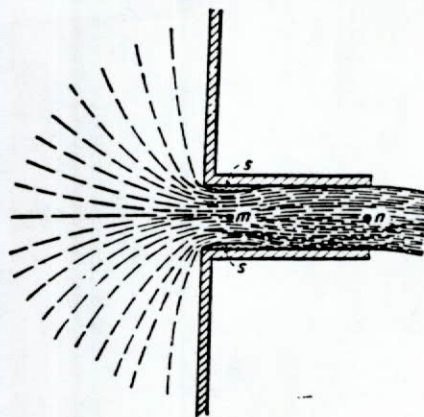


Fig. 43. Standard short tube.

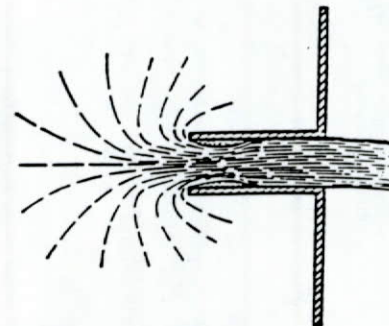


Fig. 44. Reentrant tube.

jet is greater than at the outlet n where pressure is atmospheric, it can be shown by Bernoulli's equation that the pressure at m is less than atmospheric pressure. The discharge of this tube is therefore greater than the discharge of a sharp-edged orifice of the same diameter under the same head. Since the tube flows full, the coefficient of contraction is unity, and the coefficient of discharge [Eq. (54)] equals the coefficient of velocity. From experiments, the average coefficient of discharge C is 0.82. Substituting this value of C , or C_v , in Eq. (58) gives as the head lost in discharge

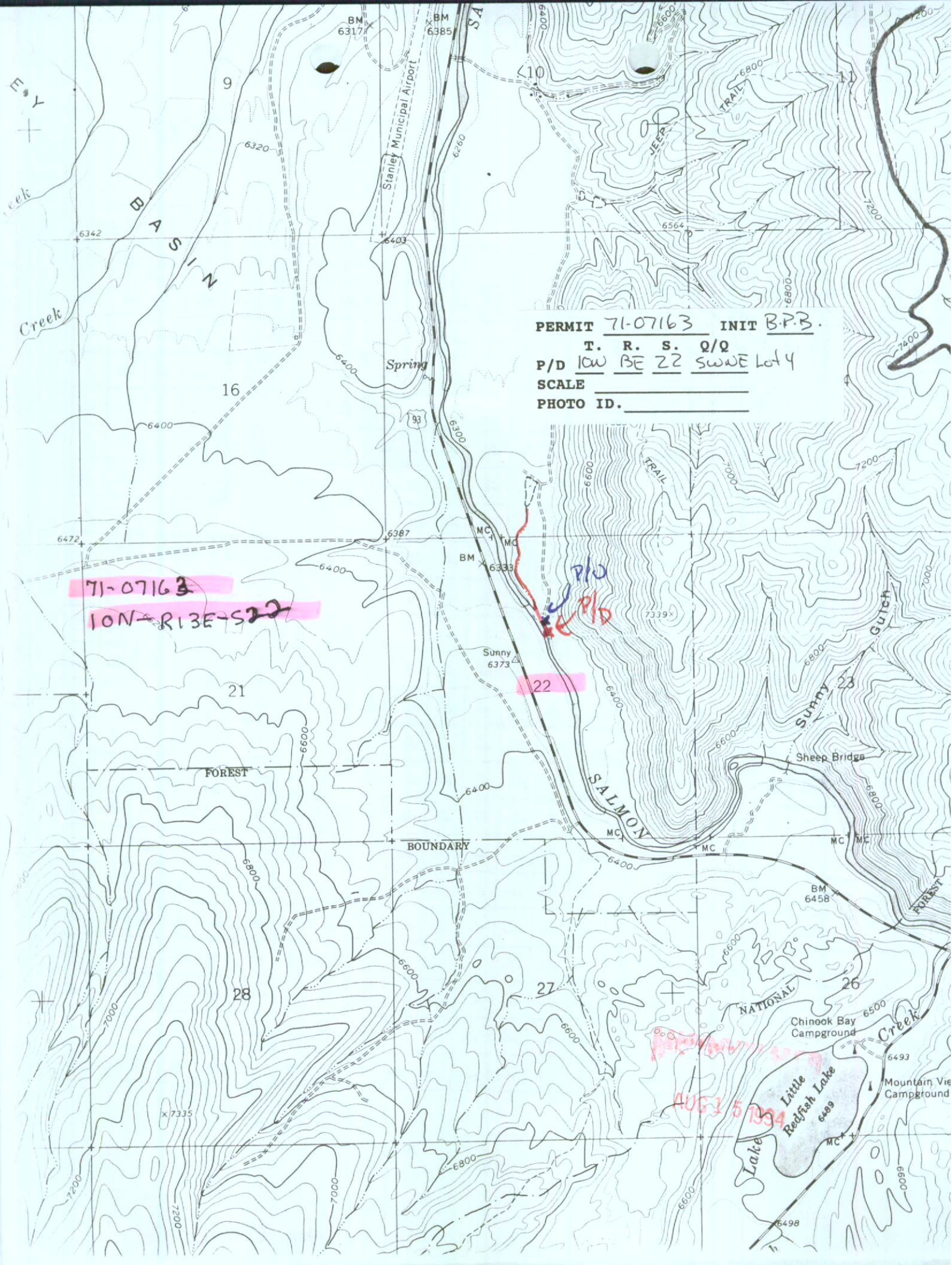
$$h_t = 0.50 \frac{v^2}{2g} \quad (65)$$

where v is the mean velocity in the tube. The conditions of flow in a short tube correspond to the conditions at the entrance to a pipe.

A tube projecting into a body of water (Fig. 44) is called a *reentrant tube*. The contraction produced by this tube is greater than for the standard short tube. The behavior of the water in the two kinds of tubes is otherwise similar. From experiments, the coefficient of discharge $C = 0.75$ and the lost head $h_t = 0.78v^2/2g$.

Civil Engineering Handbook
Urquhart, Leonard
McGraw-Hill Book Company, Inc.
1959 pgs. 4-37-4-38

