

More information can be found at:

R:\work\WR\Imaging\Spearfish Hydroplant - FERC

OFFICE OF STATE ENGINEER
PIERRE, SOUTH DAKOTA

RECORD OF PROCEEDINGS

Application No. 43

Water Div. No. 1 Belle Fourche Water Dist.

Application Received January 4, 1909

Maps Received January 4, 1909

Acknowledgment January 4, 1909

Notice for Pub. Mail January 4, 1909

Receipt from Newspaper January 6, 1909

Copy of Newspaper Rec'd. January 6, 1909

Notice of Correction

Proof of Pub. Rec'd. February 3, 1909

Hearing February 5, 1909

Approved February 5, 1909

Recorded and Filed February 5, 1909.

REMARKS

T. J. Grier, Supt., and Chambers
Kellar, Attorney, for the Homestake
Mining Co. appeared at the hearing,
held February 5, 1909, on behalf of
applicant. No protests were received
and the permit was granted.

Form 2--Application for Permit to Appropriate Water--Original.

NO.....45.....

Water Division NO.....1.....Belle Fourche Water.....District.

APPLICATION FOR A PERMIT

To Appropriate Water Within the State of South Dakota.

I. Name of applicant--Homestake Mining Company.
Postoffice address Lead, County Lawrence, State South Dakota.

2. Is a Corporation: Yes

(a) Name of same--Homestake Mining Company.

(b) Date and place of incorporation--Amended articles filed July 11, 1899, State of California, and filed in office Secretary State of South Dakota July 28, 1899.

(c) Amount of capital stock-- \$22,000,000.00

(d) Amount paid in-- \$21,640,000

(e) Names and addresses of directors:

- F. B. Baggett, New York
- F. C. Drisl, San Francisco, Cal.
- F. Clark, San Francisco, Cal.
- H. J. Tovin, San Francisco, Cal.
- H. W. Clark, New York
- Shoran Turner, San Francisco, Cal.
- Richard Clark, San Francisco, Cal.

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

(a) Method of accomplishing the work (Whether by contract, employment of others, or by direct labor)--- Direct labor

(b) Cash on hand-- 200,000

(c) Treasury stock, \$160000, but not to be issued

(d) Bonds to be issued--None

(e) Other resources,-- None

3. Name of diversion works--Homestake Power Cor. It.

4. Quantity of water claimed-- 100 cubic feet per second.

5. Source of water supply-- Spearfish Creek.

5.- Location of point of diversion-- On NE $\frac{1}{4}$ of SE $\frac{1}{4}$ of Sec. 8, Twp. 5 N., R. 2 E. N.W.M., Lawrence County, S. D., from which Cor. No. 54 of Congress Placer, T. 5. 479, bears N. 77° W. 150 feet-- on left bank.

6.- Annual periods during which water is to be used - Continuously.

7.- To be used for:

II. Mining, power, manufacture, transportation, or other purposes:

- (a) Nature of use--Power
- (b) Amount of power to be generated-- 5000 horse power.
- (c) Location of plant--On NE $\frac{1}{4}$ of NE $\frac{1}{4}$ of SE $\frac{1}{4}$ of Sec. 16, T. 6 N., R. 2 E. N.W.M., Lawrence County, S. D.
- (d) Method of developing power--Water wheels and electric generators.
- (e) Point where water will be returned to stream--Same as location of plant.

8.- Estimated cost of works:

- (a) Flood gates and diversion dam--\$15,000
- (b) 1 mile pressure pipe, \$65,000
- (c) Tunnel--\$470,000
- (d) Other structures--Waste ways, \$20,000, Power House, and Tailrace, \$85,000 Machinery, \$32,000--Total \$647,000.

9.- Description of diversion works:

I. Nature of works: (Reservoir, dam, ditch, flume, sanding plant, etc.) Concrete Dam, Tunnel, Conduit, Pressure Pipe and Power House.

II. Dimensions of works:

(a) Dam: Height --15 feet; length at bottom--350 feet; length at top--350 feet; thickness at bottom--12 feet; thickness at top --21 feet; slope of front (water) face--vertical; slope of back face--curved; material used in construction--concrete.

(a) Flood gate: Width--14 feet; height--6 feet;

material--Concrete

(a) Tunnel Conduit: Total length 23,530 feet.

Grade per mile
12 feet
14 feet
14 feet
14 feet
14 feet
14 feet

This tunnel conduit is in rock throughout practically its entire length, commencing within one hundred (100) feet of the headgate. Dimensions of tunnel are 6' x 6'.

10.- Time required for completion of work--3 years.

11.- Time required for complete application of water to the proposed beneficial use-- 3 years.

12.- Choice of newspaper for publication of notice of intention to appropriate-- Standard Daily Call.

STATE OF SOUTH CAROLINA)
 COUNTY OF SALUDA)

I, Thomas J. Greer, being first duly sworn on my oath depose and say: That in relation to the above described undertaking in that of superintendent; that I have read the above and foregoing statement, and examined the map accompanying the same, and that I know of my own personal knowledge that the matters therein stated and shown are true.

Signed, Thomas J. Greer.....

Subscribed and sworn to before me this 2nd day of January, 1901.

Blanche Colman
 Notary Public.

Remarks by State Engineer:

This application is for the right to appropriate for power purposes 100 second-feet of the water of Spearfish Creek in Lawrence County. The water is to be returned to its natural channel about 5 1/2 miles below the point of diversion.

STATE OF SOUTH DAKOTA }
County of Hughes } ss

Pierre, South Dakota, February 6, 1909

This is to certify that the foregoing application was received at this office at five o'clock P. m. upon the 4th day of January 1909 and that after examination it was found to comply with the provisions of the Water Code of South Dakota. Notice of intention was published, proof of publication was duly filed and a hearing was held in this office on February 5, 1909.

Samuel H. Lee
State Engineer.

By B. B. Lee Deputy.

Number of permit 43

Date of first receipt of application January 4, 1909

~~Date of return to applicant for correction~~ 700

Date of receipt of corrected application January 4, 1909

Date from which applicant may claim right January 4, 1909

Approved February 6, 1909, Recorded in Book -1- Page -111-

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 February 5, 1910

2d. The whole of said work is to be completed on or before February 5, 1911

3d. The limit of time for proof of beneficial use of water appropriated in accordance herewith is February 5, 1912

4th. The water appropriated shall be used for the purpose of mining, power, manufacturing or other beneficial uses.

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 100 cubic feet of water per second of time; 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-seventieth (1/70) 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 February 5, 1912; said water to be used during the following described annual periods.

Continuously

Witness my hand this 6th day of February 1909

Samuel H. Lee
State Engineer

By B. B. Lee Deputy.

COPY

No. 43

Division No. 1

Belle Fourche Water District.

PERMIT

to appropriate water from
Spearfish Creek

Lawrence County, South Dakota

Name of applicant
Homestake Mining Company

Name of diversion works
Homestake Power Conduit

Date of first receipt at office of State
Engineer January 4, 1909

~~Returned to applicant for correction~~
1909

~~Corrected application received~~
1909

Date of water right
January 4, 1909

Recorded in Book -1- Page -111-
One-fifth of work to be completed
February 5, 1910

Whole work to be completed
February 5, 1911

Final proof of use of water
February 5, 1912

Approved February 6, 1909
Samuel H. Lee
State Engineer.

By B. B. Lee
Deputy

STATE OF SOUTH DAKOTA
COUNTY OF HUGHES

I hereby certify that the within and
foregoing instrument is a true, correct and
complete transcript of the instrument which
it purports to be, as the same was filed for
record in the office of the State Engineer.

Witness my hand and official seal, done
at my office in Pierre, State of South Dakota
this 13 day of February, 1909

Samuel H. Lee
State Engineer.

By B. B. Lee
Deputy.

RECEIVED

JAN 4 1909

OFFICE OF STATE ENGINEER,
PIERRE, S. DAK.

Rec. Issued Jan 1913

STATE OF SOUTH DAKOTA

WATER LICENSE NO. 43-1

WHEREAS, On the fourth day of January A. D. 1909

THE HOMESTAKE MINING COMPANY

of Lead City County of Lawrence and State of South Dakota duly made application (No. 43-1) to me for a permit to use 100 cubic feet per second of the waters of Spearfish Creek County of Lawrence State of South Dakota for power generating purposes; and

WHEREAS, On the sixth day of February A. D. 1909

Permit No. 43-1 was issued to said applicant for the diversion of said water, and providing for the completion of the works of diversion therein described on or before the 5th day of

February A. D. 1911 and for the application to beneficial use of said water on or before the fifth day of February 1912 and whereas on the 26th day of November 1910 the time for completing the diversion was extended for three years from the first designated; said

WHEREAS, On the second day of January A. D. 1913

the holder of said permit duly made proof of the completion of adequate works for the diversion of 100 cubic feet per second of said waters, as evidenced by my Certificate No. 45-1

dated January 2, 1913 confirming the completion of works of sufficient capacity for diverting and conveying to the place of intended use 120 cubic feet per second of water, with date of priority of January 4, 1909 and

WHEREAS, On the second day of January A. D. 1913

proof was duly made of the application to beneficial use of 120 cubic feet per second of said water;

for the development of power for electrical transmission to the company's works at Lead City;

NOW, THEREFORE, By virtue of the authority vested in me by the laws of the State of South Dakota, I hereby grant and confirm to the HOMESTEAD MINING COMPANY of Lead City, South Dakota the holder and owner of said permit No. 43-1 a water right, dating from January 4th, 1909 to the use of -130- cubic feet per second of the waters of Spearfish Creek in the County of Lawrence and State of South Dakota, or so much thereof as may be necessary for the purposes hereinbelow mentioned, to be diverted at headworks of NW¹ of SE¹ of Sec. 8, Twp. 5 N., R. 2 E., B.H.M. Lawrence County and conducted to ~~and~~ power station on SE¹ of NE¹ of SE¹ of Sec. 15, Twp. 5 N R. 2 E., B. H. M. Lawrence County for the purpose of generating power

subject, however, to the laws of the State of South Dakota applicable to a license for the use of the waters of the State, and subject also, to the local or community customs, rules and regulations which have been or may be adopted from time to time by a majority of the users from a common source of supply, canal or lateral from which such water may be taken when such rules and regulations have for their object the economical use of such water.

