

388-2

Office of State Engineer
DOCUMENT FILE

State of S. D., Dept. of
Game, Fish and Parks
Pierre, S. Dak.

Sec. 8, T. 12, R. 7E
Pennington County

Rapid Creek

Source: Chisholm Springs

Engineer: Donald Driscoll
Supt. Game, Fish & Parks
Pierre, S. Dak.

Map 417-2

RECEIVED

NO. 288-22

Water Division No. 2

(Blanks to be filled by the State Engineer.)

RECEIVED

OCT 30 1952

APPLICATION FOR PERMIT

11:43 AM
APR 21 1952OFFICE OF STATE ENGINEER
PIERRE, S. DAK.OFFICE OF STATE ENGINEER
PIERRE, S. DAK.

(NOTE—Draw a line through items not applicable.)

1. Name of applicant State of South Dakota Department of Game, Fish and Parks
Postoffice address Pierre, County Hughes, State South Dakota

I. If a corporation

- (a) Name of same
(b) Date and place of incorporation
(c) Amount of capital stock
(d) Amount paid in
(e) Name and address of directors:

(NOTE—A certified copy of articles of incorporation must accompany the application.)

II. Method of accomplishing the work and financial resources of the applicant:

- (a) Method of accomplishing work (Whether by contract, employment of others, or by direct labor:) Work has been completed, mainly by contract.
(b) Cash on hand, \$..... (c) Treasury stock, \$.....
(d) Bonds to be issued, \$..... (e) Other resources, \$.....

2. Name of diversion work Cleghorn Springs Fish Hatchery
3. Quantity of water claimed cubic feet per second.
4. Source of water supply Cleghorn Springs
5. Location of point of diversion See letter.
6. Annual periods during which water is to be used During entire year.
7. To be used for:

I. Irrigation or domestic use: Gravity, overhead sprinkling or combination system?

- (a) Number of acres to be irrigated acres.
(b) Legal subdivisions to be irrigated

(NOTE—A list of lands to be irrigated, giving each subdivision and fraction with acreage thereof, should be written here, or may be appended as a part of this application. Same must also be shown on accompanying map.)

- (c) Statement as to domestic use (giving location, etc.)

II. Stockwatering, mining, milling, power, fish culture, fire protection and public recreation:

- (a) Nature of use Fish Culture.
Name any of the above uses claimed
(b) Amount of power to be generated horse power.
Amount claimed for engine cooling.....
(c) Location of plant See letter.
(d) Method of developing power
(e) Point where water will be returned to stream East boundary of described property.

8. Estimated cost of works:

(a) Head gates, \$..... (b) Pumping plant, \$.....
 (c) Fluming, \$..... (d) Canal-earth, \$..... Rock, \$.....
 (e) Other structures, buildings, ponds, etc., \$250,000.00 Total, \$250,000.00.

9. Description of diversion works:

I. Nature of works: (Reservoir, dam, ditch, flume, pumping plant, etc.)

Gleghorn Springs Fish Hatchery

II. Dimensions of works:

(a) Dam: Height.....feet; length at bottom.....feet; length at top.....feet; thickness at bottom.....feet; thickness at top.....feet; slope at front water face.....; slope of back face.....; material used in construction.....
 (b) Reservoir: Capacity when filled.....acre feet. Surface area at highwater mark.....acres.

DEPTH AT OUTLET-Feet	SURFACE AREA AT EACH DEPTH AT OUTLET—ACRES	ACRE-Feet CAPACITY

(c) * Head gate: Width 31-10" feet; height 3'-6" feet;
 Material concrete

(d) Canal: Total length.....miles.

LOCATION BELOW HEADGATE	DEPTH	BOTTOM WIDTH	WIDTH AT WATER LINE	GRADE PER MILE
At Mile	feet	feet	feet	feet
At Mile	feet	feet	feet	feet
At Mile	feet	feet	feet	feet
At Mile	feet	feet	feet	feet
At Mile	feet	feet	feet	feet
At Mile	feet	feet	feet	feet

(Give dimensions where reductions in size are made.)

10. Time required for completion of work None years.

11. Time required for complete application of water to the proposed beneficial use None years.

12. Choice of newspaper for publication of notice of intention to appropriate

No choice.

STATE OF SOUTH DAKOTA

County of Hughes ss.

I, Elmer Peterson, being first duly sworn on my oath depose and say: That my relation to the above described, undertaking is that of owner, that I have read the above foregoing statement, and examined the map accompanying the same, and that I know of my own personal knowledge that the matters herein stated and shown are true.

Signed Elmer Peterson Register
 Department of Game, Fish and Parks

Subscribed and sworn to before me this 21st day of April, 1952

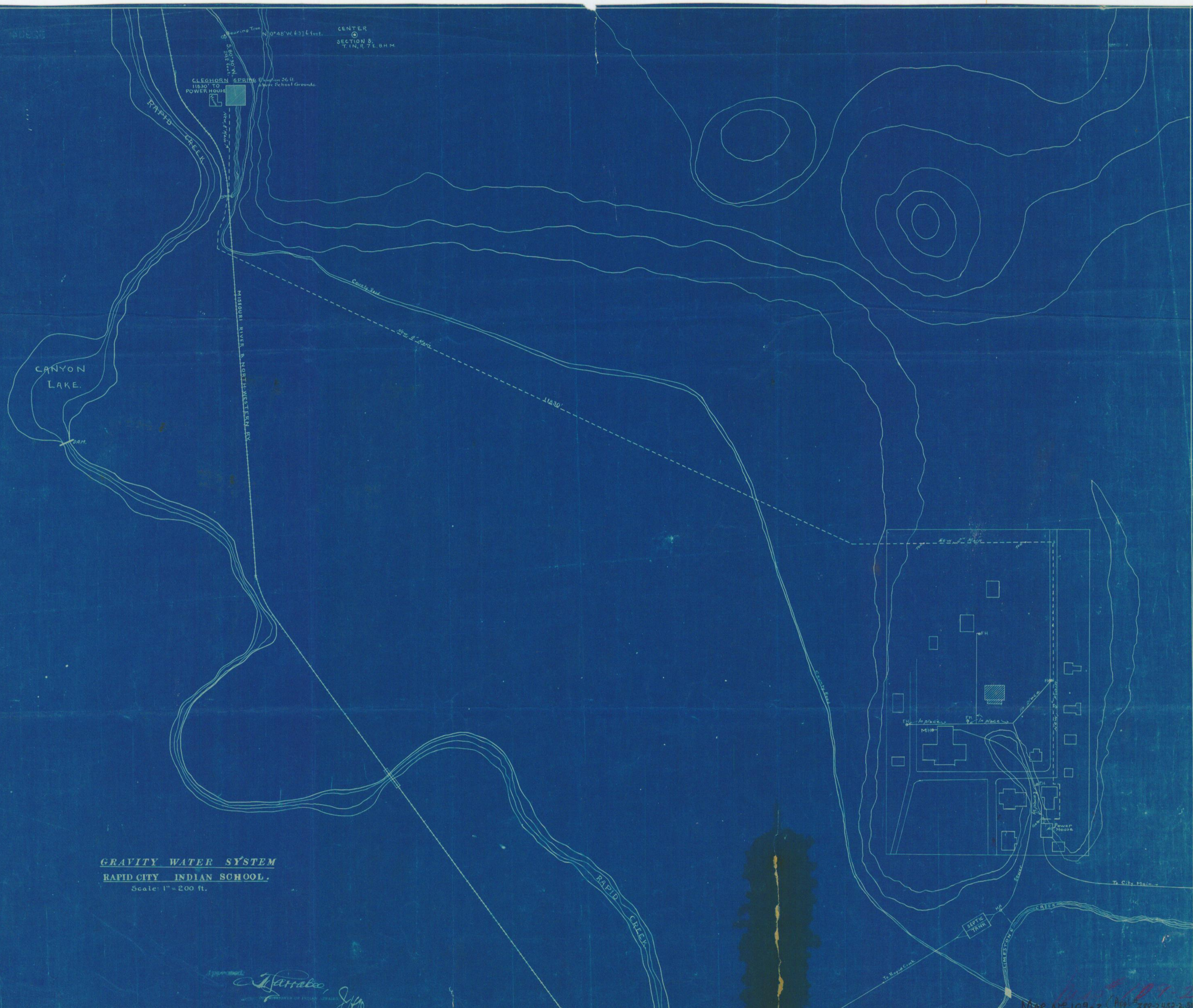
N.E. McEachern
 Notary Public (or other qualified officer.)