AUG 15 1994



PERMIT 71-07163 INIT B.P.B.
T. R. S. Q/Q
P/D 10N BE 22 SWNE Lot 4
SCALE _____
PHOTO ID. _____

71-07163
10N-R13E-S22

22

P/D
P/D

AUG 15 1994

SECTION 8

10N13E

P71-07163

08 LT04	08 LT03	08 LT02	08 LT01	05 LT04	05 LT03	05 LT02	05 LT01	04 LT04	04 LT03	04 LT02	04 LT01	03 LT05	03 LT04	03 LT03	03 LT02	03 LT01	01 LT04	01 LT03	01 LT02	01 LT01	
08 LT05	08 SEHW	08 SWHE	08 SEHE	05 SEHW	05 SEHW	05 SWHE	05 SEHE	04 SEHW	04 SEHW	04 SWHE	04 SEHE	03 SEHW	03 LT07	03 SEHE	03 SEHW	03 SWHE	03 SEHE	01 SEHW	01 SEHW	01 SWHE	01 SEHE
08 LT06	08 NEHW	08 NWHE	08 NEHE	05 NEHW	05 NEHW	05 NWHE	05 NEHE	04 NEHW	04 NEHW	04 NWHE	04 NEHE	03 NEHW	03 LT08	03 NEHE	03 NEHW	03 NWHE	03 NEHE	01 NEHW	01 NEHW	01 NWHE	01 NEHE
08 LT07	08 SEHW	08 SWHE	08 SEHE	05 SEHW	05 SEHW	05 SWHE	05 SEHE	04 SEHW	04 SEHW	04 SWHE	04 SEHE	03 LT10	03 LT11	03 SEHE	03 SEHW	03 SWHE	03 SEHE	01 SEHW	01 SEHW	01 SWHE	01 SEHE
07 LT01	07 NEHW	07 NWHE	07 NEHE	04 NEHW	04 NEHW	04 NWHE	04 NEHE	03 NEHW	03 NEHW	03 NWHE	03 NEHE	02 LT02	02 LT01	02 NEHE	02 NEHW	02 NWHE	02 NEHE	11 NEHW	11 NEHW	12 NEHW	12 NEHE
07 LT02	07 SEHW	07 SWHE	07 SEHE	04 SEHW	04 SEHW	04 SWHE	04 SEHE	03 SEHW	03 SEHW	03 SWHE	03 SEHE	02 LT03	02 LT04	02 SWHE	02 SEHE	02 SEHW	02 SWHE	11 SEHW	11 SEHW	12 SEHW	12 SEHE
07 LT03	07 NEHW	07 NWHE	07 NEHE	04 NEHW	04 NEHW	04 NWHE	04 NEHE	03 NEHW	03 NEHW	03 NWHE	03 NEHE	02 LT05	02 LT06	02 NWHE	02 NEHE	02 NEHW	02 NWHE	11 NWHE	11 NEHE	12 NWHE	12 NEHE
07 LT04	07 SEHW	07 SWHE	07 SEHE	04 SEHW	04 SEHW	04 SWHE	04 SEHE	03 SEHW	03 SEHW	03 SWHE	03 SEHE	02 LT07	02 LT08	02 SWHE	02 SEHE	02 SEHW	02 SWHE	11 SEHW	11 SEHE	12 SEHW	12 SEHE
18 LT01	18 NEHW	18 NWHE	18 NEHE	17 NEHW	17 NEHW	17 NWHE	17 NEHE	16 NEHW	16 NEHW	16 NWHE	16 NEHE	15 LT02	15 LT01	15 NEHE	15 NEHW	15 NWHE	15 NEHE	14 NEHW	14 NEHW	13 NEHW	13 NEHE
18 LT02	18 SEHW	18 SWHE	18 SEHE	17 SEHW	17 SEHW	17 SWHE	17 SEHE	16 SEHW	16 SEHW	16 SWHE	16 SEHE	15 LT03	15 LT04	15 SWHE	15 SEHE	15 SEHW	15 SWHE	14 SEHW	14 SEHW	13 SEHW	13 SEHE
18 LT03	18 NEHW	18 NWHE	18 NEHE	17 NEHW	17 NEHW	17 NWHE	17 NEHE	16 NEHW	16 NEHW	16 NWHE	16 NEHE	15 LT05	15 LT06	15 NWHE	15 NEHE	15 NEHW	15 NWHE	14 NWHE	14 NEHE	13 NWHE	13 NEHE
18 LT04	18 SEHW	18 SWHE	18 SEHE	17 SEHW	17 SEHW	17 SWHE	17 SEHE	16 SEHW	16 SEHW	16 SWHE	16 SEHE	15 LT07	15 LT08	15 SWHE	15 SEHE	15 SEHW	15 SWHE	14 SEHW	14 SEHE	13 SEHW	13 SEHE
19 LT01	19 NEHW	19 NWHE	19 NEHE	20 NEHW	20 NEHW	20 NWHE	20 NEHE	21 NEHW	21 NEHW	21 NWHE	21 NEHE	22 LT02	22 LT01	22 NEHE	22 NEHW	22 NWHE	22 NEHE	24 NEHW	24 NEHW	25 NEHW	25 NEHE
19 LT02	19 SEHW	19 SWHE	19 SEHE	20 SEHW	20 SEHW	20 SWHE	20 SEHE	21 SEHW	21 SEHW	21 SWHE	21 SEHE	22 LT03	22 LT04	22 SWHE	22 SEHE	22 SEHW	22 SWHE	24 SEHW	24 SEHW	25 SEHW	25 SEHE
19 LT03	19 NEHW	19 NWHE	19 NEHE	20 NEHW	20 NEHW	20 NWHE	20 NEHE	21 NEHW	21 NEHW	21 NWHE	21 NEHE	22 LT05	22 LT06	22 NWHE	22 NEHE	22 NEHW	22 NWHE	24 NWHE	24 NEHE	25 NWHE	25 NEHE
19 LT04	19 SEHW	19 SWHE	19 SEHE	20 SEHW	20 SEHW	20 SWHE	20 SEHE	21 SEHW	21 SEHW	21 SWHE	21 SEHE	22 LT07	22 LT08	22 SWHE	22 SEHE	22 SEHW	22 SWHE	24 SEHW	24 SEHE	25 SEHW	25 SEHE
20 LT01	20 NEHW	20 NWHE	20 NEHE	21 NEHW	21 NEHW	21 NWHE	21 NEHE	22 NEHW	22 NEHW	22 NWHE	22 NEHE	23 LT02	23 LT01	23 NEHE	23 NEHW	23 NWHE	23 NEHE	25 NEHW	25 NEHW	26 NEHW	26 NEHE
20 LT02	20 SEHW	20 SWHE	20 SEHE	21 SEHW	21 SEHW	21 SWHE	21 SEHE	22 SEHW	22 SEHW	22 SWHE	22 SEHE	23 LT03	23 LT04	23 SWHE	23 SEHE	23 SEHW	23 SWHE	25 SEHW	25 SEHW	26 SEHW	26 SEHE
20 LT03	20 NEHW	20 NWHE	20 NEHE	21 NEHW	21 NEHW	21 NWHE	21 NEHE	22 NEHW	22 NEHW	22 NWHE	22 NEHE	23 LT05	23 LT06	23 NWHE	23 NEHE	23 NEHW	23 NWHE	25 NWHE	25 NEHE	26 NWHE	26 NEHE
20 LT04	20 SEHW	20 SWHE	20 SEHE	21 SEHW	21 SEHW	21 SWHE	21 SEHE	22 SEHW	22 SEHW	22 SWHE	22 SEHE	23 LT07	23 LT08	23 SWHE	23 SEHE	23 SEHW	23 SWHE	25 SEHW	25 SEHE	26 SEHW	26 SEHE
31 LT01	31 NEHW	31 NWHE	31 NEHE	32 NEHW	32 NEHW	32 NWHE	32 NEHE	33 NEHW	33 NEHW	33 NWHE	33 NEHE	34 LT02	34 LT01	34 NEHE	34 NEHW	34 NWHE	34 NEHE	36 NEHW	36 NEHW	37 NEHW	37 NEHE
31 LT02	31 SEHW	31 SWHE	31 SEHE	32 SEHW	32 SEHW	32 SWHE	32 SEHE	33 SEHW	33 SEHW	33 SWHE	33 SEHE	34 LT03	34 LT04	34 SWHE	34 SEHE	34 SEHW	34 SWHE	36 SEHW	36 SEHW	37 SEHW	37 SEHE
31 LT03	31 NEHW	31 NWHE	31 NEHE	32 NEHW	32 NEHW	32 NWHE	32 NEHE	33 NEHW	33 NEHW	33 NWHE	33 NEHE	34 LT05	34 LT06	34 NWHE	34 NEHE	34 NEHW	34 NWHE	36 NWHE	36 NEHE	37 NWHE	37 NEHE
31 LT04	31 SEHW	31 SWHE	31 SEHE	32 SEHW	32 SEHW	32 SWHE	32 SEHE	33 SEHW	33 SEHW	33 SWHE	33 SEHE	34 LT07	34 LT08	34 SWHE	34 SEHE	34 SEHW	34 SWHE	36 SEHW	36 SEHE	37 SEHW	37 SEHE

IMPROVED
AUG 15 1994

Salmon R. in
background



P71-07163
These photos were
taken on 8-3-93.

P/O

6" pvc inlet flush
with concrete structure

P/O is approximately



6" pvc outlet
open discharge
75% full pipe
runs into excess bypass
ditch which runs
directly into Salmon R.