WITNESS, My hand and the seal of my office at Pierre, South Dakota, this 3rd day of January A. D. Nineteen Hundred and thirteen.

Samuel Hobbs
State Engineer.

Date of Priority January 4th, 1909
Recorded in Book 1, Page 111.

STATE OF SOUTH DAKOTA

Water License No. 43-1

To Homestake Mining Company

Source of Supply Spearfish Creek

Lawrence County

Am't -120- Sec. Feet

Point of Diversion NW 1/4 of SE 1/4 of Sec. 8, T. 5 N., R. 2 E. B.H.M.

Place of Use S 1/2 of NE 1/4 of SE 1/4 Sec. 15, T. 6 N., R. 3 E. B.H.M.

Purpose generating power

Date of Priority Jan. 4, 1909

Recorded

in Book 1 of Page 111

PROOF OF PUBLICATION

STATE OF SOUTH DAKOTA }
 County of Lawrence } ss

George H. Grace being duly

sworn, deposes and says the annexed printed copy of Notice

Intention to appropriate Water was taken from the

Lead Daily Coac 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 Lead County of

Lawrence and State of South Dakota,

That the said notice was published in said newspaper on the

following dates: begin each Friday day and

date except Sundays from & including the

5th day of January to the 4th day of February 1909

in each and every issue of the full number thereof, the first

publication being made on the 5th day of January

1909 and the last publication on the 4th day of

February 1909, upon which days or times

of publication aforesaid the newspaper was regularly pub-

lished, and that during the whole time of said publication

was Manager of the Lead Daily Coac Company the

printer and publisher of

the said newspaper.

George H. Grace

Subscribed and sworn to before me this 4th day of February A. D. 1909.

C. H. ...

Notary Public Lawrence County, S. D.

*My commission will
 expire June 27, 1910*

First Publication Jan 5, 1909.
 Appropriation of Water
 Office of the State Engineer,
 Pierre S. D. Jan. 4, 1909
 Notice is hereby given that the
 Homestake Mining company, whose
 postoffice address in Lead, Lawrence
 county, S. D., has made an applica-
 tion in accordance with the provisions
 of the irrigation laws of South
 Dakota, for a permit to appropriate
 for beneficial use one hundred (100)
 cubic feet of water per second of
 time from Spearfish Creek, through
 the Homestake power conduit, the
 point of diversion of which is to be
 located upon the left bank of said
 stream in the N. W. 1-4 of the S.
 E. 1-4 of section 8, Township 5 North
 Range 2 E. B. H. M., such water to
 be used for the purpose of power. The
 power plant to be upon the S. 1-2 of
 the N. E. 1-4 of the S. E. 1-4 of Sec-
 tion 15, T. 6 N. R. 2 E. B. H. M.
 Point of diversion and power plant
 situated in Lawrence County, S. D.
 This application will be taken up by
 the State Engineer at his office at
 Pierre for consideration and appro-
 priate action upon the 5th day of Feb-
 ruary, 1909, at 9 o'clock A. M., at
 which time all persons who believe
 that the prior rights would be injur-
 iously affected or that the allowance
 of the permit would be detrimental
 to the public welfare, and also par-
 ties making the application and to be
 benefited are notified to be present.

When you want a Turkish bath call

Chambers Keller
Jas. C. Stanley
ATTORNEYS AND COUNSELORS AT LAW
LEAD CITY, SOUTH DAKOTA

RECEIVED

1/4/13.

JAN 6 1913

OFFICE OF STATE ENGINEER,
PIERRE, S. DAK.

Hon. Samuel H. Lea,
Pierre, S. D.

Dear Sir:

I acknowledge receipt of your esteemed favor of the 3rd inst., enclosing Water License No. 43-1, issued to the Homestake Mining Company, covering the use of 120 second feet of water out of Spearfish Creek, Lawrence County, S. D., for the development of power for electrical transmission to the company's works in Lead. I beg to hand you herewith draft for \$3.00, to cover fees for the filing and issuance of papers in connection with this license.

Yours very truly,

Chambers Keller

Permit No.

Water Division No. Water District

Certificate of Examination of Works

Report of Examining Engineer

To the State Engineer, Pierre, South Dakota:

Dear Sir: I hereby certify that in accordance with your letter of authorization dated December 30, 1912, I have this day made a thorough examination of the diversion works constructed by Homestake Mining Company, a corporation organized under the laws of California and transacting business in Lawrence County, South Dakota, holder of permit No. 43-1, issued upon application No. 43-1, bearing date of priority of January 4, 1909, authorizing the diversion of 100 second feet of the waters of Spearfish Creek for mining, power, manufacturing, transportation and other purposes. I have to report on the condition of the same as follows:

The diversion works comprise:

One massive re-inforced concrete dam, 200 feet long from the head gates across the main Valley of the creek, resting on steel sheet piling, driven to an impervious stratum. Substantial concrete head works with four cast iron inlet gates for the control and regulation of the water; an open concrete flume, extending from the head gates to the tunnel entrance about 100 feet; thence through a concrete lined tunnel 6½ feet wide by 8 feet 3 inches high in the center of the arch, 23,800 feet long, discharging into a concrete forbay 30 feet by 70 feet, in the walls of which the regulating gates are built. The water is conducted from this forbay through these regulating gates into two lines of wood staved pipe, 4 feet internal diameter, substantially built into the walls of said forbay, extending thence 1200 feet to a large collecting cylinder upon which are erected 4 steel stand pipes for the purpose of balancing the pressure and relieving the water of accumulated air, substantially covered and braced, and connected to this collecting cylinder are three steel pressure pipe lines or penstocks, varying in diameter from 34 inches to 30 inches at the power house, each line 4000 feet long. From these penstocks water is led direct by nozzles to the pelton wheels situate in the power station hereinafter described.

Substantial concrete, fire proof power house, in which are installed three 2000 KV. Westinghouse generators, driven by double overhung pelton water wheels; two exciter generators, both water and electrically driven; three banks of step-up transformers, having capacity of the generators; switch board control, oil switches and duplicate transmission line from the power station to the sub-station in Lead City, from which the power is distributed to motors in the various works of the Homestake Mining Company. The location of the power plant is on the SE¼ of the NE¼ of the SE¼ of Section 15 T. 5 N. R. 2 East, B.H.M., Lawrence County, S. D., and about one mile south of the Town of Spearfish. The transmission line is eleven miles long, carrying current at 33,000 volts.

The utilization for power, mining, or other beneficial uses comprises:

Witness my hand, this

21st day of January, 1913.

Richard B. Blount

Examining Engineer

Permit No.

Water Div. No. Water Dist.

**Certificate of Examination
of Works**

Dated. 19

Stream

County

Amount

Second Feet

Date of Priority

Recorded in Book

Page

Filed in the office of the State Engineer this

... day of ... A. D. 19

State Engineer.

Deputy.

FILED
JAN 5 1913
FILED

SAMUEL H. LEA, State Engineer.

RECEIVED

JAN 3 1913

OFFICE OF STATE ENGINEER,
PIERRE, S. D. A.

Permit No. 43-1

Water Division No. 1 Colle Favour's Water District

Certificate of Application of Water to Beneficial Use.

Deposition of Holder

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

Ans. T. J. Grier; residence and postoffice address Lead, S. D.; occupation superintendent of Homestake Mining Company.

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. I am acting in behalf of said Homestake Mining Company, a corporation organized under the laws of the State of California; statutory agent is above named T. J. Grier. I am also superintendent of said company and as such appear in its behalf.

Ques. 3. State number and date of permit, and date of priority you propose to establish under the permit.

Ans. Number of permit, 43-1. Date of permit, February 6, 1909. Date of priority under said permit, January 4, 1909.

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

Ans. Source of water supply, Spearfish Creek; location of point of diversion-- On NW 1/4 of SE 1/4 of Sec. 8, Twp. 5 N., R. 2 E. B.H.M., Lawrence County, S.D., from which Cor. No. 34 of Congress Placer, N. S. 479, bears N. 77° W. 190 feet--on left bank.

Ques. 5. Describe your works of diversion, 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.

Ans. Re-inforced concrete dam, resting on steel sheet piling across the valley; concrete and cast iron head gates for control; concrete lined tunnel in rock 23,800 feet long; two lines 4 foot wood staved pipe, four feet internal diameter, 1200 feet long; three lines of steel penstock or pressure pipe, 4000 feet long; smallest diameter 30 inches. Name of tunnel and pipe line conduit Homestake Power Conduit.