CLEGHORN SPRINGS
FISH HATCHERY
PENNINGTON COUNTY
SOUTH DAKOTA

CONTOUR INTERVAL: 2'
SCALE: 1"=30'-0"



Sheet No. 388-2
Map No. 417-2



GRAVITY WATER SYSTEM
RAPID CITY INDIAN SCHOOL.
Scale: 1" = 200 ft.

Harrabee
ENGINEER OF PUBLIC WORKS

MAP NO 109-2 (APP 383-2,432-2,514-2)

Remarks by State Engineer:

A COURT DECISION IN CIRCUIT COURT FOR THE 7TH JUDICIAL DISTRICT DATED AUGUST 5, 1901 RECOGNIZES THE "BENNETT RIGHT" AS DATING FROM 1877 TO THE USE OF 450 MINER INCHES FROM RAPID CREEK, WITH A COMPLEX SYSTEM OF SPRINGS CONTRIBUTING TO THE FLOODS. THIS PERMIT IS BASED ON THE "BENNETT RIGHT," WITH THE PRIORITY DATING FROM THE "BENNETT RIGHT" THIS PERMIT IS ISSUED UNDER THE "VESTED RIGHT" PROVISIONS OF THE

STATE OF SOUTH DAKOTA

SOUTH DAKOTA WATER LAWS,

County of HUGHES

Pierre, South Dakota, MARCH 20, 1963

This is to certify that the foregoing application was received at this office at 11:45 o'clock h. m. upon the 21ST day of APRIL, 1952 and that after examination it was found to comply with the South Dakota water laws, was published in accordance with the provisions thereof and consideration given to any and all information presented.

Number of permit 388-2

Burton Jones
CHIEF ENGINEER & EXECUTIVE OFFICER
State Engineer.

Date of first receipt of application APRIL 21, 1952

Date of return to applicant for correction APRIL 22, 1952

Date of receipt of corrected application OCTOBER 30, 1952

Date from which applicant may claim right 1877 DURING NON-IRRIGATION SEASON

Approved MARCH 20, 1963 Recorded in Book B Page 51

This is to certify that I have examined the foregoing application for a permit to appropriate water of the State of South Dakota, and I hereby grant the same as stated herein, subject, however, to the following limitations and conditions:

1st. The equivalent of at least one-fifth, of the work above specified is ~~to be~~ completed ~~on or~~ before 10.

2nd. The whole of said work is ~~to be~~ completed ~~on or~~ before 10.

3rd. The limit of time for proof of beneficial use of water appropriated in accordance herewith is completed, 10.

4th. The water appropriated shall be used for the purpose of FISH CULTURE.

5th. The prior right of all persons who, by compliance with the laws of the State of South Dakota, have acquired a right to the use of water must not be injuriously affected by this appropriation.

6th. The amount of the appropriation herein granted shall not exceed 6.18 cubic feet per second; neither shall it exceed the capacity of the above described system of diversion works, nor the least amount of water that experience may hereafter indicate as necessary for the production of crops in the exercise of the best husbandry; and further, said appropriation must be limited to not more than one-thirtieth (1/30) of one cubic foot of water per second of time for each acre of land to which water is actually and beneficially applied for irrigation on or before JUNE 30, 1955; said water to be used during the following described annual period:

CONTINUOUSLY

Witness my hand this 20TH day of MARCH, 1963

Certificate of Construction issued MARCH 17, 1971

Water License issued MARCH 17, 1971

State Engineer.

WATER LICENSE NO. 388-2

(1) WHEREAS, On the 30th day of October A.D. 1952the South Dakota Department of Game, Fish and Parksmade Water Right Application No. 388-2 Vested Right for a permit to use 7.00 cubic feet per second of the waters of Cleghorn SpringsCounty of Pennington State of South Dakota, for Fish Culture

purposes; and

(2) WHEREAS, On the _____ day of _____ A.D. 19____

Permit No. _____, with a date of priority of _____
 was issued to said applicant _____ for the diversion of said water, and provided for the completion of construction of the water supply system therein described on or before the _____ day of _____ A.D. 19____ and for the application to beneficial use of said water on or before the _____ day of _____ A.D. 19____

A "Proof of Application of Water to Beneficial Use" dated June 2, 1965 verifying the use of 6.18 cubic feet per second of water since 1928 was received from the South Dakota Department of Game, Fish and Parks and the Commission recognizes the use of this amount of water with a priority date of 1877, during the irrigation season, and a priority date of 1928 for the remainder of the year, under the vested right portion of the South Dakota Water Laws.

and:

(3) WHEREAS, It is hereby certified that the applicant has complied with the provisions of the laws of the State of South Dakota relating to completion of the construction of the water supply system and is entitled to divert 6.18 cubic feet per second of water for beneficial use and,

(4) WHEREAS, It is hereby certified that the applicant has complied with the provisions of the laws of the State of South Dakota relating to the application of water to beneficial use of the following extent:

Fish Culture involving numerous open ponds, cribbed and concreted ponds and a
hatchery building located in the NW $\frac{1}{4}$ SE $\frac{1}{4}$ and W $\frac{1}{4}$ NE $\frac{1}{4}$, SE $\frac{1}{4}$ of Section 8, T1N, R7E
lying North of the former R.R. Right of Way containing 28.45 acres, more or less
plus the East 15 acres of the NE $\frac{1}{4}$ SW $\frac{1}{4}$, Section 8, T1N, R7E, less .92 acres of
the former F.R. Right of Way.