MINNESOTA

AUG 15 1994

State of Idaho
Department of Water Resources

WATER RIGHT LICENSE

WATER RIGHT NO. 71-07163

Priority: June 9, 1992

Maximum Diversion Rate:

0.80 CFS

This is to certify, that STATE OF IDAHO
DEPT OF FISH & GAME
PO BOX 25
BOISE ID 83707

has complied with the terms and conditions
of the permit, issued pursuant to Application for Permit dated June 9, 1992; and
has submitted Proof of Beneficial Use on January 13, 1993. An examination indicates
that the works have a diversion capacity of 1.520 cfs of water from:

SALMON RIVER

tributary to SNAKE RIVER

source, and a water right has been established as follows:

<u>BENEFICIAL USE</u>	<u>PERIOD OF USE</u>	<u>RATE OF DIVERSION</u>	<u>ANNUAL VOLUME</u>
FISH PROPAGATION	05/01 to 09/30	0.80 CFS	

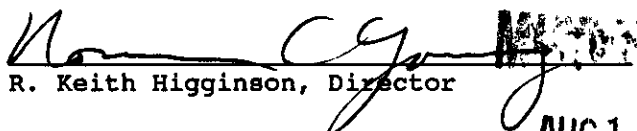
LOCATION OF POINT(S) OF DIVERSION: Lot 4(SWNE), Sec. 22, Township 10N, Range 13E
CUSTER County

PLACE OF USE: FISH PROPAGATION
TWN RGE SEC
10N 13E 22 Lot 4(SWNE)

CONDITIONS/REMARKS:

1. This water right is appurtenant to the described place of use.
2. This right is subject to all prior water rights and may be forfeited by five years of non-use.
3. Modifications to or variance from this license must be made within the limits of Section 42-222, Idaho Code, or the applicable Idaho law.
4. Use of water under this right shall be non-consumptive.
5. The issuance of this right in no way grants any right-of-way or easement across the land of another.
6. Fish propagation use is for fish protection through the installation of a deflecting screen at a diversion canal entrance and a bypass pipe to flush the fish back to the Salmon River.

This license is issued pursuant to the provisions of Section 42-219, Idaho Code.
Witness the seal and signature of the Director, affixed at Boise, this 19TH
day of July, 1994.

Acting for  R. Keith Higginson, Director

AUG 15 1994

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JAN 13 1993

Department of Water Resources

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

OFFICE USE ONLY

Amt. of Fee \$ 100.00

Date 1-14-93

Receipt No. 0076514

Receipt by [Signature]

PROOF OF BENEFICIAL USE

The Idaho Department of Water Resources considers this form a statement that the permit holder(s) has/have completed all development that will occur under this permit and that water has been applied according to the provisions of the permit for the beneficial use(s) described below. This form must be accompanied by a license examination fee, when necessary, or a completed field examination report prepared by a certified water right examiner who has been appointed by the department.

1. Permit No. 71-07163 Telephone No. (208) 334-3700

2. Name(s) of Permit Holder(s): Idaho Department of Fish and Game

3. Mailing Address: 600 S. Walnut, Boise, Idaho 83707

4. Source of Water: Salmon River, tributary of Snake River

If GROUNDWATER, Well Driller's Name: _____ Date Drilled: _____

OPTIONAL:

Pump horsepower: _____ Pressure (psi): _____ Dynamic pumping level (ft.): _____

5. Extent of Use (as authorized by the permit):

Domestic _____ (No. of households) Stockwater _____ (No. and type of stock)

Irrigation _____ (No. of acres) Other Fish Propagation

6. Total rate and/or volume for which proof is submitted 0.80 cfs OR _____ acre/feet

7. Refer to the approval conditions on your permit and respond accordingly:

Measuring device: Required? _____ Yes X No Installed? _____ Yes _____ No

OR

Flow Measurement Port: Required? _____ Yes X No Installed? _____ Yes _____ No

8. Fee Enclosed: \$ 100.00 (See License Fee Schedule on back of Instruction Sheet)

9. Person to contact to accompany the Department representative during field examination of the water system.

Jim Blake (208) 756-2271
Name Telephone No.

P.O. Box 1336, Highway 93 N, Salmon, Idaho 83467
Address

10. The above information is my true statement of the extent to which the above numbered permit has been developed and I relinquish any undeveloped portion of the permit to the state of Idaho.

12-10-92 Jim Blake County Supervisor J. R. F. & B.
Date Signature (and title, if on behalf of a company or organization)

FEB 05 1993

State of Idaho
Department of Water Resources

Permit To Appropriate Water

NO. 71-07163

Proposed Priority: June 9, 1992

Maximum Diversion Rate:

0.80 CFS

This is to certify, that **STATE OF IDAHO**
DEPT OF FISH & GAME
PO BOX 25
BOISE ID 83707

has applied for a permit to appropriate water from:

SALMON RIVER

tributary of **SNAKE RIVER**

and a permit is **APPROVED** for development of water as follows:

<u>BENEFICIAL USE</u>	<u>PERIOD OF USE</u>	<u>RATE OF DIVERSION</u>
FISH PROPAGATION	03/15 to 11/15	0.80 CFS

LOCATION OF POINT(S) OF DIVERSION: Lot 4(SWNE), Sec. 22, Township 10N, Range 13E
CUSTER County

PLACE OF USE: FISH PROPAGATION
TWN RGE SEC

10N 13E 22 SWNE

CONDITIONS/REMARKS:

1. Proof of construction of works and application of water to beneficial use shall be submitted on or before **November 1, 1993**.
2. Subject to all prior water rights.
3. Use of water under this right shall be non-consumptive.
4. The issuance of this right in no way grants any right-of-way or easement across the land of another.
5. Fish propagation use is for fish protection through the installation of a deflecting screen at a diversion canal entrance and a bypass pipe to flush the fish back to the Salmon River.

This permit is issued pursuant to the provisions of Section 42-204, Idaho Code.
Witness the signature of the Director, affixed at Boise, this

29th day of September, 1992

R. Keith Higginson
for R. Keith Higginson, Director

MICROFILMED

OCT 27 1992

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
APPLICATION FOR PERMIT

Ident. No. 71-7163

RECEIVED

OCT 17 1992

Department of Water Resources
Southern Region Office

To appropriate the public waters of the State of Idaho

1. Name of applicant Idaho Department of Fish and Game Phone 334-3700

Post office address 600 S. Walnut, P.O. Box 25 Boise ID 83707

2. Source of water supply Salmon River which is a tributary of Snake River

3. Location of point of diversion is _____ 1/4 of SW 1/4 of NE 1/4, Govt. Lot 4

Sec. 22 Township 10N Range 13E B.M. Custer County; additional points of diversion if any: _____

4. Water will be used for the following purposes:

Amount 0.8 for fish propagation purposes from 3/15 to 11/15 (both dates inclusive)
(cfs or acre-feet per annum)

Amount _____ for _____ purposes from _____ to _____ (both dates inclusive)
(cfs or acre-feet per annum)

Amount _____ for _____ purposes from _____ to _____ (both dates inclusive)
(cfs or acre-feet per annum)

Amount _____ for _____ purposes from _____ to _____ (both dates inclusive)
(cfs or acre-feet per annum)

5. Total quantity to be appropriated is (a) 0.8 and/or (b) _____
cubic feet per second acre feet per annum

6. Proposed diverting works:

a. Description of ditches, flumes, pumps, headgates, etc. Concrete structure in ditch with screen and bypass pipe.

b. Height of storage dam _____ feet; active reservoir capacity _____ acre-feet; total reservoir capacity _____ acre-feet; period of year when water will be diverted to storage: _____ to _____ inclusive.

c. Proposed well diameter is _____ inches; proposed depth of well is _____ feet.

d. Is ground water with a temperature of greater than 90°F being sought? no

7. Time required for the completion of the works and application of the water to the proposed beneficial use is Screen built in 1976 and has operated since _____ years (minimum 1 year).