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. Water is used for development of electric power. Place of power plant on SE 1/4 of NE 1/4 of Sec. 15, Township 6 North, Range 2 East, B.H.M., Lawrence County, S. D., about one mile south of the Town of Spearfish.

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

Ans. Power is generated through electric generators at the power station above described, transmitted to Lead, where applied through motors. Amount of horse power generated, minimum about 3000, to a maximum of 6000, according to flow of water in creek.

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

Ans. 100 second feet

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. Since about April 1, 1912, continuously to the present time by means of the diversion works, power conduit and power plant hereinbefore described, we have been diverting all of the water of Spearfish Creek at said point of diversion.

(Sign.)

[Handwritten signature]

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 Lead, County of Lawrence State of South Dakota, on this 2nd day of January A. D., 1913

[Handwritten signature]
Notary Public

My commission expires Jan. 7-1914

Permit No.

**Proof of Application of Water to
Beneficial Use.**

DEPOSITION OF HOLDER.

Amount of water.....second feet

Source.....

County.....

Purpose.....

Place of Use.....

Date of priority.....

RECEIVED
JAN 3 1915

OFFICE OF STATE ENGINEER,
PIERRE, S. DAK.

FILED
JAN 5 1915
FILED

SAMUEL H. LEA, State Engineer.

Received and filed.....

Chambers Keller
Jas. C. Stedley
ATTORNEYS AND COUNSELORS AT LAW
LEAD CITY, SOUTH DAKOTA

1/2/13.

Hon. Samuel H. Lea,
Pierre, S. D.

Dear Sir:

I beg to enclose herewith, properly executed, certificate of examination of works by Engineer, Form 23, and certificate of application of water to beneficial use, Form 24, all in connection with Permit No. 43-1, of Homestake Mining Company. I trust you will find these executed in due form. The showing only goes to the extent of obtaining 100 second-feet of water, although as a matter of fact the works are susceptible of using 120 second-feet at high water. At the time of making our application, however, we felt that 100 second-feet would probably cover any ordinary normal conditions and we assume now that you cannot issue permit for more than that amount. At the same time we do use and are prepared to use all of the water in the stream up to 120 second-feet. In view of the fact that we are really the owners of all of the riparian lands between our intake and power plant, and in view of the further fact that we are proving ourselves quite a public benefactor to all water users below us, in that we are delivering the water of Spearfish Creek into the creek free of ice and in larger quantities than heretofore, five miles nearer to such water users, it occurred to me that possibly the permit could be for the full quantity that our present works are susceptible of using, to-wit, 120 second-feet instead of 100.

Yours respectfully.

Chambers Keller

RECEIVED
JAN 3 1913
OFFICE OF STATE ENGINEER,
PIERRE, S. DAK.

January
Third,
1913.

Mr. Chambers Kellar,
Lead, So. Dak.

Dear Sir:-

This is to acknowledge receipt of your letter of the 2nd inst together with certificate of examination of works and certificate of application of water to beneficial use in connection with permit No. 43-1 of the Homestake Mining Company.

I note what you say about the application having been made to comprise the use of only 100 second feet of water, whereas the works are capable of using 120 second feet of water. I note that you would like to have the license cover the larger amount, since this amount can be made use of when the water is available.

I hand you herewith Water License No. 43-1; this completes the water right of the Homestake Mining Company under its permit bearing same number. In accordance with the statement of capacity and the request made by you that the larger quantity of water be designated, I have made the license to cover the use of 120 second feet of water.

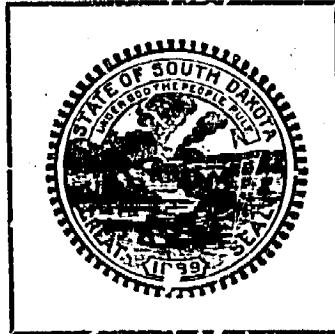
The fees covering the filing and issuance of the papers in connection with Water License No. 43-1 amount to \$3.00. These fees, which are turned into the State Treasury, should be sent direct to this office.

Yours very truly,

State Engineer.

State of South Dakota

Department of State

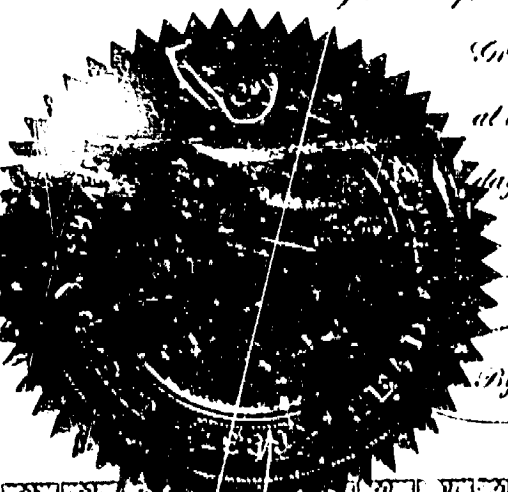


United States of America, }
State of South Dakota. } Secretary's Office.

*I, J. D. Wiff, Secretary of State of South Dakota, and
keeper of the Great Seal thereof, do hereby certify that the
attached instrument of writing is a true and correct copy of*
AMENDED ARTICLES OF INCORPORATION OF THE
HOMESTAKE MINING COMPANY

*and of the whole thereof, and has been compared with the original now on file in
this office.*

*In Testimony Whereof, I have hereunto set my hand and affixed the
Great Seal of the State of South Dakota, done
at the City of Pierre this 28th
day of MARCH 1907.*



J. D. Wiff
Secretary of State

[Signature]
Assistant Secretary of State

We, the undersigned, Lloyd Tevis, the President, and F. C. Drum, the Secretary of the HOMESTAKE MINING COMPANY, a corporation organized and existing under and by virtue of the laws of the State of California, and the President and Secretary respectively of the Board of Directors of said corporation, do hereby certify that at a meeting of said Board of Directors held on the 11th day of July, 1899, the articles of incorporation of said Homestake Mining Company were by a majority vote of said Board of Directors, amended so as to read as follows:

ARTICLES OF INCORPORATION
OF THE
HOMESTEAK MINING COMPANY.

Know all men by these presents, that we, the undersigned, all of whom are citizens and residents of the State of California, have this day voluntarily associated ourselves together, for the purpose of forming a corporation under the laws of the state of California.

And we do hereby certify:

First: That the name of said corporation shall be
HOMESTEAK MINING COMPANY.

Second: That the purposes for which it is formed are:

- 1: To purchase, lease, locate, own, sell, develop and work mines and mining claims within the State of South Dakota, and elsewhere in the United States.
- 2: To own, purchase and acquire water and water-rights; to construct, maintain and operate flumes, aqueducts, reservoirs, ditches and pipe-lines, necessary or expedient for the use of this company, and after supplying all water and requirements of this company, to sell and distribute its surplus waters to others.
- 3: To buy, sell, own and deal in shares of stock and obligations of other corporations.
- 4: To acquire by purchase or otherwise, own, use, deal in, sell, assign, grant, convey or otherwise dispose of patents and patent rights and licenses for any and all kinds of inventions, devices and improvements.
- 5: And powerfully to engage in the business of mining in said State of South Dakota and elsewhere in the United States, and to do all and every act and thing useful or necessary in carrying on the business for which the corporation is formed.

Third: That the place where the principal business of said corporation is to be transacted, is the City and County of San

San Francisco, State of California.

Fourth: That the time for which said corporation is to exist is fifty (50) years from and after the date of its incorporation.

Fifth: That the number of Directors or Trustees of said corporation shall be five (5), and that the names and residences of Directors or Trustees who are elected for the first year, and to serve until the election, and qualification of such officers, are as follows, to wit:

NAMES.	RESIDENCES.
Lloyd Tovia	San Francisco, California.
Henry Janin	do.
H. L. McDonald	do.
George Hearst	do.
George S. Dodge	do.

Sixth: That the amount of the capital stock of the corporation is twelve million five hundred thousand (12,500,000) dollars, divided into one hundred and twenty-five thousand shares, of the par value of one hundred dollars each.

Seventh: That the amount of said capital stock which has been actually subscribed is two thousand five hundred dollars, and the following are the names of the persons by whom the same has been subscribed, to wit:

NAMES OF SUBSCRIBERS.	NUMBER OF SHARES.	AMOUNT.
Lloyd Tovia	Five	Five Hundred Dollars.
Henry Janin	"	" " "
H. L. McDonald	"	" " "
George Hearst	"	" " "
George S. Dodge	"	" " "

IN WITNESS WHEREOF, we have hereunto set our hands and seals, this 2th day of November, 1877.

Lloyd Tovia

D. F. Verdonal

H. L. McDonald

V. H. Kesteven

George S. Dodge

REPRODUCTION REDUCTION 25% ROLL NO. DATE MICROFILMED CAMERA OPERATOR

State of California)
City and County of San Francisco) ss.

On this fifth day of November in the year one thousand eight hundred and seventy-seven, before me, James L. King, a Notary Public, in and for said ^{City and} County, residing therein, duly commissioned and sworn, personally appeared Lloyd Davis, B. F. Verdonal, W. L. McDonald, W. H. Kompton and George S. Dodge, known to me to be the persons whose names are subscribed to the foregoing instrument, and they duly acknowledged to me that they executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal at my office in said City and County, the day and year last above written.

James L. King,

(S H A L)

Notary Public.

State of California---Department of State.