(5) NOW, THEREFORE By the virtue of the authority vested in us by the laws of the State of South Dakota, We hereby grant and confirm to _____

the South Dakota Department of Game, Fish and Parks

_____ of _____ Pierre, South Dakota

the holder _____ and owner _____ of said _____ **Vested Right** permit No. 388-2 a water right, dating from 1877 and 1928

_____ to use of 6.18 cubic feet per second of the waters of Cleghorn Springs

in the County of Pennington and State of South Dakota, or so much thereof as may be necessary for the purposes hereinbelow mentioned, to be diverted at a point located North 6° 46' East 780 feet from the SW Corner of the NW¼ SE¼, Section 8, T1N, R7E

and conduct to and upon land located in the NW¼ SE¼ and N¼ NE¼, SE¼ of Section 8, T1N, R7E lying North of the former R.R. Right of way containing 22.45 acres, more or less plus the east 15 acres of the NE¼ SW¼, Section 8, T1N, R7E, less .92 acres of the former R.R. Right of Way.

for the purpose of Fish Culture

Subject to any limitations listed in Water Right Permit No. 388-2 and subject to the laws of the State of South Dakota.

WITNESS, My hand and seal of our office at Pierre, South Dakota
this 17th day of March A. D.
Nineteen Hundred and Seventy-one

WATER RESOURCES COMMISSION

By:

Chief Engineer, Executive Officer, J.W. GRIMES

Form 15.

Permit No. 388-2

Water Diversion No. 2 RAPID CREEK Water District

CERTIFICATE OF CONSTRUCTION

This is to Certify, That the South Dakota Department of Game, Fish and Parks,
Pierre, South Dakota

_____ the holder _____ of
/ Vested Right 388-2, issued upon Application No. 388-2, bearing date of priority of 1977 & 1928
Permit No. _____, authorizing the diversion of 6.18 cu. ft. per second of the waters of _____
Gleghorn Springs County of Pennington, State of South Dakota at _____
a point located North 6° 46' East 780 feet from the SW Corner of the
NW¼ SW¼, Section 8, T1N, R7E
_____, for Fish Culture purposes

_____ purposes, has _____ complied with the provisions of the laws of the State of South Dakota relating to proof of
completion of the works of diversion set out and described in said Permit; that said works are found in satisfactory
condition for diverting and conveying to the place of intended use 6.18 cu. ft. per second of water.

Date March 17, 1971

WATER RESOURCES COMMISSION

By:

J.W. CRIMES, Executive Officer

PROOF OF PUBLICATION

STATE OF SOUTH DAKOTA

County of Pennington ss.

E. H. Lighter being duly sworn, deposes and says the annexed printed copy of Notice of Intention to Appropriately Water was taken from the

Rapid City Daily Journal a newspaper which during the whole time of publication of said notice herein-after stated, has been and is printed and published in the city of Rapid City County of

Pennington and State of South Dakota;

that the said notice was published in said newspaper on the following dates:

November 14, 1952

November 21, 1952

November 28, 1952

December 4, 1952

in each and every issue of the full number thereof, the first publication being made on the 14th day of November 1952 and the last publication on the 4th day of December 1952, upon which days or times of publication aforesaid the newspaper was regularly published, and that during the whole time of said publication he was Business Manager the printer and publisher of the said newspaper.

E. H. Lighter

Subscribed and sworn to before me this 4th day of December A. D. 1952

[Signature]
Notary Public Pennington County, S. D.

Nov. 14, 21, 28, Dec. 4, 1952
APPROPRIATION OF WATER
Office of State Engineer,
Pierre, S. Dak., November 1, 1951
Notice is hereby given that the State of South Dakota Department of Game, Fish & Parks whose office address is Pierre, S. Dakota has made an application in accordance with the provisions of the laws of South Dakota for a permit to appropriate for beneficial use 1.0 cubic feet of water per second of time from the Cleghorn Springs Hatchery, the point of diversion of which is to be located in the NW 1/4 of the SE 1/4 of Section 8, Twp. 1N Range 7E. Said water to be used for the purpose of providing water for fish culture.
This application will be taken up by the State Engineer at his office at Pierre for consideration upon the 24th day of December, 1952, at 2:00 P. M. Any persons who believe that their prior rights would be injuriously affected, or that the allowance of the permit would be detrimental to the public welfare shall file such protest with the State Engineer in writing prior to the above date and may appear on the day above mentioned in person for the purpose of discussing further, the information presented.
Appropriate action will be taken by the State Engineer after suitable time has elapsed for the consideration of any or all information presented.
DEAN W. LOUSKE,
State Engineer

(First Publication _____, 19____)

APPROPRIATION OF WATER

Office of State Engineer,

Pierre, S. Dak., November 1, 1952

Notice is hereby given that the State of South Dakota Department of Game, Fish & Parks whose postoffice address is Pierre S. Dak., has made an application in accordance with the provisions of the water laws of South Dakota for a permit to appropriate for beneficial use 7.0 cubic feet of water per second of time from the Cleghorn Springs through the Cleghorn Springs Fish Hatchery In the NW 1/4 of the SE 1/4 of Section 8 Twp. 111 Range 7E Said water to be used for the purpose of providing irrigation water for

Water for Fish Culture

This application will be taken up by the State Engineer at his office at Pierre for consideration upon the 12th day of December, 1952, at 2:00 P.M. All persons who believe that their prior rights would be injuriously affected, or that the allowance of the permit would be detrimental to the public welfare shall file such protest with the State Engineer in writing prior to the above date and may appear on the day above mentioned in person for the purpose of discussing further, the information presented.

Appropriate action will be taken by the State Engineer after suitable time has elapsed for the consideration of any or all information presented.

LEAH W. LOUCKS
State Engineer

HCS:mt

Enc.

cc: H. S. Thorgrimsen
City Manager of Rapid City
12-5-52



City of Rapid City

The GATEWAY TO THE BLACK HILLS

South Dakota

CITY MANAGER

December 9, 1952

Mr. Dean W. Loucks
State Engineer
State Building
Pierre, South Dakota

Subject: Rapid City, South Dakota
STATE GAME, FISH & PARKS WATER RIGHT APPLICATION
Cleghorn Springs

Dear Mr. Loucks:

A. The City of Rapid City has title to the Jackson Springs by deed from Robert J. Jackson, including the land as shown in red on the attached plat; B. The State Game, Fish & Parks Department has title to the Cleghorn Springs by deed from the Cleghorn Estate, including the land as shown in orange on the attached plat. The Jackson Springs and the Cleghorn Springs are approximately 400 feet apart.