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OCT 27 1992

8. Description of proposed uses (if irrigation only, go to item 9):

- Hydropower; show total feet of head and proposed capacity in KW. _____
- Stockwatering; list number and kind of livestock. _____
- Municipal; show name of municipality. _____
- Domestic; show number of households. _____
- Other; describe fully. Fish - screen prevents fish from entering irrigation ditch and bypass pipe returns fish and water to river

9. Description of place of use:

- If water is for irrigation, indicate acreage in each subdivision in the tabulation below.
- If water is used for other purposes, place a symbol of the use (example: D for Domestic) in the corresponding place of use below. See instructions for standard symbols.

TWP	RANGE	SEC.	NE¼				NW¼				SW¼				SE¼				TOTALS
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	
10N	13E	22			14														

Total number of acres to be irrigated _____

10. Describe any other water rights used for the same purposes as described above. none

11. a. Who owns the property at the point of diversion? C.M. & E.M. Fiedler

b. Who owns the land to be irrigated or place of use? same

c. If the property is owned by a person other than the applicant, describe the arrangement enabling the applicant to make this filing. Easement agreement S-39A filed at Custer Co. courthouse on 11/17/60, pp 34-36, Book 34. Ditch owners C.M. & E.M. Fiedler

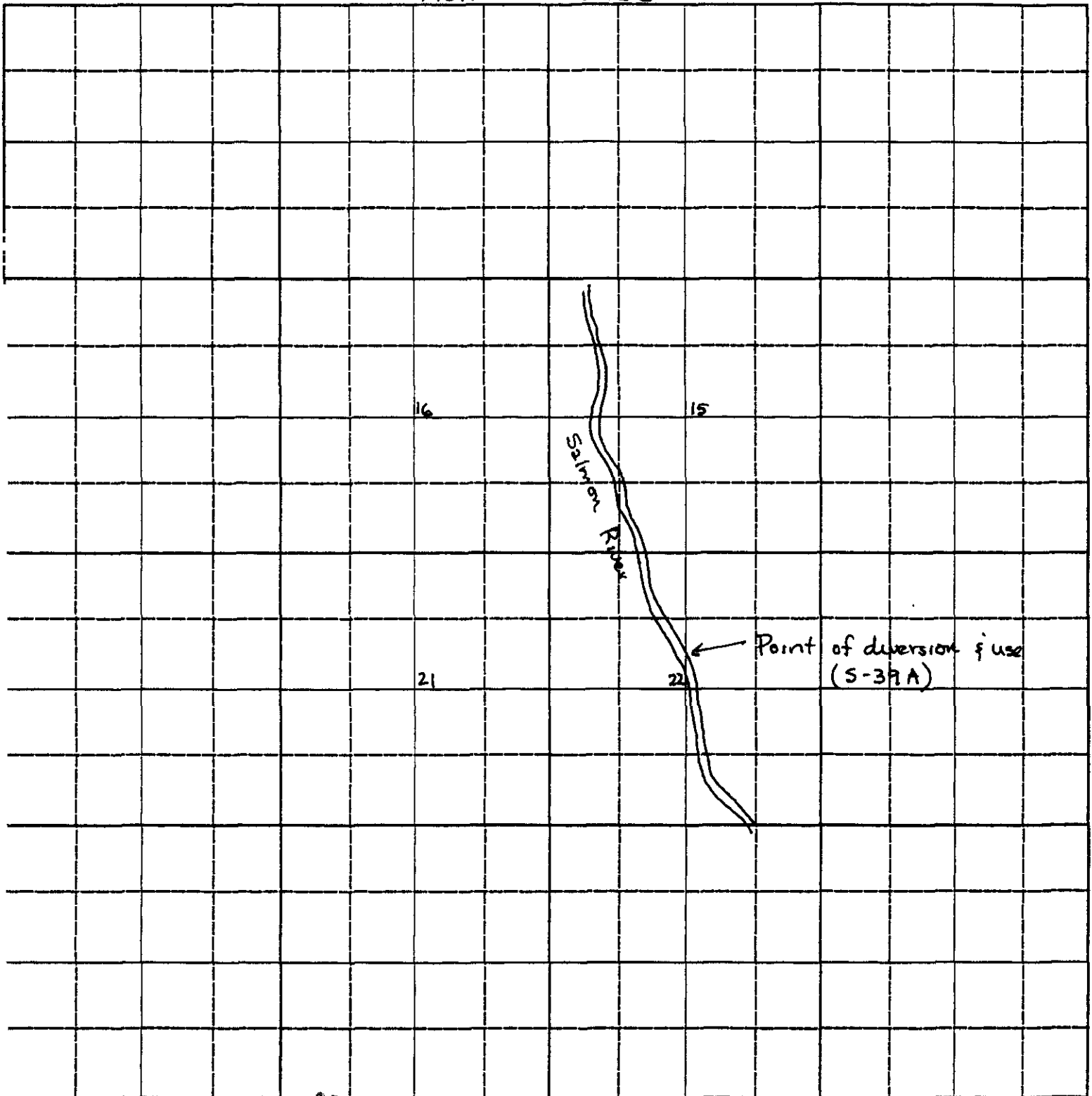
12. Remarks: _____

MICROFILMED
OCT 27 1992

71-7163

13. Map of proposed project: show clearly the proposed point of diversion, place of use, section number, township and range number.

TION R13E



Scale: 2 inches equal 1 mile.

BE IT KNOWN that the undersigned hereby makes application for permit to appropriate the public waters of the State of Idaho as herein set forth

RECORDED
667th

7 1992

Cynthia Robertson IDFG
(Applicant)

Received by SA Date 6/10/92 Time 2:30 Preliminary check by MTS
Fee \$ 4500 Receipted by SA # C024477 Date 6/10/92 fee rec'd 6/9
Publication prepared by MB Date 7/6/92 Published in Challis Messenger
Publication approved M. Baldwin Date 8-24-92

ACTION OF THE DIRECTOR, DEPARTMENT OF WATER RESOURCES

This is to certify that I have examined Application for Permit to appropriate the public waters of the State of Idaho No. _____, and said application is hereby _____.

1. Approval of said application is subject to the following limitations and conditions:

a. SUBJECT TO ALL PRIOR WATER RIGHTS.

b. Proof of construction of works and application of water to beneficial use shall be submitted on or before _____, 19 ____.

c. The rate of diversion, if water is to be used for irrigation under this permit, when combined with all other water rights for the same land shall not exceed 0.02 cubic feet per second for each acre of land.

d. The water right acquired under this permit if for hydropower purposes shall be junior and subordinate to all rights to the use of water, other than hydropower, within the State of Idaho that are initiated later in time than the priority of this permit and shall not give rise to any right or claim against any future rights to the use of water, other than hydropower, within the State of Idaho initiated later in time than the priority of this permit.

e. Other:

MICROFILMED
OCT 27 1992



State of Idaho

DEPARTMENT OF WATER RESOURCES

1301 North Orchard Street, Statehouse Mail, Boise, Idaho 83720-9000

Phone: (208) 327-7900 FAX: (208) 327-7866

CECIL D. ANDRUS
GOVERNOR

R. KEITH HIGGINSON
DIRECTOR

July 20, 1994

STATE OF IDAHO
DEPT OF FISH & GAME
PO BOX 25
BOISE ID 83707

RE: WATER RIGHT NO. 71-07163

Dear Water Right Holder(s):

Enclosed herewith is a copy of the Water Right License issued on the above referenced permit. If you have any questions, please contact me within 10 days of receipt of this license.