I, G. F. Currey, Secretary of State of the State of California, do hereby certify that I have carefully compared the annexed copy of Amended Articles of Incorporation FORESTARK BEHIND COMPANY with the certified copy of the original now on file in my office, and that the same is correct transcript therefrom, and of the whole thereof. Also, that this authentication is in due form and by the proper officer.

Witness my hand and the Great Seal of State, at office in Sacramento, California, the 14th day of July A. D. 1899.

G. F. Currey,

Secretary of State.

By J. H. Wood

(S H A L)

Deputy.

I, Wm. A. DEANE, County Clerk of the City and County of San Francisco, State of California, and ex-officio Clerk of the Superior Court, in and for said City and County, hereby certify that foregoing to be a true, true and correct copy of the original amended Articles of Incorporation of the Homestake Mining Company filed in my office on the 13th day of July A. D. 1899.

ATTEST my hand and seal of said Court, this 15th day of July, A. D. 1899.

Wm. A. Deane, Clerk.

(J B A L)

By Wm. H. A. Johnson, Deputy Clerk.

(10¢ I. R. Stamp cancelled.)

And we do further certify that the foregoing is a correct copy of the articles of incorporation of said HOMESTAKE MINING COMPANY as thus amended.

And we do further certify that prior to such amendment the same was assented to in writing by the stockholders of said Homestake Mining Company, representing more than two-thirds of the subscribed capital stock of said company.

Dated July 12th, 1899.

Lloyd Toyle

President of Homestake Mining Company
and of its Board of Directors.

CORPORATE

F. G. Dross

SEAL

Secretary of Homestake Mining Company
and of its Board of Directors.

(10¢ Revenue Stamp affixed and cancelled.)

(ENDORSED)

Filed in the Office of the County Clerk of the City and County of San Francisco, State of California, this 15th day of July, A. D. 1899.

Wm. A. Deane, County Clerk.

By Wm. H. A. Johnson, Deputy Clerk

(ENDORSED)

Filed in the Office of the Secretary of State, the 14th
day of July, A. D. 1899.

C. F. CURRY,

Secretary of State.

By J. Housh,

Deputy.

State of South Dakota,)
) ss.
Office Secretary of State.)

I hereby certify that the within instrument was filed for
record on the 23 day of July, A. D. 1899 at 10 o'clock P. M.,
and recorded in Vol. 5 on page 549 Record of Foreign Conveyances
of this office.

Phillip Lawrence,

ASST. Secretary of State.

Lead, S. D., 12/31/12.

Mr. Samuel M. Lea,

State Engineer,

Pierre, S. D.

Dear Sir:

Your letter of December 30, 1912, asking me to make an examination of the works of the Homestake hydro-electric plant on Spearfish Creek, in South Dakota, received this day. I hereby accept the duties imposed upon me by this letter and will make prompt report upon the same.

Yours truly,

Richard Blackstone
Engineer.

RECEIVED

JAN 3 1913

OFFICE OF STATE ENGINEER,
PIERRE, S. DAK.

Filed

JAN 3 1913

POINT OF DIVERSION: Bearfish Creek NW¹/₄SE¹/₄ Sec. 8 T. 5 N., R. 2 E.

RECEIVED
FEB 7 1931

RE WATER RIGHT NUMBER 43-1
HOMESTAKE MINING CO.

OFFICE OF STATE ENGINEER
MONTANA

1. Do you now own the lands to be irrigated, or if for industrial purposes, the property, as listed in your original water right application?

YES

~~NO~~

2. If you are not at present the owner of the land to be irrigated, or other property listed in the original application, please give name and address of the present owner.

3. How many acres did you irrigate during the

1930 crop season? _____ acres.

1929 crop season? _____ acres.

1928 crop season? _____ acres.

X 4. If your original application was for industrial or domestic purposes, was the water used in substantially the amount and for the purpose stated in the application during the years 1928, 1929, and 1930?

Yes, for industrial purposes, to-wit, development of

hydro-electric power.

Y 5. If the distribution of water, or the use of water by others, has been unsatisfactory in any manner, please write your objection in full on back of this sheet, or use separate sheet if necessary.

Dated January 31, 1931.

SIGNED, HOMESTAKE MINING COMPANY

~~XXXXXX~~

By

R. J. Raymond
Assistant General Manager.

No 152720

Agreement

Cascade Water Power and
Electrical Transmission Company
To

Homestake Mining Company

Filed for record Feby 1st 1905

at 3-20 O'clock P. M.,

Edward Trevasikis

Register of Deeds

By E. H. Ellis Deputy

Copy

In The Circuit Court of the United
States, within and for the Western
Division of the District of South
Dakota,

Cascade Water Power & Electrical Trans-
mission Company, corporation Plaintiff
vs,
Homestake Mining Company, Black Hills
Canal & Water Company and Thomas J
Grier, Defendants

It is stipulated and agreed by and between the parties in the above
entitled cause that on the testimony taken and filed in this case,
applying the law thereto, that the defendants are entitled to the
Judgement and Decree of this court, dismissing this cause upon the
merits or as the defendants shall determine, entering a decree quieting
the title to so much of the waters flowing in Spearfish Creek and its
branches, situated in Lawrence County, South Dakota, as is included
in the water rights and locations set forth in the defendants answer
to the amended bill of complaint,

Therefore, it is stipulated and agreed that the court may upon
application of the defendants, make and enter an order either dismissing
the plaintiffs amended bill of complaint upon the merits, or entering
a decree quieting the title to the waters flowing in the main or
sometimes called middle branch of Spearfish Creek as the same flows
past and are found at the head of defendants intake, including also
the waters found in Juniper Gulch, sometimes called Reudick Gulch,
just below the point where the defendants propose taking the waters
out of said creek, and to the extent of all the waters flowing there,
estimated to be about ten cubic feet per second, and also including
the waters of the east branch or fork of said Spearfish Creek at the
point where the defendants assert their water right and location,
which is at the point where the defendants are erecting and construct-
ing a pumping plant, including all the waters flowing down the creek
to that point, as well as those which are taken into what is known
as the Poake ditch, as well as those found below down to and including

the site of said pumping plant, these decrees and judgement to be entered without costs to the plaintiff,

And it is further stipulated that whatever order may be necessary or desired by the said defendants with reference to the continuance of said cause or its submission at any place within the district to the court, or for any other purpose, may be had and entered on defendants application without costs to the plaintiff,

Dated, Deadwood, S,D, September - 1900

Cascade Water Power and Electrical Transmission Company

By R N, Ogden

President

Wm L McLaughlin

Secretary

R N Ogden, McLaughlin & McLaughlin

Attorneys for complainant

Moody Kellar & Moody

Attorneys for defendants,

Endorsed, Filed Jan'y 26th 1905

Cliver S Pendar Clerk

By Byron P Dague, Deputy

United States of America

District of South Dakota,

I, Cliver S, Pendar, Clerk of the Circuit Court of the United States of America for the District of South Dakota do hereby certify that I have carefully compared the foregoing copy with the original hereof which is in my custody as such Clerk, and such copy is a correct Transcript from such original,

Cascade Water Power & Electrical Transmission Company A Corporation

V S,

Homestake Mining Company, Black Hills Canal and Water Company And
Thomas J , Grier

In Testimony Whereof, I have hereunto set my hand and affixed the seal of said Court at Deadwood, South Dakota in the said District, this 1st day of February A, D, 1905

(Seal)

Cliver S Pendar
Clerk

By Byron P Dague
Deputy

South Dakota



GREAT FACES. GREAT PLACES.

DEPARTMENT OF WATER & NATURAL RESOURCES

Joe Foss Building
523 East Capitol
Pierre, South Dakota 57501-3181

43-1

May 6, 1991

TO: Spearfish Creek Water Right Owners
(See Attached List With Priority Dates)

FROM: John Hatch, Chief Engineer
Division of Water Rights
(605) 773-3352

SUBJECT: Diversions from Spearfish Creek

If drought conditions continue in the Black Hills area during 1991, we expect another irrigation season with very low flows in Spearfish Creek. As I understand it, during the 1990 irrigation season, there were short periods of time when there were no flows in Spearfish Creek at different locations.

I believe that a short reach of the creek channel below Cook Ditch's diversion received the most attention from the news media. Although state law does not require instream flows for fish and wildlife and aesthetic purposes, state law does give preference to water for domestic use which includes livestock watering.

We would like to work with you to maintain minimum flows in the creek for domestic use during 1991. Maintenance of minimum flows should reduce news media attention to Spearfish Creek.