In the past gaugings have been made on this Jackson-Cleghorn Springs area by different engineers. These have revealed that it is apparent that the total flow from the two springs is approximately 18.6 cfs (12 MGD). The City has taken, in the past, 6.20 cfs (4 MGD) from Jackson Springs; the U. S. Indian Service has taken 1.16 cfs (0.75 MGD, Est.) from Cleghorn Springs; the State Game, Fish & Parks Department has taken 6.20 cfs (4 MGD) from Cleghorn Springs. This is a total of 13.56 cfs (8.75 MGD) used from this area and leaves a balance of 5.04 cfs (3.25 MGD) unused and running into Rapid Creek.

The present City water development has a maximum capacity of 16.27 cfs (10.5 MGD) but the immediate water production for meeting the City's requirements including the U. S. Air Base must total 24.8 cfs (16 MGD) by 1960 if all needs are to be met.

It is estimated that the City can economically develop an additional 3.49 cfs (2.25 MGD) from the percolating waters of Rapid Creek Valley, but it is imperative that the City be given the right to develop the 5.04 cfs (3.25 MGD) now flowing unused from the Jackson-Cleghorn Springs, in order to meet the estimated total requirements of 24.8 cfs (16 MGD).

The City's present development of Jackson Springs is such that the City can take a total of 9.30 cfs (6 MGD) from it; but if it does, the State Game, Fish & Parks Department cannot obtain their present use of 6.20 cfs (4 MGD) from Cleghorn Springs without installing pumping equipment to raise the water to the level of the present fish ponds.

The question arises here as to the rights of the City over and against those of the State Game, Fish & Parks Department. It would appear that the following Court decisions might apply here:

Metcalf v. Nelson - 8 S. D. 37, 65 NW 911
SPRING: RIGHTS OF OWNER. "In the absence of evidence as to its source, it will be presumed that a natural spring of water is formed by the ordinary percolation of water in the soil. Water so percolating through the soil or coming to the surface in a spring belongs to the owner of the soil in such a sense and to such an extent that he is entitled to the exclusive right to use and dispose of the same."

Madison v. Rapid City - 61 S. D. 83, 246 NW 283
UNDERGROUND WATERS: INTERCEPTION. "That city, by digging trenches on land adjacent to plaintiff's property, intercepted flow of subterranean waters and thereby caused spring on plaintiff's property to disappear gave plaintiff no cause of action."

It would appear, therefore, that the City owns Jackson Springs and under the above Court decisions has a right to develop them to their full capacity, notwithstanding that such development might lessen the flow of the adjacent Cleghorn Springs.

It is entirely impractical for the City to use the water that emerges as effluent from the State Fish Hatchery ponds for it is polluted by fish food to the extent that it would require filtration; and, further, arsenic salts are present in it from chemicals added by the State Game, Fish & Parks Department, making impractical the treatment of it in an effort to produce a resultant water acceptable for human consumption.

It is believed that the City has certain rights to the waters from the Jackson-Cleghorn Springs area, which rights can be established; sufficient time should be allowed for this procedure before consideration is given to the granting of an increased allotment to the State Game, Fish & Parks Department as requested in "Water Application No. 388-2". If the City does not obtain its rights to these now unused waters, the City will have to abandon the present development of percolating waters, which cost the City several hundreds of thousands of dollars, and resort to a filtration plant which will cost it an estimated \$1,250,000 and approximately double the City's unit cost of producing water.

Page #3

In the proposed development of the Jackson-Cleghorn Springs area, it is not the City's intention, nor is it the City's desire, to deprive the U. S. Indian Service nor the State Game, Fish & Parks Department of the required waters now being used by either of them, but it is the City's desire to be permitted to obtain the present unused waters from this area, which waters fully meet the U. S. Public Health Standards of drinking water for human consumption.

Therefore, we are at this time, pursuant to your letter of December 4, submitting this protest and request that we be allowed time to develop all the pertinent information regarding the same. In the event that you do decide to postpone your decision on this matter, please be advised that the City of Rapid City requests that its representative be allowed to appear at the postponed hearing on this matter.

Very truly yours,

H. B. Thorgrisen
H. B. Thorgrisen
CITY MANAGER

HST:hm

CC - Mayor

CC - City Attorney

CC - City Engineer

SOUTH DAKOTA
STATE DEPARTMENT OF HEALTH
DIVISION OF SANITARY ENGINEERING
PIERRE

TOWN Rapid City, South Dakota DATE April 18, 1953
REPORT ON Pollution of Rapid Creek by Cleghorn Fish Hatchery
BY Robert P. Hayward, Sanitary Biologist
TO Dean Loucks, State Engineer

INTRODUCTION

OFFICE OF STATE ENGINEER
PIERRE, S. D.

Pursuant to a request from the office of the State Engineer and the Director of Game, Fish and Parks Department, the Division of Sanitary Engineering, State Department of Health, conducted a field survey of the Cleghorn Fish Hatchery to determine the degree of pollution caused by this operation. For the purpose of the pollution investigation the survey has been divided into two phases:

1. An interview with the hatchery officials to determine the possible sources, nature, concentration, and volume of pollutants;
2. Laboratory analyses, if the information from the preliminary investigation requires supplemental laboratory data.

The preliminary investigation was conducted on January 22 and 23, 1953. The following is a report of the field findings, conclusions and recommendations.

FIELD FINDINGS

General:

The Cleghorn Fish Hatchery is located approximately three miles west of Rapid City on the Rim Rock Highway. The hatchery ponds and buildings are situated east of Cleghorn Springs which serves as the water source for the hatchery operations. When the volume of water was last measured in 1943 by the Department of Game, Fish and Parks engineer there was a free flowing discharge of approximately 4 million gallons per day. This water is piped to the several ponds and buildings on the grounds and is eventually discharged to Rapid Creek just ahead of Canyon Lake. The water temperature varies from 50°F. in the winter to 59°F. in the summer making the springs a very desirable source of water.

There are 37 outside ponds to facilitate the culturing of approximately one million fish annually. The principal hatch consists of the three predominant trout species found in the Black Hills region, namely: Loch Leven, Brook and Rainbow.

The eggs are secured by manual stripping of the brood stock from about the first of November to the last week in January. The harvested eggs are collected in pans. The milt secured from the male trout is mixed with the eggs and an adequate period of time is allowed for fertilization to take place. The eggs are then placed in screen bottom trays that are placed in the hatching tanks. After approximately 35 days the trout emerge from the eggs as fry. During the 35-day incubation period

one-half ounce of stock copper sulfate solution is added daily to the incoming water of each tank which contains eggs. This water flows through these tanks at the rate of approximately 60 gallons per minute.