Sincerely,

JIM JOHNSON, Manager
Water Right Permits Section

JJ:dc

Enclosure

RECEIVED

AUG 15 1994

DATE: 06/23/94
PAGE: 1

Date: 01/14/1993 User-ID: VAULT Subject: Proof of Beneficial Use Rcvd

LICENSE REVIEW CHECKLIST

PERMIT NO. 71-07163

DATE 6-23-94



NAME	Yes ☐	No ☒	Or Address Change?
PRIORITY DATE	☐	☒	Advance? ☐ Advanced to: ☐ Order to reinstate needed? ☐ Incorrect fee for rate recommended? <u>NO</u>
SOURCE	☐	☒	Changes or just clarification of originally intended source? ☐ Notice of Intent to Void necessary? ☐
POINT OF DIV	☐	☒	Amendment needed? ☐ Overlaps? ☐
PLACE OF USE	☐	☒	Amendment needed? <u>Add Gov Lot #4</u> Overlaps? ☒
DIV RATE	☐	☒	Measurement Q = <u>1.52</u> Theoretical Q = ☐
Capacity: <u>1.52</u> Combined rates exceed capacity ☐ Permit/fee limits: <u>.80</u> Allowable: <u>.80 CFS</u>			
ANNUAL VOLUME	☐	☒	Season of use: <u>5-1 to 9-30 (ok/new)</u> Calculations: <u>-NA-</u>
Flow limit: ☐ cfs x ☐ x 1.9835 = ☐ Combined volumes exceed capacity/allowable ☐			
USES	☐	☒	Change in Nature of Use or additional uses? ☐ Amendment necessary? ☐
REMARKS	☒	☒	Multiple p/d(s) in 1/4 1/4? ☐ Other <u>SUBORDINATING REMARK</u>
CONDITIONS	☐	☒	Measuring/Locking Devices ☐ Watermaster control - District ☐ Irrigation Overlap ☒ Water Quality ☒ Other <u>004, 027</u>

COMMENTS: _____

RECOMMENDED	CFS	VOLUME	LICENSE ☒
<u>Lish Prop</u>	<u>.80</u>	☐	
☐	☐	☐	1ST AMENDMENT LETTER ☐
☐	☐	☐	FINAL AMENDMENT LETTER ☐



STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

RECEIVED

JUN 17 1994

Department of Water Resources

A. GENERAL INFORMATION

Permit No. P71-07163

1. Owner: State of Idaho - Dept. of Fish & Game Phone No. 334-3700

Current Address: 600 S. Walnut, P.O. Box 25 Boise 83707

2. Accompanied by: Robert Downing, Mel Schulte & Loren Holmes EXAM DATE: 8-3-93
(IDWR)

Address: _____ Phone No. 774-3613

Relationship to Permit Holder: Screen Tender - IDF#6

3. Source: Salmon River tributary to Snake River

B. OVERLAP REVIEW

1. Other water rights with the same place of use: NONE

2. Other water rights with the same point of diversion: A71-10117, A71-10631

C. DIVERSION AND DELIVERY SYSTEM

1. Point(s) of Diversion:

Ident No.	Gov't Lot	1/4	1/4	1/4	Sec.	Twp.	Rge.	County	Method of Determination/Remarks
	4		SW	NE	22	10W	13E	Custer	USGS Topo

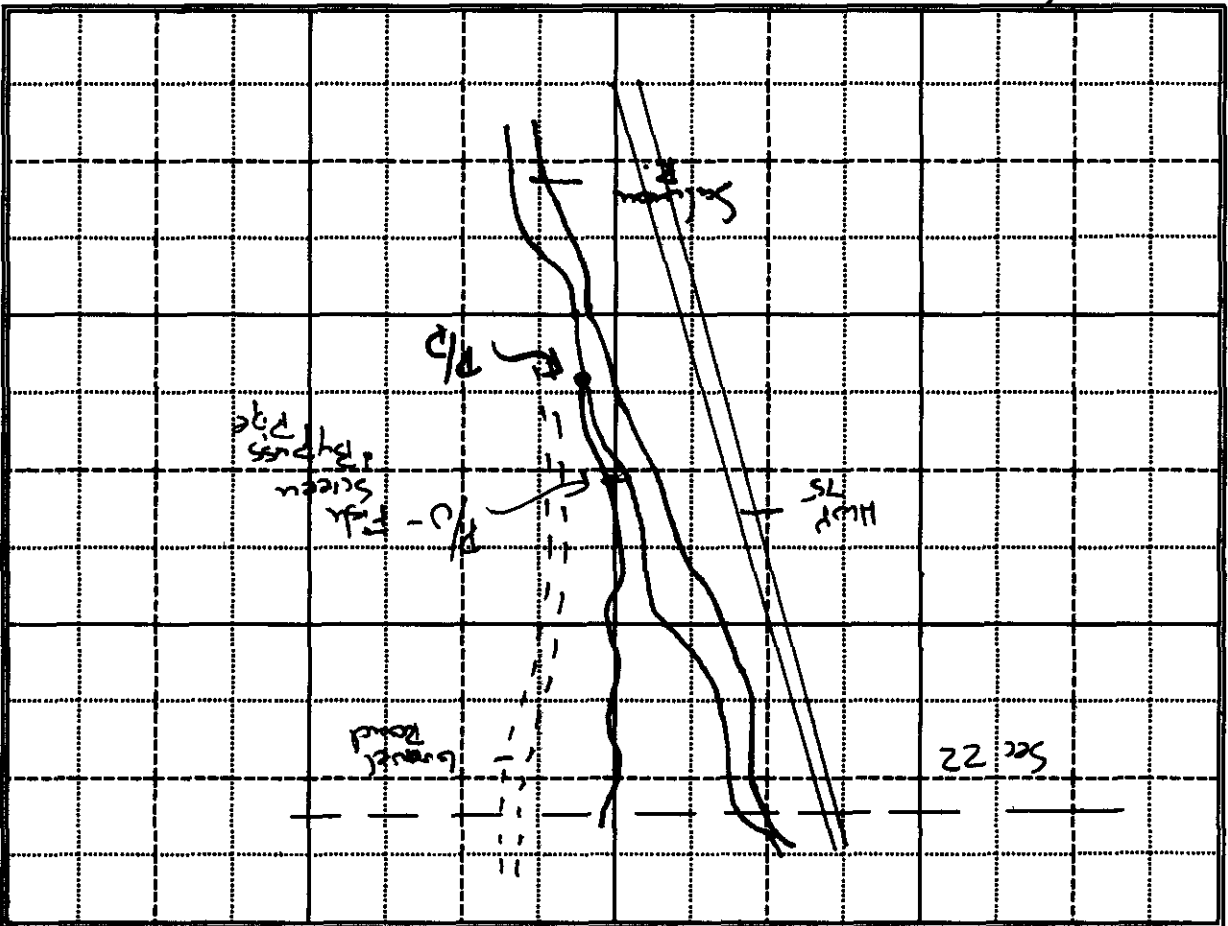
2. Place(s) of Use:

Indicate Method of Determination USGS Topo, Inspection

TWP	RGE	SEC	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
10W	13E	22			H														H
					L+4														

AUG 15 1994

3. Delivery System Diagram: Indicate all major components and distances between components. Indicate well size/ditch size/pipe l.d. as applicable.



Scale 1" = 100' to Scale

Copy of USGS Quadrangle Attached Showing location(s) of point(s) of diversion and place(s) of use (required).
Aerial Photo Attached of 10+ acres (required for irrigation of 10+ acres)
Photo of Diversion and System Attached

Well or Diversion Identification No.*	Motor Make	Hp	Motor Serial No.	Pump Make	Pump Serial No. or Discharge Size
W/A					

*Code to correspond with No. on map and aerial photo

D. FLOW MEASUREMENTS

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date

2. Measurements: H₂O Depth to middle of Inlet = 1.18'

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E. NARRATIVE/REMARKS/COMMENTS

A 6" pvc bypass pipe runs west into an excess bypass ditch that runs about 40' directly to the Salmon R.