If you have any questions, please contact Del Brosz or Rassool Ahadi, Division of Water Rights, 523 E. Capitol, Pierre, SD 57501. Phone: (605) 773-3352

cc: Representative Harvey Krautschun

SPEARFISH CREEK WATER RIGHTS

PERMIT NO.	NAME	PRIORITY DATE	RATE (CFS)
*43--1	Homestake Mining Co	01/04/1909	100.00
138-1	City of Spearfish	11/12/1917	0.50
141-1	City of Spearfish	03/01/1919	1.10
148-1	City of Spearfish	01/27/1930	1.50
150-1	City of Spearfish	01/27/1930	1.00
+1041-1	US. Bur Sport & Fish	02/19/1937	6.66
X1385-1	Homestake Mining Co	10/01/1876	1.67
1386-1	Walton-Schuler Ditch	03/20/1887	8.50
1387-1	Tonn-Evans Ditch	05/01/1876	14.40
1388-1	Fowman Ditch	06/11/1877	8.0
1389-1	Cook Ditch	06/10/1877	21.60
1392-1	Mann Ditch	03/21/1878	1.45
1394-1	Kemper Ditch	07/31/1881	33.00
1399-1	Cook-Burns Ditch	06/15/1881	33.0
1400-1	Owens-Gay Ditch	03/01/1877	1.74
1403-1	Ramsdell Ditch	10/01/1876	2.00
1416-1	Richard Cundy	04/01/1920	0.20

- * - Power Generation, non-consumptive
- + - Fish Hatcher in City of Spearfish
- X - For municipal use, City of Spearfish

REPRODUCTION: REDUCTION 22-1
 ROLL NO. 12
 DATE MICROFILMED
 CAMERA OPERATION



HOMESTAKE MINING COMPANY
630 E. Summit Street
Lead, South Dakota 57754-1700
605-584-GOLD (4653)

January 16, 2004



Mr. John Cooper
Secretary
SD Game Fish & Parks
523 E. Capitol
Pierre SD 57501

Dear John:

At the request of Vic Pawlikowski, Federal Emergency Regulatory Commission, I am forwarding to you a copy of the Emergency Action Plan for the Spearfish Canyon Hydroelectric Projects.

If you have any questions, do not hesitate to call me at 605-722-4875.

Sincerely,

Todd A. Duex
Todd A. Duex
Engineering Division Manager
Homestake Mine



Enc.

cc wo/enc.: Vic Pawlikowski

**SPEARFISH CANYON
HYDROELECTRIC PROJECTS**

EAP

EMERGENCY ACTION PLAN

**SPEARFISH CANYON
HYDROELECTRIC PROJECTS
HOMESTAKE MINING COMPANY
LEAD, SOUTH DAKOTA**

Copy No. _____

**SPEARFISH CANYON
HYDROELECTRIC PROJECTS
EMERGENCY ACTION PLAN**

TABLE OF CONTENTS

I. EAP Flowchart 1

II. Statement of Purpose 2

III. Project Description 2

IV. Emergency Detection, Evaluation, and Classification 4

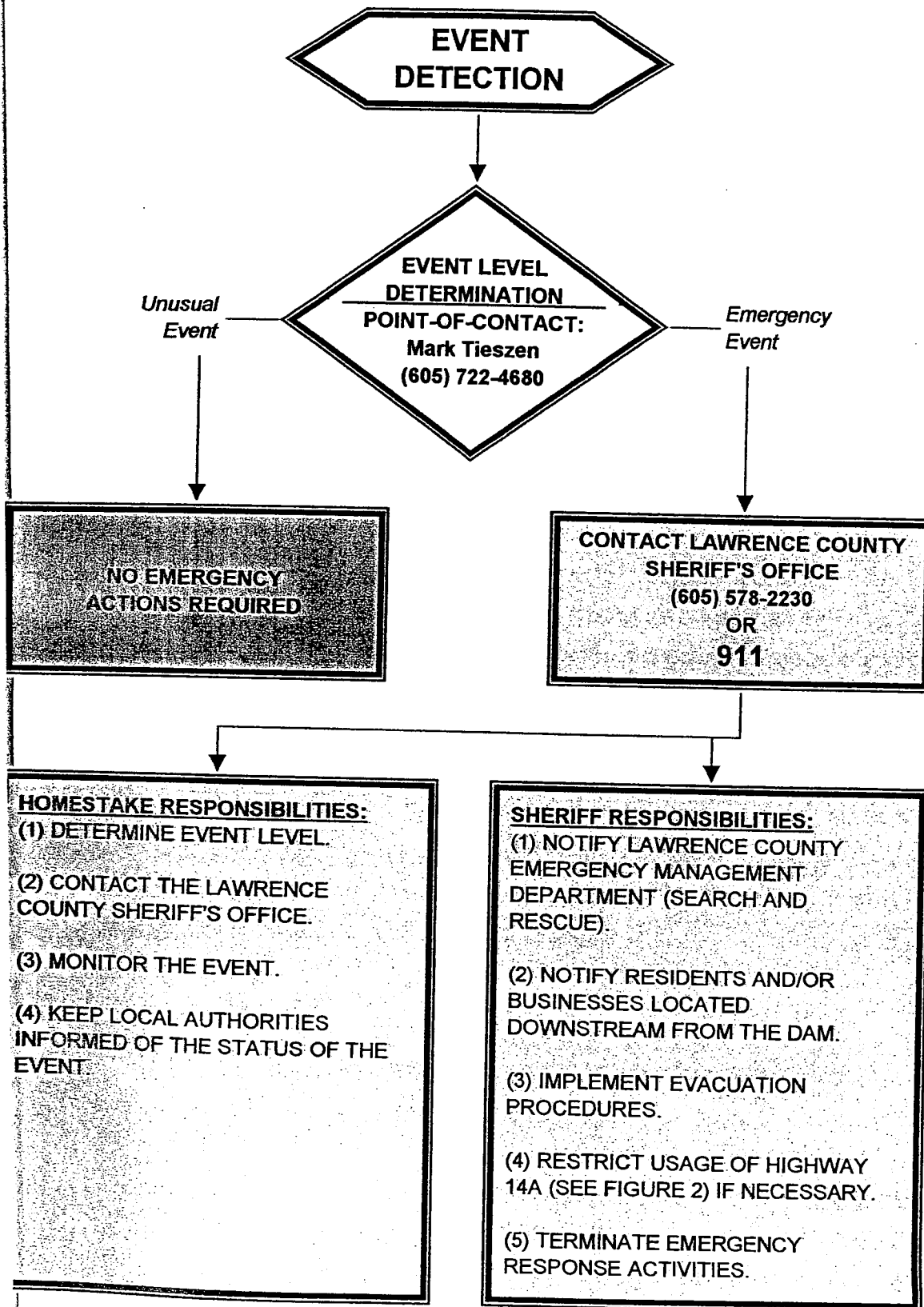
V. General Responsibilities 5

Figure 1 - Spearfish Canyon Hydroelectric Projects General Site Map

Figure 2 - Suggested Road Closures at Savoy Dam or Little Spearfish Dam

Appendix A - List of Planholders

I. EAP Flowchart



II. Statement of Purpose

The purpose of this abbreviated Emergency Action Plan (EAP) is to minimize the potential for loss of life and property damage within Spearfish Canyon in the event that water released from Savoy Dam or Little Spearfish Dam begins to overtop U.S. Highway 14A. This EAP defines responsibilities and outlines procedures for notifying emergency management officials and for closing U.S. Highway 14A in the event of an emergency at one of the Spearfish Canyon Dams.

A 2003 Hazard Evaluation report by W. W. Wheeler and Associates, Inc. indicates that under reasonable dam failure conditions, failure of any of the dams will not significantly increase the potential for loss of life or significant property damage downstream. However, because some overtopping of U.S. Highway 14A could occur in the event of failure of the Savoy Dam or Little Spearfish Dam, the Federal Energy Regulatory Commission (FERC) has required that Homestake Mining Company (Homestake) prepare this abbreviated EAP. Based on the results of the 2003 Hazard Evaluation report, U.S. Highway 14A is not expected to be overtopped if Maurice Dam or Forebay Dam should fail. As such, emergency action procedures such as notification and suggested road closings were not included for these dams.

On August 13, 2003 the turbines at the Hydro No.2 facility were decommissioned and the generators shut down. Subsequently, the Savoy Dam and Little Spearfish Dam aqueducts were closed. On August 1, 2003, the Little Spearfish Dam and associated water rights were transferred from Homestake to the South Dakota Department of Game, Fish, and Parks.

III. Project Description

The Spearfish Canyon hydroelectric project features that are owned by Homestake and the location of the project dams are shown on Figure 1.

Hydro No. 1 lies adjacent to Spearfish Creek just east of Spearfish, SD. Water for this facility is diverted from Spearfish Creek at the Maurice Dam located about 7.4 miles upstream. From the Maurice Dam, water flows via gravity through 4.5 miles of aqueduct into the Forebay Dam and then through 1.0 mile of aqueduct to Hydro No. 1.

The Maurice Dam is located along Spearfish Creek about 7.4 miles upstream from Hydro No. 1 and 6.0 miles downstream from Savoy. The concrete dam is 4.8 feet high with a total crest length of about 130 feet. The dam has two spillways with a combined width of 22.5 feet. At the spillway crests, which lie about 1.0 foot lower than the dam crest, the dam impounds 1 to 2 acre-feet of water.

The Forebay Dam stores water conveyed through the aqueduct between the Maurice Dam and Hydro No. 1. The impoundment was generally constructed below the natural ground surface. However, the concrete spillway section has a height of about 10 feet with a total crest length of 8.9 feet. The spillway empties into a 48-inch-diameter CMP culvert that discharges into a natural swale tributary to Spearfish Creek. This dam impounds less than 1.0 acre-foot of water.

The decommissioned Hydro No. 2 lies adjacent to Spearfish Creek about 1.0 mile upstream of the Maurice Dam. Water for this facility was diverted from both Spearfish Creek and Little Spearfish Creek. The Savoy Dam impounds Spearfish Creek 6.1 miles upstream from Hydro No. 2 and the Little Spearfish Dam impounds Little Spearfish Creek 0.3 miles upstream from its confluence with Spearfish Creek. During operation water flowed via gravity through approximately 4.5 miles of aqueduct to Hydro No. 2.