After the fry have hatched and drop their egg sacks the screen trays are removed to a sorting trough to separate the dead eggs and the empty egg sacks from the fry. The fry are planted in larger tanks in an adjacent room. In these tanks, which have a flow through water supply, the fingerlings are kept until they are moved to the outside ponds in the early spring. Fingerlings are moved to the outside ponds after 40-50 days feeding or from the middle of February to the middle of March.

The fish are maintained in the outside ponds until about the middle of September when they are planted in the creeks and impoundments in the Black Hills region. The trout are about 3 to 5 inches in size when they are planted in the fall.

Possible Sources of Pollution

During the period that the trout are at the hatchery they are very susceptible to disease caused by the communal existence. Consequently, to protect the fry and the fingerlings, several chemicals are used to treat these diseases. Since trout are extremely sensitive to any chemicals, the treatment procedures must be carefully observed or a considerable loss of fish will result. The chemicals used are in a diluted form and the exposure of the trout is minimal. A list of chemicals used, their concentrations and treatment methods are presented in appendix A of this report.

The feeding operation begins 31 days after the fry hatch and continues until the trout are moved out in the fall of the year. During the period that the trout are fed in the hatchery ponds they receive a total of approximately 35 tons of food. The peak months of food consumption are June, July, August and September, when approximately 4.5 tons are fed each month. The fish are fed twice daily to minimize food waste.

All of the food is prepared in its usable form at the hatchery. The meats such as beef liver, lung and spleen are purchased in fresh frozen 100 pound containers. A commercially prepared fish food is mixed with the meats to complete the dietary requirements. Scraps from the food preparation which cannot be used are transported to the city dump or buried. A negligible amount of blood and scraps gain access to the building drainage system. Sodium phosphate or other commercial cleaners are used in the cleaning operation of the food preparation room.

At the present time the sanitary wastes from the hatchery appear to have the most significance. There are 4 men who are full time employees at the hatchery. One additional employee may be hired on a seasonal basis. The assistant superintendent of the hatchery has living quarters in the area. The toilet facilities are available to visitors, however, their use of the toilets is usually at a minimum. All of the sanitary wastes are discharged to a septic tank and then to Rapid Creek. The size of the septic tank could not be definitely determined, however, it is believed to be at least a 500 gallon unit.

CONCLUSIONS

The preliminary investigation conducted January 22 and 23, 1953, and the operational data collected at that time do not merit the laboratory phase of the investigations at this time.

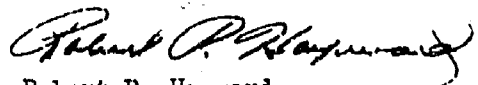
The chemicals most frequently used in the treatment of diseases are used in an 8 to 9 gallon container. The chemicals used in the dipping process are of relatively high concentrations but the volume is so small that when the vats are dumped into the pond the final diluted effluent from the hatchery would contain only a negligible amount of the substance. Through good operational practices at the hatchery the amount of organic material from the food preparation and feeding operation gaining access to the hatchery drainage system is negligible at this time. The dead fish which are large enough to cause a nuisance are buried or hauled to the city dump for disposal.

As a result of this investigation it appears that the sanitary wastes are the most significant. At the present time these wastes are receiving partial treatment in a septic tank. Because of down stream water uses it appears that additional treatment of these wastes should be encouraged. Such additional treatment should consist of a subsurface filter.

RECOMMENDATION

1. That the possibility of a subsurface filter be explored and if at all feasible, the unit should be constructed to provide additional treatment of the sanitary wastes.

Respectfully submitted,



Robert P. Hayward
Sanitary Biologist

RPH:mp

APPENDIX A

Chemicals used at Giephorn Springs Fish Culture Station

1. Pyridylmercuric Acetate - (Total Mercury - 47.5% minimum)

Used for gill diseases. Lower water in pond to 18". Sprinkle in P.M.A. and circulate water for 1 hour. Turn on water and let overflow go to creek.

Dose: 126 grains to pond (1650 cu.ft. or 12,340 gallons)
2.685 parts per million P.M.A.
1.272 parts per million minimum mercury

2. Acetic Acid - Glacial

Used for Gyrodactylum and Flatworm. Fish are dipped in 8-gallon tub of water for 1 minute immersion. Requires 3 treatments on 3 successive days.

Dose: 2 ounces or 0.125 pounds of glacial acetic acid in 8 gallons of water; after dipping is completed tub is dumped at head end of 3 ponds in series. (1950 parts per million glacial acetic acid)

3. Sodium Chloride

Used for white fungus. Fish are dipped in 9 gallons of water for 1 minute immersion or until distress. Discharged same as Acetic acid - head end of series of 3 ponds.

Dose: 30 ounces or 1.87 pounds of NaCl in 36 quarts of water.
25,000 parts per million of Sodium Chloride

4. Calomel (Mild Mercurous Chloride)

Feed orally for intestinal disorder - fed orally by mixing 1 level teaspoonful to 10 pounds of food. Mix thoroughly - let stand over night then feed.

Dose: 1 level teaspoonful per 10 pounds of food. Parts per million cannot be determined.

5. Copper Sulfate

Used for fin, tail and gill diseases - Fish dipped for 1 minute immersion in 8 gallon tub.

Dose: 1 ounce of Stock CuSO_4 solution in 8 gallons of water. Used solution dumped into pond which eventually empties into Rapid Creek.

Stock Solution of Copper Sulfate

1 pound CuSO_4 to 3 gallons of water
(40,000 parts per million Stock Solution)

Concentration used for dipping trout

1 ounce of Stock in 8 gallons of water
1 ounce of 40,000 ppm CuSO_4
8 gallons of 39 ppm CuSO_4 used for dipping

Concentration used for treating trout in ponds

Use 6 ounces of stock CuSO_4 solution in 1650 cu. ft. water
0.15 ppm of CuSO_4 used to treat trout in ponds

Concentration used for disinfectant (No trout exposure)

12 ounces of stock CuSO_4 solution in 2200 cu.ft.
0.22 ppm CuSO_4 used as disinfectant in pond without trout

Future Use - Rapid City

439-2	9.30 c.f.s.	Deerbrook Gallery
	4.0 c.f.s.	Jackson Springs
	<u>7.25 c.f.s.</u>	Sioux Park Gallery (Baken
	22.00 c.f.s.	Park in Factola Contract)

Provisions of a contract between Rapid City and the United States (Bureau of Reclamation) provide that releases of water from Factola Reservoir for use by Rapid City includes replacement water in the amount of the City's diversion from the sources specified in Permit 435-2 and similar sources and water which may be diverted by the City directly from the surface flows of Rapid Creek.

During the irrigation season of each year, diversion of water by the City under Permit 439-2 is subject to replacement at the point of diversion from the City's storage in Factola and/or Deerfield Reservoir in the amount being diverted.