The 6" pvc inlet is flush with the concrete structure in the irrigation canal. The 6" outlet is an open discharge and the pipe is about 75% full.

Because the pipe wasn't full, the system is treated as a submerged orifice (see attached calculation).

The H₂O depth to the middle of the inlet was 1.18'.

The use of water shall be non-consumptive only.

This water right is subordinate to all existing water rights at the point of diversion.

Water returns to the Salmon River in the SWNE (1+4), S22, 10° 13'E

Have conditions of permit approval been met? ☒ yes ☐ no

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F. FLOW CALCULATIONS

Measured Method:

☒ Additional Computation Sheets Attached

G. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation: *N/A*

$$V_{LR} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = \underline{\hspace{2cm}}$$

$$V_{D,R} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation Season}) \times 1.9835 = \underline{\hspace{2cm}}$$

$$V = \text{Smaller of } V_{LR} \text{ and } V_{D,R} = \underline{\hspace{2cm}}$$

2. Volume Calculations for Other Uses:

For Non-Consumptive Use Only

H. RECOMMENDATIONS

1. Recommended Amounts

Beneficial Use	Period of Use		Rate of Diversion Q (cfs)	Annual Volume V (ata)
	From	To		
<i>Fish Propagation</i>	<i>3/15</i>	<i>7/15</i>	<i>0.80 cfs</i>	<i>—</i>
	<i>5-1</i>	<i>9-30</i>		
Totals:			<i>0.80 cfs</i>	<i>—</i>

2. Recommended Amendments

☐ Change P.D. as reflected above ☐ Add P.D. as reflected above ☒ None
☐ Change P.U. as reflected above ☐ Add P.U. as reflected above ☐ Other

I. AUTHENTICATION

Field Examiner's Name *Brian Bailey* Date *8-25-93*

Reviewer _____ Date _____



DATE: August 10, 1993
FROM: Brett Barry
TO: FILES 71-7146 through 71-7162
SUBJECT: Fish Screens - Measurement

In the Salmon River drainage basin, near Stanley, the IDFG has built a fish screen on almost every major irrigation canal that diverts water from a river or creek that possess a spawning fish population.

The IDFG filed adjudication claims on these fish screens but then withdrew their claims. These permits are taking the place of the withdrawn claims.

On August 3 and August 4, Mel Schulte and I conducted the field examinations for the above water permits. Each fish screen, or permit, had a unique structure and bypass pipe. The water permit was for the diversion of water from the irrigation canal to the bypass pipe at the fish screen.

Most of the permits contained bypass pipes that were underground from the entrance at the fish screen to the outlet at the river or creek, therefore, a polysonic ultrasound measurement was usually not possible.

Loren Holmes, manager of Southern Regional office, suggested we survey the structure and obtain the difference in elevation between the water surfaces. This enables us to find the amount of head(energy per unit weight) consumed in the bypass pipe. Once the amount of head consumed is found, the flow can be calculated by estimating the relative roughness of the pipe or by estimating a Manning's coefficient.

The actual calculation involves using the Manning's equation for head loss in a pipe and the minor losses caused by inlets, outlets, and transitions, and the velocity head generated by an open discharge. This calculation was completed with the use of a program developed by Allen Merritt and myself on LOTUS 1-2-3.

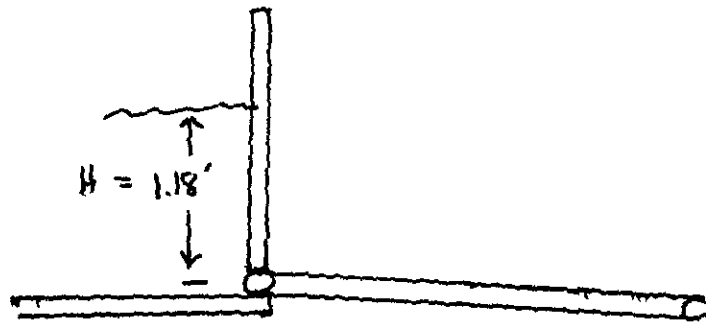
The program is very useful for calculating the discharge on longer pipes. But, when the bypass pipes are very short, the minor losses control the head loss and cannot be estimated accurately enough for predictable results.

Therefore, on very short bypass pipes and where the discharge at the outlet of the bypass pipe is not full, a measurement was obtained by treating the system as an orifice with a certain amount of head.

AUG 15 1994

Measurement Flow Calculation

71-07163



$$Q = CA\sqrt{H}$$

See attached page for
orifice relationships & coefficients
definitions

$$Q = \frac{0.785 (6.2)^2}{4} \sqrt{2gH}$$

$$C = 0.82$$

$$= \frac{0.785 (0.2096)}{4} (\sqrt{2(32.2)(1.18)})$$

square edged inlet

standard short tube

$$= \frac{0.785 (0.2096)}{4} \sqrt{75.872}$$

$$= 1.50 \text{ cfs}$$

APR 15 1994

P71-07163

Prepared by Beth Barry
on 9-3-93

143. *Orifice Relationships.*—Formulas (45) and (46) can be used to develop a formula for flow through an orifice (a hole in the side or bottom of a container of water (fig. 107)). To find the velocity of flow in the orifice, use formula (46), $v = \sqrt{2gh}$. Then using the size or area of the hole, the quantity of water being discharged, Q , can be determined using formula

310

WATER MEASUREMENT MANUAL

(45), $Q = Av$. This can be accomplished in one step, however, if the two formulas are combined.

Inserting the value $\sqrt{2gh}$ for v in $Q = Av$ gives

$$Q = A\sqrt{2gh} \quad (47)$$

the formula for the theoretical discharge through an orifice. This formula assumes that the water is frictionless and is an ideal fluid. Since water is not an ideal fluid, a correction must be made.

The jet of water, after passing through the orifice, continues to contract, and if the orifice edges are sharp, the jet will appear as shown in figure 108. The maximum jet contraction occurs at a distance of one-half the orifice diameter, or $d/2$, downstream from the sharp edge, and the cross-sectional area of the jet will be only about six-tenths of the area of the orifice. Accordingly, formula (47) must contain a coefficient, C , to accurately determine the quantity of water being discharged. Thus, in actual practice,

$$Q = CA\sqrt{2gh} \quad (48)$$

For a sharp-edged orifice where full contraction occurs, the coefficient is about 0.61, and the formula becomes

$$Q = 0.61A\sqrt{2gh}$$

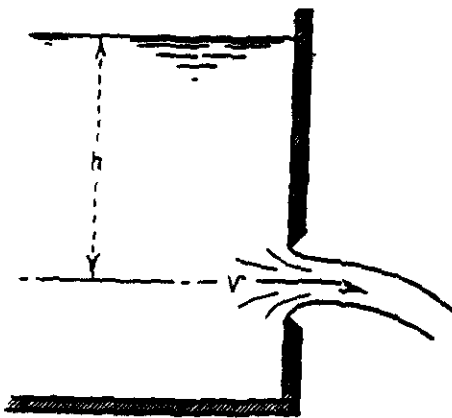


Figure 107.—Orifice flow. 103-D-986.

Water Measurement
Manual

United States Department of Interior
Bureau of Reclamation Denver 1967

TUBES, CULVERTS, AND SIPHONS

Cylindrical Tubes. A short cylindrical tube $2\frac{1}{2}$ to 3 diameters in length with sharp upstream corners (Fig. 43) is called a *standard short tube*. The sharp corner causes the jet to contract, but it soon expands and fills the tube. The space s surrounding the contracted jet is filled with air and eddying water. Since the velocity at m in the contracted

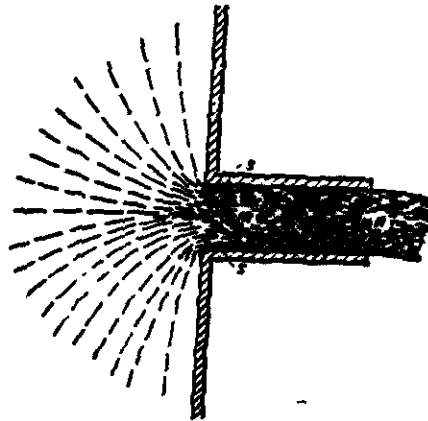


FIG. 43. Standard short tube.