The Savoy Dam is located along Spearfish Creek about 1.0 mile upstream from Savoy and 4.3 miles downstream from the intersection of U.S. Highways 85 and U.S. Highway 14A (Cheyenne Crossing). The concrete dam is 8.0 feet high with a total crest length of about 80 feet. The spillway consists of six 10-foot-wide by 3-foot-high flashboard sections. At the tops of the flashboards, which lie about 3.0 feet below the dam crest, the dam impounds 6 to 8 acre-feet of water.

The Little Spearfish Dam is located along Little Spearfish Creek about 0.3 miles upstream from its confluence with Spearfish Creek near Savoy. The concrete dam is 7.6 feet high with a total crest length of about 294 feet. The spillway consists of a 53-foot-wide stop-log structure. At the top of the stop-log, which lies about 1.0 foot below the dam crest, the dam impounds 1 to 2 acre-feet of water.

IV. Emergency Detection, Evaluation, and Classification

An *unusual event* or *emergency event* may be detected by observations at or near the dam by Homestake personnel, visitors to the dam, or the public. In addition, environmental conditions, such as an earthquake or severe weather forecast, may forewarn the occurrence of either type of event.

After any event is detected and reported, the Homestake Point-of-Contact shall be responsible for classifying the event as an *unusual event* or *emergency event*. If the Lawrence County Sheriff's Office or other Homestake personnel receive notification regarding observations of any type of event at any of these dams, that person shall first contact the Homestake Point-of-Contact and he/she shall determine the appropriate event classification.

- An *unusual event* is defined as an event which takes place, or a condition which develops, that is not normally encountered in the routine operation of the dam and will not cause overtopping of U.S. Highway 14A. An *unusual event* does not require immediate operations in accordance with this EAP. Homestake shall take appropriate steps to address the *unusual event*. An event initially classified as an *unusual event* may later be classified as an *emergency event*.
- An *emergency event* is defined as an event which takes place, or a condition which develops, that is of a serious nature that may cause overtopping of U.S. Highway 14A and endanger persons or property in Spearfish Canyon. An *emergency event* requires immediate operations in accordance with this EAP.

V. General Responsibilities

1. **Homestake** shall, upon event detection and reporting, evaluate the severity of the event and classify the event as either an *unusual event* or an *emergency event*.
 - If the event is classified as an *unusual event*, emergency action procedures are not necessary; however, **Homestake** shall take appropriate actions to address the *unusual event*, monitor the event, and be prepared to declare the event an *emergency event* and enact the emergency response procedures if the event worsens and begins to threaten public safety.
 - If the event is classified as an *emergency event*, the following emergency response procedures shall be immediately performed.
2. **Homestake** shall contact the Lawrence County Sheriff's Office (Sheriff) to notify them of the location of the dam at which the *emergency event* has occurred and the severity of the event.
3. **Sheriff** shall notify the Department of Emergency Management (Search and Rescue).
4. **Sheriff** shall notify all residents and businesses located downstream from the dam at which the *emergency event* has occurred and shall implement appropriate evacuation procedures.
5. **Homestake** shall send personnel to the dam site to monitor the event and keep local authorities informed of the status of the event.
6. **Sheriff** shall, if necessary, restrict usage of U.S. Highway 14A for those sections of the highway that are in danger of being overtopped. Figure 2 provides general guidelines as to possible highway closure locations for an *emergency event* at Savoy Dam or Little Spearfish Dam.
7. **Sheriff** shall terminate the emergency response activities when the event has been reduced to an *unusual event* or normal operating conditions.
8. **Homestake** shall review and update this abbreviated EAP on an annual basis and send any revisions to the plan holders listed in Appendix A.

APPENDIX A
LIST OF PLANHOLDERS

Planholder:	Plan No.:
Homestake Mining Company Mark Tieszen (Point-of-Contact) 630 E. Summit Street Lead, South Dakota 57754-1700 (605) 722-4680	1
Lawrence County Sheriff's Office Richard Mowell (Sheriff) 78 Sherman Street Deadwood, South Dakota 57732 (605) 578-2230	2
Federal Energy Regulatory Commission Division of Dam Safety and Inspections - Chicago Regional Office Peggy Harding (Regional Engineer) 230 South Dearborn Street, Suite 3130 Chicago, Illinois 60604 (312) 353-6171	3

SD Eform - 0495 V1 NOTICE OF TRANSFER OF OWNERSHIP

To: Chief Engineer
Water Rights Program, DENR
523 E. Capitol
Pierre, SD 57501-3181

Water Right/Permit No. 43-1

Date: May 3, 2004

I/We request that Water Right/Permit No. 43-1 formerly owned by:
HOMESTAKE MINING COMPANY OF CALIFORNIA be transferred to:

New Owner Name: CITY OF SPEARFISH
Address: 625 FIFTH STREET
City, State Zip SPEARFISH SD 57783 Telephone No. (605) 642-1325

Title to the following described land(s)/property has been transferred as described above:

N/A

I understand that the validity of Water Right/Permit No. 43-1 has not been determined by this transfer action. If I have any questions on validity, I understand that only the Water Management Board has the authority to determine if a water permit/right is valid (see note below).

You are requested to file this "Notice of Transfer" in the appropriate file with the Water Rights Program, as evidence of the change of ownership.

A fee of Two Dollars and Fifty Cents (\$2.50) is required to cover the filing fees as required under SDCL 46-2-13.

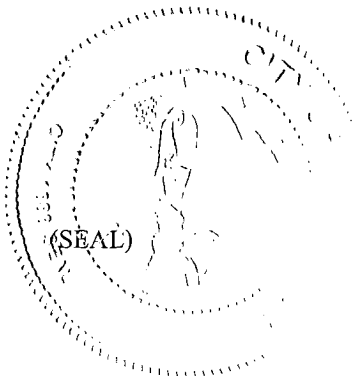
I, CITY OF SPEARFISH, the new owner, certify that the above information is true and correct.

CITY OF SPEARFISH

By: Jerry A. Krambeck
Jerry A. Krambeck
Mayor

ATTEST:

Elizabeth A. Benning
Elizabeth A. Benning
Finance Officer



NOTE: Water permits may be cancelled for nonconstruction after the five year construction period has expired. Once a water permit is developed and the water used, the permit becomes a right. A water right may be lost for three reasons:

1. Abandonment - no intent to use water and use is abandoned.
2. Forfeiture - no use of water for three year period without legal excuse.
3. For a third violation of a condition of a water permit/right.

11/2002



Hood, Nies & Dardis, P.C.

ATTORNEYS AT LAW

E. James Hood
Lester Nies
Suzanne M. Dardis
Bruce L. Outka

Carol J. Vavruska, Paralegal
Kristin D. Nies, Secretary

P.O. Box 759, 109 Main Street Spearfish, SD 57783-0759

April 30, 2004

Eric Gronlund
Chief Engineer
Water Rights Program, DENR
523 E. Capitol
Pierre SD 57501-3181

Re: Homestake to City of Spearfish
Water Right No. 43-1

Dear Chief Engineer:

Enclosed for filing is Notice of Transfer of Ownership of Water Right No. 43-1 from Homestake Mining Company of California to the City of Spearfish. Our firm's check #4181 in the amount of \$2.50 for the filing fee is enclosed.

Please contact me if there are any questions.

Very truly yours,

E. JAMES HOOD

EJH:cjv

Enclosure

cc: Mayor Krambeck
Finance Officer Elizabeth Benning
Public Works Administrator Cheryl Johnson

RECEIPT

WATER RIGHTS PROGRAM

South Dakota Department of Environment and Natural Resources

Date May 5, 2004

RECEIVED OF Hood, Nies & Dardis PC, PO Box 759, Spearfish SD 57783

The following amount in fees for services rendered as provided for by law:

Fee for Application for Permit No. _____ to Appropriate Water, to construct and to put water to beneficial use		
Fee for Application for Permit No. _____ to Appropriate Water for Future use		
Fee to retain Future Use Permit No. _____ after period of seven years.		
Fee for Inspecting Constructed Works, confirming beneficial use and issuing Water License No. _____		
Fee for Filing Transfer Form <u>43-1</u>		2 50
Fee for _____		
Fee for Issuing New Well Driller's License No. _____ for C.Y. _____		
Fee for Renewal of Well Driller's License No _____ for C.Y. _____		
Fee for Issuing Well Pump Installer's License No. _____ for C.Y. _____		
Fee for Renewal of Well Pump Installer's License No: _____ for C.Y. _____		
(Any Other Work Provided by Law)	TOTAL	2.50

No.

009395

By

Darland Eibeke

Chief Engineer

gm

RECEIPT

Received for filing at 2:20 o'clock P.M., CDT, this ⁵~~X~~th day of May, 2004,
Notice of Transfer of Ownership of Water Right No. 43-1, together with check #4181
drawn on the account of Hood, Nies & Dardis, P.C., in the amount of \$2.50 for the filing
fee.

STATE OF SOUTH DAKOTA DEPARTMENT
OF ENVIRONMENTAL & NATURAL RESOURCES
OFFICE OF THE CHIEF ENGINEER
WATER RIGHTS PROGRAM

By: Eric S. Hummel
Its: Water Rights Program



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

May 6, 2004

Jerry A Krambeck, Mayor
City of Spearfish
625 Fifth St
Spearfish SD 57783

RE: Water Right No. 43-1
Homestake Mining Company – City of Spearfish

Dear Mayor Krambeck:

I am writing to acknowledge receipt of the ownership change for Water Right No. 43-1. The transfer has been completed. The water right formerly held by Homestake Mining Company of California is now held by the City of Spearfish.