During the non-irrigation season of each year such replacement of water from City storage is not required under Permit 439-2. (See Permits 431-2, 432-2, or 437-2)

Also, at no time shall withdrawal of water from the Jackson Springs source be made at a rate that interferes with preference and/or prior water rights to Cleghorn Springs waters, including 6.10 cubic feet per second for fish hatchery use (Permit 338-2) and the water taken by domestic users connected to the pipeline connecting Cleghorn Springs and the Sioux Reservoir.

FOURTH CASE - RAPID CITY

439-2

1.94 c.f.s.

Cleghorn Springs

Action on the Cleghorn Springs portion of Application 439-2 is deferred until such time as Rapid City can furnish satisfactory proof that:

- (1) The United States (Sioux Sanitation) relinquishes its water right to Rapid City through transfer or other satisfactory arrangement.
- (2) Arrangements have been made for water service to domestic users who are connected to the Sioux Sanitation pipeline from Cleghorn Springs or other satisfactory arrangements have been made to assure continuing availability of domestic supplies for these people.
- (3) Diversion will not interfere with Permit No. 381-2 for Fish Hatchery use in the amount of 6.18 cubic feet per second.

Reconsideration of the application for water from Cleghorn Springs may be requested by Rapid City by submitting proof of satisfactory relationships with other water users as outlined above.

Game, Fish and Parks

388-2

7.0 c.f.s.

Cleghorn Springs

Permit to appropriate water may be established as a vested right with priority as of 1928 for the State Fish Hatchery use of water.

6 Various estimates have been made as to the amount of water actually used by the Fish Hatchery. Application 388-2 and supporting information claims that from 7.0 c.f.s. to 6.68 c.f.s is the capacity of Cleghorn Springs and that the entire flow of the Springs is required by the Fish Hatchery during the irrigation season. However, 6.18 c.f.s (4,000,000 gals/day) was offered tentatively to Rapid City in settlement of protest in 1953. Other estimates indicate that 6.18 c.f.s is the maximum amount of water actually used by the Fish Hatchery.

Elmer Peterson will check into this matter. Action to be recommended to the Water Resources Commission must await results of his inquiry as to whether or not 6.18 c.f.s. is adequate for Fish Hatchery use.

Location No.

Water Division No. Water District

Proof of Application of Water to Beneficial Use

PETITION OF HOLDER

Ques. 1. State your name, residence, occupation and postoffice address.

Ans. Department of Game, Fish and Parks, Pierre, South Dakota

Ques. 2. If acting in behalf of a corporation, state its name, principal place of business (if a foreign corporation, give name and postoffice of statutory agent,) your position with reference to same, and your authority for appearing in its behalf.

Ans.

Ques. 3. State date of posting and date of recording notice of appropriation.

Ans. April 21, 1952

Ques. 4. State source of water supply and give exact location of point of diversion.

Ans. Cleghorn Springs - N 6° 46' E 780 feet from the SW corner of the NW 1/4 SE 1/4, Section 8, Twp. 1 N, Range 7E.

Ques. 5. Describe your works of diversion giving length and height of each dam and state amount of water they are capable of conveying from point of diversion to place of use, and give name of canal or ditch or other works by which water is conducted to such place of use, and date of completion of same.

Ans. Three concrete headgates (1) 3'10" x 3'6" (2) 6'0" x 2'0" and (3) 3'0" x 3'0" Water conveyed through a series of rearing ponds and returned to Rapid Creek after going through septic tanks.

Ques. 6. State for what purpose water is used and describe place of use. (If for irrigation, name each subdivision in which used, and number of acres in each subdivision that have ACTUALLY been irrigated with said water.)

Ans. Fish culture

Ques. 7. If for other than irrigation purpose, state how applied, amount of horse power generated, etc.

Ans.

Ques. 8. What is the minimum amount of water required for the use specified above?

Ans. 4,000,000 gallons per day.

Ques. 9. If you are not the person or representative of the corporation to whom above mentioned permit was originally issued, please state how ownership was acquired by present holder.

Ans.

Ques. 10. State when, how, in what amount and to what extent, the water diverted under above mentioned permit has been used.

Ans. Water use was transferred to the fish hatchery in 1928 when
hatchery was built, and has been used for fish culture since
that time.

(Sign) Martin F. Bensen

I hereby certify that the foregoing testimony was read to the above subscriber before its signing, that I believe him to be the person he represents himself to be, and that said testimony was subscribed and sworn to before me, at my office in Sioux, County of Sioux

State of South Dakota, on this 7th day of June A. D. 1965

Witnesses.

I, the undersigned, do hereby certify that I am a duly qualified elector residing in the immediate vicinity of the diversion works designated in the foregoing testimony, that I have no interest in the works, water or land above described, that I have read the foregoing testimony and that I know of my own personal knowledge that the matters therein stated are true.

Location No. _____

**PROOF OF APPLICATION OF
WATER TO BENEFICIAL USE**

PETITION OF HOLDER

Amount of Water _____ c. f. s.

Source _____

County _____

Purpose _____

Place of Use _____

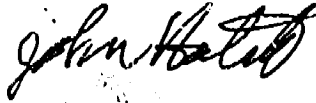
Date of recording _____

Received and filed _____

February 26, 1999

MEMO TO: John Cooper, Secretary
Department of Game, Fish and Parks

FROM: John Hatch, Chief Engineer
Water Rights Program, DENR



SUBJECT: Cleghorn Springs Fish Hatchery Vested Water Right No. 388-2

The purpose of this memorandum is to suggest correction of a piping problem at the Cleghorn Springs Fish Hatchery. GF&P holds Vested Water Right No. 388-2 for Cleghorn Springs Fish Hatchery with a priority date of February 28, 1877. No. 388-2 is senior to Rapid City's Jackson Springs Gallery Vested Water Right No. 432-2 with a priority of January 1, 1944.

During past dry periods, there have been times when pumping by the City from Jackson Springs Gallery was believed to be causing water supply problems for the fish hatchery. GF&P has then requested the City to cut back on usage of Jackson Springs Gallery until flows from the springs have improved. As I understand this issue, the fish hatchery's water supply problems during drought periods may have more to do with how the water piping system was installed than from reduced water levels at the springs.

A few years ago the hatchery manager told Mark Rath and Del Brosz of my staff that a pipeline running from the collection gallery to the hatchery was installed with a "hump" over a large rock. This "hump" has an estimated vertical rise of about four feet above the centerline of the rest of the pipe. To avoid crisis conflicts during drought periods, I am suggesting that the vertical rise be removed.

In the past the City has cooperated and reduced pumping from Jackson Springs. However, with the "hump" in place the delivery system is not efficient, and interferes with delivery of water to the hatchery. Therefore, I do not believe GF&P can exercise the 1877 priority date and require the City to reduce Jackson Springs pumping. Once the "hump" is removed, then Rapid City's Jackson Spring's water right would be subject to the 1877 priority date.