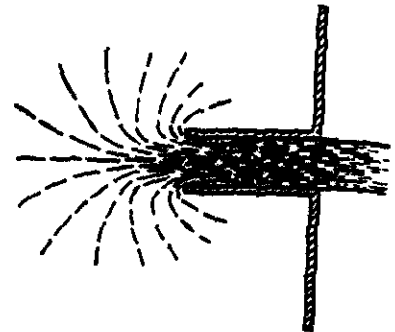


FIG. 44. Reentrant tube.

jet is greater than at the outlet n where pressure is atmospheric, it can be shown by Bernoulli's equation that the pressure at m is less than atmospheric pressure. The discharge of this tube is therefore greater than the discharge of a sharp-edged orifice of the same diameter under the same head. Since the tube flows full, the coefficient of contraction is unity, and the coefficient of discharge [Eq. (54)] equals the coefficient of velocity. From experiments, the average coefficient of discharge C is 0.82. Substituting this value of C , or C_v , in Eq. (58) gives as the head lost in discharge

$$h_f = 0.50 \frac{v^2}{2g} \quad (65)$$

where v is the mean velocity in the tube. The conditions of flow in a short tube correspond to the conditions at the entrance to a pipe.

A tube projecting into a body of water (Fig. 44) is called a *reentrant tube*. The contraction produced by this tube is greater than for the standard short tube. The behavior of the water in the two kinds of tubes is otherwise similar. From experiments, the coefficient of discharge $C = 0.75$ and the lost head $h_f = 0.75v^2/2g$.

Civil Engineering Handbook

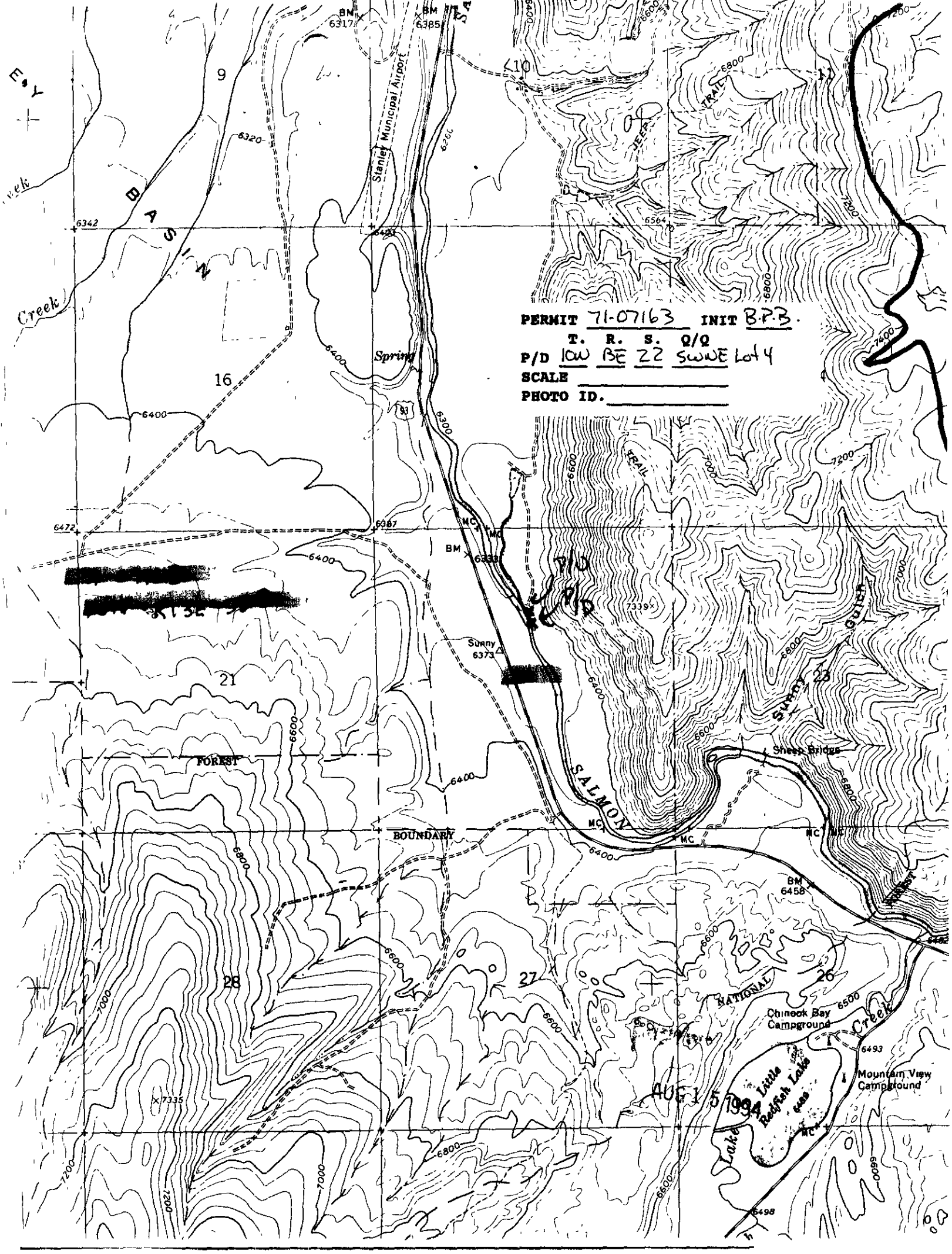
Urquhart, Leonard

McGraw-Hill Book Company, Inc.

1959 pgs. 4-37-4-38

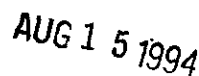
Aug 15 1994

pgs 309-310



PERMIT 71-07163 INIT B.P.B.
T. R. S. Q/Q
P/D LOW BE 22 SWNE Lot 4
SCALE _____
PHOTO ID. _____

P71-07163



Sal. in
background



P71-07163
These photos were
taken on 8-3-93.

P/O

6" pvc inlet flush
with concrete structure

P/O is approximately



6" pvc outlet
open discharge
75% full pipe
runs into excess bypass
ditch which runs
directly into Salmon R.

11/11/93

AUG 15 1994

January 15, 1993

STATE OF IDAHO
DEPT OF FISH & GAME
PO BOX 25
BOISE ID 83707

PROOF ACKNOWLEDGMENT LETTER

RE: PERMIT NO. 71-07163

Dear Permit Holder:

The department acknowledges receipt of the proof of beneficial use form submitted for the above referenced permit. The next step in the process of developing a water right is for the department to conduct a field examination to determine and confirm the use being made of the water.

If you have questions concerning this matter, please feel free to contact the SOUTHERN Regional Office in Twin Falls at (208)736-3033.

Sincerely,

Karen L. Gustafson
Secretary/Records Manager

c: IDWR - Region

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FEB 05 1993



State of Idaho

DEPARTMENT OF WATER RESOURCES

1301 North Orchard Street, Statehouse Mail, Boise, Idaho 83720-9000

Phone: (208) 327-7900 FAX: (208) 327-7866

CECIL D. ANDRUS
GOVERNOR

R. KEITH HIGGINSON
DIRECTOR

October 2, 1992

STATE OF IDAHO
DEPT OF FISH & GAME
PO BOX 25
BOISE ID 83707

PERMIT APPROVAL NOTICE

RE: PERMIT NO. 71-07163

Dear Permit Holder:

Enclosed is a copy of your approved application for permit. We direct your attention to the conditions of approval on the final page.