If I can answer any questions for you, please contact me.

Sincerely,

Genny McMath
Environmental Scientist
Water Rights Program
(605) 773-3352
email: genny.mcmath@state.sd.us

c: E James Hood, w/Hood, Nies & Dardis, PC
Karl Burke, w/Homestake Mining Company



HOMESTAKE MINING COMPANY
630 E. Summit Street
Lead, South Dakota 57754-1700
605-584-GOLD (4653)

January 16, 2004



Mr. John Cooper
Secretary
SD Game Fish & Parks
523 E. Capitol
Pierre SD 57501

Dear John:

At the request of Vic Pawlikowski, Federal Emergency Regulatory Commission, I am forwarding to you a copy of the Emergency Action Plan for the Spearfish Canyon Hydroelectric Projects.

If you have any questions, do not hesitate to call me at 605-722-4875.

Sincerely,

Todd A. Duex
Todd A. Duex
Engineering Division Manager
Homestake Mine



Enc.

cc wo/enc.: Vic Pawlikowski

**SPEARFISH CANYON
HYDROELECTRIC PROJECTS**

EAP

EMERGENCY ACTION PLAN

**SPEARFISH CANYON
HYDROELECTRIC PROJECTS
HOMESTAKE MINING COMPANY
LEAD, SOUTH DAKOTA**

Copy No. _____

**SPEARFISH CANYON
HYDROELECTRIC PROJECTS
EMERGENCY ACTION PLAN**

TABLE OF CONTENTS

I. EAP Flowchart 1

II. Statement of Purpose 2

III. Project Description 2

IV. Emergency Detection, Evaluation, and Classification 4

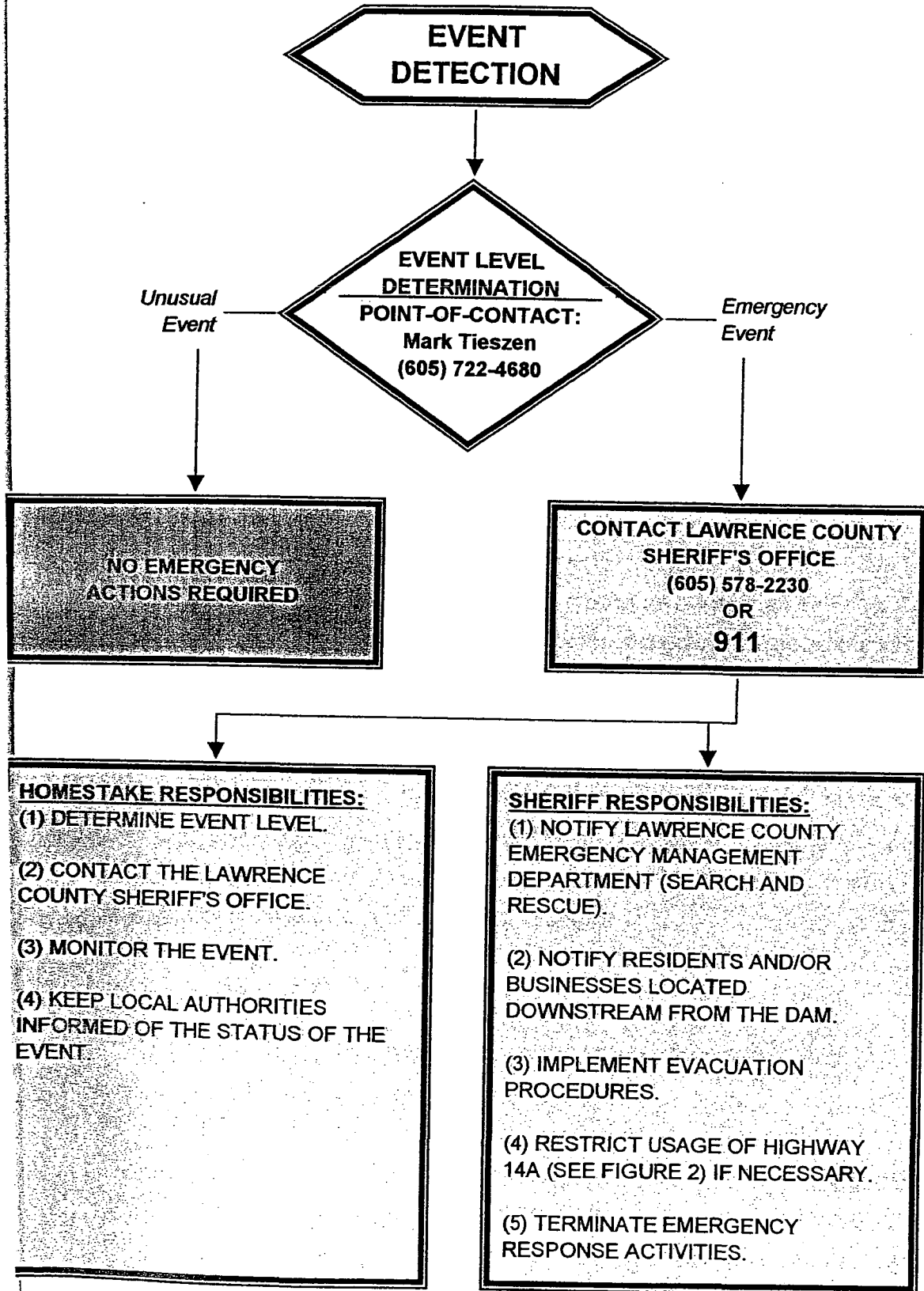
V. General Responsibilities 5

Figure 1 - Spearfish Canyon Hydroelectric Projects General Site Map

Figure 2 - Suggested Road Closures at Savoy Dam or Little Spearfish Dam

Appendix A - List of Planholders

I. EAP Flowchart



II. Statement of Purpose

The purpose of this abbreviated Emergency Action Plan (EAP) is to minimize the potential for loss of life and property damage within Spearfish Canyon in the event that water released from Savoy Dam or Little Spearfish Dam begins to overtop U.S. Highway 14A. This EAP defines responsibilities and outlines procedures for notifying emergency management officials and for closing U.S. Highway 14A in the event of an emergency at one of the Spearfish Canyon Dams.

A 2003 Hazard Evaluation report by W. W. Wheeler and Associates, Inc. indicates that under reasonable dam failure conditions, failure of any of the dams will not significantly increase the potential for loss of life or significant property damage downstream. However, because some overtopping of U.S. Highway 14A could occur in the event of failure of the Savoy Dam or Little Spearfish Dam, the Federal Energy Regulatory Commission (FERC) has required that Homestake Mining Company (Homestake) prepare this abbreviated EAP. Based on the results of the 2003 Hazard Evaluation report, U.S. Highway 14A is not expected to be overtopped if Maurice Dam or Forebay Dam should fail. As such, emergency action procedures such as notification and suggested road closings were not included for these dams.

On August 13, 2003 the turbines at the Hydro No.2 facility were decommissioned and the generators shut down. Subsequently, the Savoy Dam and Little Spearfish Dam aqueducts were closed. On August 1, 2003, the Little Spearfish Dam and associated water rights were transferred from Homestake to the South Dakota Department of Game, Fish, and Parks.

III. Project Description

The Spearfish Canyon hydroelectric project features that are owned by Homestake and the location of the project dams are shown on Figure 1.

Hydro No. 1 lies adjacent to Spearfish Creek just east of Spearfish, SD. Water for this facility is diverted from Spearfish Creek at the Maurice Dam located about 7.4 miles upstream. From the Maurice Dam, water flows via gravity through 4.5 miles of aqueduct into the Forebay Dam and then through 1.0 mile of aqueduct to Hydro No. 1.

The Maurice Dam is located along Spearfish Creek about 7.4 miles upstream from Hydro No. 1 and 6.0 miles downstream from Savoy. The concrete dam is 4.8 feet high with a total crest length of about 130 feet. The dam has two spillways with a combined width of 22.5 feet. At the spillway crests, which lie about 1.0 foot lower than the dam crest, the dam impounds 1 to 2 acre-feet of water.

The Forebay Dam stores water conveyed through the aqueduct between the Maurice Dam and Hydro No. 1. The impoundment was generally constructed below the natural ground surface. However, the concrete spillway section has a height of about 10 feet with a total crest length of 8.9 feet. The spillway empties into a 48-inch-diameter CMP culvert that discharges into a natural swale tributary to Spearfish Creek. This dam impounds less than 1.0 acre-foot of water.

The decommissioned Hydro No. 2 lies adjacent to Spearfish Creek about 1.0 mile upstream of the Maurice Dam. Water for this facility was diverted from both Spearfish Creek and Little Spearfish Creek. The Savoy Dam impounds Spearfish Creek 6.1 miles upstream from Hydro No. 2 and the Little Spearfish Dam impounds Little Spearfish Creek 0.3 miles upstream from its confluence with Spearfish Creek. During operation water flowed via gravity through approximately 4.5 miles of aqueduct to Hydro No. 2.

The Savoy Dam is located along Spearfish Creek about 1.0 mile upstream from Savoy and 4.3 miles downstream from the intersection of U.S. Highways 85 and U.S. Highway 14A (Cheyenne Crossing). The concrete dam is 8.0 feet high with a total crest length of about 80 feet. The spillway consists of six 10-foot-wide by 3-foot-high flashboard sections. At the tops of the flashboards, which lie about 3.0 feet below the dam crest, the dam impounds 6 to 8 acre-feet of water.