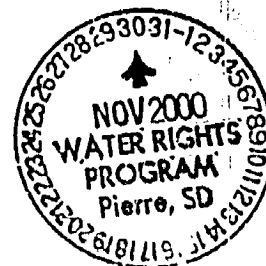
Possibly prison labor could be used to correct the piping problem. Now is the time to get this problem fixed rather than during a drought and a water supply crisis for the hatchery. Please let me know if I can answer any questions.

Cy: Nettie Myers, Secretary DENR
Doug Hansen, GF&P



DEPARTMENT OF GAME, FISH AND PARKS

Foss Building
523 East Capitol
Pierre, South Dakota 57501-3182



November 27, 2000

Mr. Garland Erbele
Chief Engineer
Division of Water Rights
South Dakota Department of Water and Natural Resources
523 E. Capitol
Pierre, SD 57501-3182

RE: Cleghorn Springs Hatchery vested water right #388-2

Dear Mr. Erbele:

The Department of Game, Fish and Parks seeks to amend the vested water right for non-consumptive fish production use at Cleghorn Springs Hatchery located in Rapid City, SD to reflect actual water usage. The water license for the hatchery was validated in 1971 for 6.18 cfs from springs arising at the hatchery site. Flow investigations conducted at the hatchery from 1971 to the present show the water used for fish production at the hatchery being between 10 and 12 cfs.

Enclosed is a brief prepared by my staff that has led to the conclusion to request an amendment to #388-2. Prior to filing an official request for amendment, we would like to meet with you and your staff to determine if the documentation developed to support the request for amendment is satisfactory or if changes are necessary.

Dennis Unkenholz will be contacting you to set the time and place for a staff review. Thank you in advance for your help in securing an amendment for the State Fish Hatchery at Cleghorn Springs.

Sincerely,

Doug Hansen
Director
Division of Wildlife

CC: Dennis Unkenholz
Ron Koth
Greg Young

Cleghorn Springs history

Water rights at the site of Cleghorn Springs fish hatchery originate in 1877 through the Bennett grant for water use during the irrigation season. The Bennett right was recognized in a 7th Judicial Court decision in 1901 for 600 miners inches of which 450 miners inches* (9.02 cfs) were diverted in the vicinity of Cleghorn Hatchery. No detailed information is available regarding where or how measurements were taken. Descriptive text in the 1963 vested right application (filed in 1952) states that a "complex system of springs contributing to the flows" is the water upon which the right is based.

**12960 gallons/24 hrs under 6" pressure (commonly 50 miners inches/1 cfs in SD)*

Following construction of the Cleghorn Springs Fish hatchery in 1928 the original irrigation right (Bennett) was extended to year-round use. Priority dates are 1877 for the irrigation season (April-October) and 1928 for the remainder of the year. Water right #388-2 was validated in 1971 for 6.18 cfs although the original application sought 7 cfs. It is unknown how either of these volumes were determined. Documents describing past water measurements and original design criteria for the hatchery are presumed lost in the 1972 Rapid Creek flood.

In 1971 a GFP investigation into water volumes at Cleghorn determined that 8-13 cfs flowed through the hatchery depending upon seasonal changes in the water table. It was reported that the hatchery use was approximately 2.5 mgd over the 4.0 mgd water license (2.5 mgd plus 4.0 mgd equals approximately 10 cfs).

Recent water volume investigations

In 1987 the USGS began to measure flows at the hatchery by installing three weirs in the vicinity of the hatchery outlet. In 1992 a joint USGS/GFP effort to continue measurement of water flow through the hatchery began when the three weirs were combined to a single weir at the hatchery outlet.

USGS, three weirs

Measurements from the three weirs installed in 1988 and operated through 1992 show an annual mean flow of 11.13 cfs through the hatchery.

Summary Statistics for water years 1988-1992. Values are for the stations: 06412800, 06412700, 06412600.

	06412600(main)	06412700(north)	06412800(south)
Annual mean	9.25	0.94	0.98
Total flow annual mean	11.13 cfs		
Highest annual mean	9.74 1988	1.11 1988	1.08 1991
Lowest annual mean	8.95 1991	0.84 1992	0.88 1992

These numbers are derived from summary statistics computed by Burr and Nedewald and kindly supplied by Dan Driscoll, USGS, Rapid City, 5/11/2000.

GFP, three weirs

Measurements conducted in 1988 by hatchery personnel using a mainline propeller meter and digital readout flow meter installed to quantify water pumped through the hatchery raceways and building; plus gravity flow through ponds indicate that approximately 11.5 cfs leaves the hatchery through a Parshall flume (one of the three weirs installed by the USGS). Additional flows of 1.59 cfs were measured flowing through the two other weirs installed by the USGS. Total volume leaving the hatchery was measured as 13.092 cfs. The 1.89 cfs difference between the USGS measurements and volumes determined by the hatchery are likely due to the fact that the hatchery measurements were instantaneous measurements, while the USGS were results of 4 water years.

USGS/GFP, single combined weir

In 1992 the three weir sites installed by the USGS in 1987 were combined into a single weir to measure the combined outflows of the hatchery. During water years 1993-99 annual mean flows at the single weir (combined hatchery outflows) were measured at 12.2 cfs.

Summary Statistics for water years 1993-1999 gauged at station number 06412810(single combined flows from hatchery).

Annual mean	12.2 cfs	
Highest annual mean during period	13.3	1999
Lowest annual mean during period	11.1	1993

Cleghorn Hatchery water use

Use of water at Cleghorn Hatchery has not changed significantly since 1928. The original hatchery facility (photo 1) and the current facility, built following the 1972 flood, (photo 2) show the differences in fish holding/rearing facilities; however, the volume of water used has not measurably changed. Prior to 1972, 29 stone-walled ponds, 4 raceways, 7 earthen ponds, and 3 spring (water source) ponds were located on the hatchery site. Following the 1972 flood reconstruction, 50 rearing units (10 raceways) and 8 ponds were located on the hatchery site.

Infiltration galleries buried under the site of the old spring ponds provided water to Cleghorn from 1972-1992. During this time various difficulties with water volume and quality were experienced. This led to a series of improvements at the hatchery aimed towards improving fish production capabilities. In 1992 pumps sized to draw 4000 gpm (8.9 cfs) from the galleries were installed. Pumps supplied water to the raceways while upwelling springs fed 8 ponds. The same pumps are in place today, however, due to wear and aging now only pump 3400 gpm (7.58 cfs, 24/7). Upwelling still supplies 8 ponds.