Enclosed is a form entitled "Instructions for Proof of Beneficial Use". Please read the instructions carefully since you must take further action to develop this permit. Also enclosed is a form entitled "Proof of Beneficial Use". If your project is already completed you should complete and submit this form immediately.

Sincerely,

BRENDA L. MILLER
Water Resource Agent

BLM:cz

Enclosures

MIDCOW MED

OCT 27 1992



State of Idaho

DEPARTMENT OF WATER RESOURCES

Southern Region, 222 Shoshone St. East, Twin Falls, Idaho 83301 (208) 736-3033

CECIL D. ANDRUS
Governor

08-Jul-1992

R. KEITH HIGGINSON
Director

ATTN CINDY ROBERTSON
FISHERY BIOLOGIST
IDAHO FISH & GAME
PO BOX 25
BOISE ID 83707-0025

Re: Applications for Permit Nos. 71-07146 thru 71-07166,
72-07482 thru 72-07499

Dear Ms. Robertson:

The Department of Water Resources acknowledges receipt of 39 water right applications for permit. Each application has been assigned an identification number. Please refer to this number in all further correspondence. A computer produced proof report for each application is enclosed for your information and reference.

This office will be advertising the applications with points of diversion located within Custer County in the Challis Messenger on 8/6 & 8/13/92. Application No. 71-07160 will be advertised in the Wood River Journal on 8/5 & 8/12/92 because it has a point of diversion located within Blaine County. A period of ten days following the second publication will be allowed for the submittal of protests.

If an application is protested you will be sent a copy of the protest. The protest must be resolved before the application is approved or denied. If the protest is not resolved voluntarily, this Department will conduct a conference and/or hearing on the matter.

If the application is not protested, it will be forwarded to our State Office in about five weeks. State office personnel will conduct a complete review prior to final processing of the application and will notify you of the outcome of this review. When a permit is issued, you will be sent a copy. A

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OCT 27 1992

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Idaho Fish & Game
Page 2
08-Jul-1992

typical processing time for an unprotested application is about eight weeks.

Please feel free to contact this office if you have any questions regarding this procedure.

Very truly yours,

Mel Schulte
Water Right Agent

MS:MB

100-111111-100
OCT 27 1992

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STATEMENT

AUG 27 1992



Department of Water Resources

Custer Publishing, Inc.

Phone 879-4445

P.O. Box 405

Challis, Idaho 83226

Dept. of Water
232 Shoshone St. East
Jurn Falls, Id 83301

Job No.	Date	DESCRIPTION	Amount
544 lines	8-20-92	Notice of Application for Water Right 8/6/13/92 #71-07146, 71-07147, 71-07148, 71-07149, 71-07150, 71-07151, 71-07152, 71-07153, 71-07154, 71-07155, 71-07156, 71-07157, 71-07158, 71-07159, 71-07161, 71-07162, 71-07163, 71-07164, 71-07317, 71-07318, 72-07482, 72-07483, 72-07484, 72-07485, 72-07486, 72-07487, 72-07488, 72-07489, 72-07490, 72-07491, 72-07492, 72-07493, 72-07494, 72-07495, 72-07496, 72-07497, 72-07498, 72-07499	\$312.80 OK MB 8-24-92

A finance charge of 1 1/2 percent (annual percentage rate of 18%) with a minimum charge of 50¢ will be charged to all accounts not paid within 30 days of billing.

WILL DO ALL

OCT 27 1992

NOTICE OF APPLICATION FOR WATER RIGHT

The Following application(s) have been filed to appropriate the public waters of the State of Idaho:

71-07163

STATE OF IDAHO
DEPT OF FISH & GAME
PO BOX 25
BOISE, ID 83707

Source: SALMON RIVER

Tributary: SNAKE RIVER

Diversion Pt: LOT 4 (SWNE) Sec 22 T 10N R 13E in CUSTER County.

Use: FISH PROPAGATION (.800 CFS)
Total Diversion: (.800 CFS)

Date Filed: 6/ 9/1992

In: CUSTER County
T10N R13E S22 SWNE

The permit(s) will be subject to all prior water rights. Protests must be filed with the Director, Dept. of Water Resources, Southern Region, 222 Shoshone Street East, Twin Falls, ID 83301 on or before AUGUST 24, 1992.

R. KEITH HIGGINSON, Director

Published: 8/ 6/1992 & 8/13/1992

RECORDED

OCT 27 1992

Legal OK in
8/6/92 issue of CM.
mb
8-11-92

S T A T E O F I D A H O
DEPARTMENT OF WATER RESOURCES
Southern Region
222 Shoshone Street East
Twin Falls, ID 83301
(208) 736-3033

JULY 6, 1992

CUSTER PUBLISHING COMPANY
PO BOX 405
CHALLIS, ID 83226

Gentlemen:

Enclosed you will find a legal notice which we wish to have published on the dates indicated (once a week for two consecutive weekly issues) in your newspaper. If you cannot publish the notice on the proposed dates, please contact us immediately.

An affidavit of publication must be submitted to the Department along with the publication bill. Your cooperation is appreciated.

Please send the affidavit of publication and publication billing to this office before AUGUST 24, 1992.

Yours truly,

Mary Baldwin
Secretary/Office Coordinator

Enclosure

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OCT 27 1992



IDAHO FISH & GAME

600 South Walnut
P.O. Box 25
Boise, ID 83707-0025

June 3, 1992

Mr. Jim Johnson
Idaho Department of Water Resources
STATEHOUSE MAIL
Boise, ID 83720

Re: Water Right Application for Fish Screens

Dear Mr. Johnson:

I have enclosed 33 applications for permit and a check for \$1,485.00 for fish screens in the Salmon River Basin. These applications are for nonconsumptive uses of water. The screens prevent fish from entering irrigation ditches and becoming stranded. The fish are shunted into bypass pipes near the screens and are returned back to the stream below the irrigation ditch.

I have had several conversations with Water Resources personnel regarding the need to apply for water right permits for these fish screens and have received conflicting responses. When I filed our Department's claims for the Snake River Basin Adjudication, I was told that we should file claims for existing fish screens and applications for permit for screens that were built after 1971. Conversely, since filing our adjudication claims, I have been told that because the use of the water is nonconsumptive and no additional water is diverted down the ditches to run the screens, we do not need a water right to use them.

Could you clarify for me whether or not we need to file applications for the fish screens? If we do not need to file the enclosed applications, please return them to me with the check. If we are required to file applications, then you have them and the payment for processing them. If I can provide you with any further information regarding these applications, please call me at 334-2597. Thank you in advance for your help in this matter.

Sincerely,

Cindy Robertson

Cindy Robertson
Fishery Biologist

CR:tlv

Enclosure

cc: Jim Blake, Salmon
Lee VanDeBogart, Engineering

Cecil D. Andrus / Governor
Jerry M. Conley / Director

Equal Opportunity Employer



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OCT 7 1992

APPLICATIONS FOR WATER RIGHT PERMITS FOR FISH SCREENS
IN THE SALMON RIVER BASIN

<u>Screen Number</u>	<u>Cost</u>
EF-14 ✓	\$45.00
EF-20	45.00
EF-22	45.00
EF-24	45.00
EF-HC-3	45.00
S-1	45.00
S-8	45.00
S-20	45.00
S-21	45.00
S-21A	45.00
S-23	45.00
S-24	45.00
S-28	45.00
S-32	45.00
S-33	45.00
S-38	45.00
S-39	45.00
S-39A	45.00
S-40	45.00
S-41	45.00
S-42	45.00
S-43	45.00
S-44	45.00
S-45	45.00
S-47	45.00
S-PC-1	45.00
S-VC-1	45.00
S-VC-2	45.00
S-VC-3	45.00
S-VC-4	45.00
S-VC-6	45.00
S-WSC-1	45.00
S-WCS-2	45.00

MITCHELL

OCT 27 1992