Active re-development of free-flowing spring water on the north and south sides of the hatchery site was not completed during reconstruction efforts in 1972. This water was routed through hatchery production facilities prior to the flood. Since the flood, natural reproduction of fish has taken place in the side-channels. Internal GFP memos indicate the intent to route this water through the hatchery for use in fish production (as was the case prior to 1972), however, funding limitations and technical difficulties encountered with reconstruction has delayed efforts to re-route water from the side channels. On going plans at the hatchery still include full development of the side channel flows to recover fish production capability never regained following the 1972 reconstruction of the hatchery.

Conclusion

Based on review of the available historic records and recent investigations into water use at Cleghorn Hatchery, the total volume of water flowing through the hatchery site today is very similar to what has been measured since the 1970's. No information is available to suggest this volume is measurably different than historical flows of the late 1800's and early 1900's. The volume flowing through the hatchery facility used for fish production is estimated to be 12 cfs with minor seasonal and/or annual changes due to groundwater levels.

Recommendation

Seek an amendment to vested water license 388-2 to reflect actual historical use of water at Cleghorn Springs Hatchery. Increase the water right to 12.0 cfs from 6.18 cfs. This increase of 5.82 cfs should be for identical purposes to the existing right with the same uses and provisions as the current right.

This amendment should not conflict with other water uses or rights at the Cleghorn/Jackson Springs complex or downstream. USGS report 98-4214 documents 21.6 cfs flowing from the springs with a standard error of +/- 1,200 acre-ft/yr (USGS 1999). Water rights at the Cleghorn/Jackson Springs complex held by the City of Rapid City total 7.75 cfs. Vested water permit 388-2 is for 6.18 cfs. An amendment to 388-2 to reflect actual use will bring the total permitted water use at Cleghorn/Jackson Springs to 19.75 cfs. The remaining volume of 1.85 cfs is adequate to make up the measurement error of 1,200 acre-feet/year (1.66 cfs).

Downstream users of water will not notice any change in volume of water as the hatchery use is a non-consumptive flow through system of fish culture.

Action

Meet with the Chief Engineer and staff of the Division of Water Rights to present the case for amendment to 388-2 and determine any changes necessary as a result of their investigation.

Meet with the City of Rapid City and Rapid Valley Irrigators to notify them of the pending amendment to vested water license 388-2.

File formal request for amendment to the Division of Water Rights.

Participate in the Board of Water Management proceeding as necessary to answer questions regarding the amendment.

Prepared by R. Koth and G. Young

NEXT

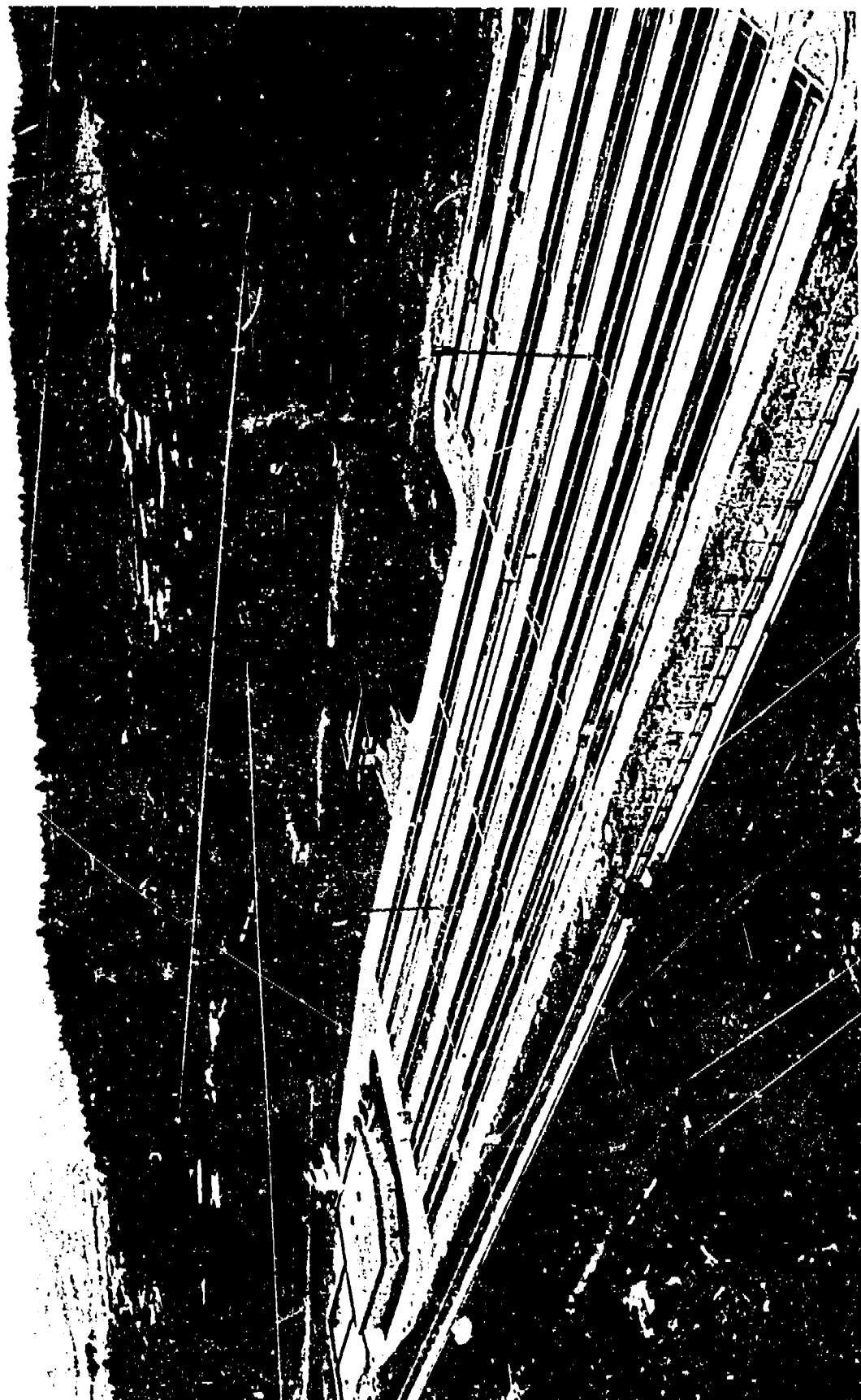
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24





388-2
DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182

denr.sd.gov

OCT 12 2017

388-2
2454-2

Leslie Murphy
SD Game Fish & Parks Department
523 E Capitol
Pierre SD 57501

Dear Ms. Murphy:

Enclosed is Water License No. 2454-2. This is the final water right document completing the process of obtaining a Water Right. Included with the license are maps prepared by the staff engineer who conducted the field investigation.

As long as you use the water beneficially, as stated in the Water License, State Water Laws provide that you have a continuing right to use the water.

Sincerely,

Jeanne Goodman, Chief Engineer
Water Rights Program
(605) 773-3352

enclosures

Note: Upon licensing, the applicable portions of Vested Water Right No. 388-2 were incorporated into No. 2454-2.