The Little Spearfish Dam is located along Little Spearfish Creek about 0.3 miles upstream from its confluence with Spearfish Creek near Savoy. The concrete dam is 7.6 feet high with a total crest length of about 294 feet. The spillway consists of a 53-foot-wide stop-log structure. At the top of the stop-log, which lies about 1.0 foot below the dam crest, the dam impounds 1 to 2 acre-feet of water.

IV. Emergency Detection, Evaluation, and Classification

An *unusual event* or *emergency event* may be detected by observations at or near the dam by Homestake personnel, visitors to the dam, or the public. In addition, environmental conditions, such as an earthquake or severe weather forecast, may forewarn the occurrence of either type of event.

After any event is detected and reported, the Homestake Point-of-Contact shall be responsible for classifying the event as an *unusual event* or *emergency event*. If the Lawrence County Sheriff's Office or other Homestake personnel receive notification regarding observations of any type of event at any of these dams, that person shall first contact the Homestake Point-of-Contact and he/she shall determine the appropriate event classification.

- An *unusual event* is defined as an event which takes place, or a condition which develops, that is not normally encountered in the routine operation of the dam and will not cause overtopping of U.S. Highway 14A. An *unusual event* does not require immediate operations in accordance with this EAP. Homestake shall take appropriate steps to address the *unusual event*. An event initially classified as an *unusual event* may later be classified as an *emergency event*.
- An *emergency event* is defined as an event which takes place, or a condition which develops, that is of a serious nature that may cause overtopping of U.S. Highway 14A and endanger persons or property in Spearfish Canyon. An *emergency event* requires immediate operations in accordance with this EAP.

V. General Responsibilities

1. **Homestake** shall, upon event detection and reporting, evaluate the severity of the event and classify the event as either an *unusual event* or an *emergency event*.
 - If the event is classified as an *unusual event*, emergency action procedures are not necessary; however, **Homestake** shall take appropriate actions to address the *unusual event*, monitor the event, and be prepared to declare the event an *emergency event* and enact the emergency response procedures if the event worsens and begins to threaten public safety.
 - If the event is classified as an *emergency event*, the following emergency response procedures shall be immediately performed.
2. **Homestake** shall contact the Lawrence County Sheriff's Office (Sheriff) to notify them of the location of the dam at which the *emergency event* has occurred and the severity of the event.
3. **Sheriff** shall notify the Department of Emergency Management (Search and Rescue).
4. **Sheriff** shall notify all residents and businesses located downstream from the dam at which the *emergency event* has occurred and shall implement appropriate evacuation procedures.
5. **Homestake** shall send personnel to the dam site to monitor the event and keep local authorities informed of the status of the event.
6. **Sheriff** shall, if necessary, restrict usage of U.S. Highway 14A for those sections of the highway that are in danger of being overtopped. Figure 2 provides general guidelines as to possible highway closure locations for an *emergency event* at Savoy Dam or Little Spearfish Dam.
7. **Sheriff** shall terminate the emergency response activities when the event has been reduced to an *unusual event* or normal operating conditions.
8. **Homestake** shall review and update this abbreviated EAP on an annual basis and send any revisions to the plan holders listed in Appendix A.

APPENDIX A
LIST OF PLANHOLDERS

<u>Planholder:</u>	<u>Plan No.:</u>
Homestake Mining Company Mark Tieszen (Point-of-Contact) 630 E. Summit Street Lead, South Dakota 57754-1700 (605) 722-4680	1
Lawrence County Sheriff's Office Richard Mowell (Sheriff) 78 Sherman Street Deadwood, South Dakota 57732 (605) 578-2230	2
Federal Energy Regulatory Commission Division of Dam Safety and Inspections - Chicago Regional Office Peggy Harding (Regional Engineer) 230 South Dearborn Street, Suite 3130 Chicago, Illinois 60604 (312) 353-6171	3

Attorney General

270609

MAY 18 2005

DBL
JPG

LAW OFFICES OF
BENNETT, MAIN & GUBBRUD
A PROFESSIONAL CORPORATION
618 STATE STREET
BELLE FOURCHE, SOUTH DAKOTA 57717-1489
TEL (605) 892-2011
FAX (605) 892-4084
EMAIL: bellelaw@bellelaw.com

MAX MAIN*
DWIGHT A. GUBBRUD
WADE NYBERG
*ALSO LICENSED IN WYOMING

EST. 1908

RETIRED
DONN BENNETT

May 17, 2005

COPY

Michael M. Hickey
Attorneys at Law
P.O. Box 2670
Rapid City, SD 57709-2670

John P. Guhin
Assistant Attorney General
500 East Capitol
Pierre, SD 57501

RECEIVED
MAY 20 2005
WATER RIGHTS
PROGRAM

RE: **Williamsons v. Spearfish, et al.; Lawrence County Civ. No. 05-114.**

Dear Mike and John:

Enclosed for each of you is a copy of a Notice of Entry of Order. This is intended as service by mail upon you.

Sincerely,

BENNETT, MAIN & GUBBRUD, P.C.

Max Main

Max Main

MM/ra

Enc.

cc (w/Enc.): E. James Hood
Diane Best ✓

STATE OF SOUTH DAKOTA	)	DRAFT IN CIRCUIT COURT
	)	SS.
COUNTY OF LAWRENCE	)	FOURTH JUDICIAL DISTRICT
KEITH D. WILLIAMSON and)	
DIANNA L. WILLIAMSON,)	
	)	Civ. Case No. 05-114
Plaintiffs,)	
)	
vs.)	
)	
CITY OF SPEARFISH,	)	NOTICE OF ENTRY OF
HOMESTAKE MINING COMPANY,	)	ORDER
INC., and SOUTH DAKOTA)	
DEPARTMENT OF)	
ENVIRONMENT & NATURAL)	
RESOURCES, WATER)	
MANAGEMENT BOARD,)	
)	
Defendants.)	

TO: KEITH D. WILLIAMSON and DIANNA L. WILLIAMSON, Plaintiffs, and their attorney, MICHAEL M. HICKEY.

YOU ARE HEREBY NOTIFIED that on May 16, 2005, the Circuit Court of Lawrence County, South Dakota entered its ORDER in the above-captioned action. A true and correct copy of the said Order is attached hereto and incorporated herein by this reference. The Order was filed with the Clerk of Courts of Lawrence County, South Dakota on the 16th day of May, 2005.

BENNETT, MAIN & GUBBRUD, P.C.
Attorneys for defendant City of Spearfish

By Max Main
Max Main
618 State Street
Belle Fourche, SD 57717-1489
605.892.2011


CERTIFICATE OF SERVICE

I, MAX MAIN, one of the attorneys for City of Spearfish, do hereby certify that on the 17th day of May, 2005, I caused full, true, and complete copies of the NOTICE OF ENTRY OF ORDER to be served upon the following named persons at their last known mailing addresses, as follows:

Michael M. Hickey
Attorney at Law
P. O. Box 2670
Rapid City, SD 57709-2670

John P. Guhin
Assistant Attorney General
500 East Capitol
Pierre, SD 57501

by depositing the same in the United States Mail in Belle Fourche, South Dakota with first class postage thereon fully prepaid, in envelopes addressed as above.



Max Main

Bangs McCullen Law Firm

Bangs, McCullen, Butler, Foye & Simmons, L.L.P.

RECEIVED

OCT - 6 2005

WATER RIGHTS
PROGRAM

Rapid City

Thomas H. Foye
Thomas E. Simmons
Charles L. Riter
Allen G. Nelson
James P. Hurley
Michael M. Hickey
Terry L. Hofer
Rod Schlauger
Daniel F. Duffy
Jeffrey G. Hurd
John H. Raforth
Terry G. Westergaard
Steven R. Nolan
Gregory J. Erlandson
Eric J. Pickar
Sara L. Larson

Sioux Falls

Michael A. Hauck
John P. Mullen
Brian K. Kirby
Victoria M. Duehr
Kara C. Van Bockern
Patrick J. Knecht

Attorneys also admitted in
Nebraska, North Dakota,
Iowa and Minnesota.

Reply to Rapid City Office

Writer's e-mail address: mhickey@bangsmccullen.com

October 4, 2005

Garland Erbele
Chief Engineer
Water Rights Program
Department of Environment and Natural Resources
Joe Foss Building
523 E. Capitol
Pierre, SD 57501-3182

Re: Water License 43-1

Dear Mr. Erbele:

In accordance with the provisions of SDCL 46-5-37.1 and the decision of Judge Johns, this is to request that your office conduct an investigation and issue a report concerning the validity and extent of this license and the permit holder's compliance with the rules, regulations and laws relating to water rights.

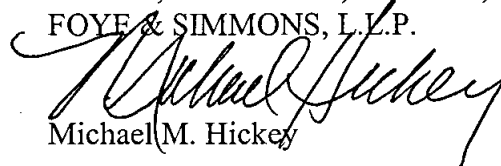
In addition, it is our belief and position that the purported transfer of the water license between Homestake Mining Company and the City of Spearfish was improper and should be set aside.

Please contact my office prior to the time your office intends to inspect the diversion system and the hydroelectric plant, as I would like our expert to accompany your staff members during any such inspection.

Thank you for your cooperation. If you have any questions or need any additional information, please advise.

Sincerely,

BANGS, McCULLEN, BUTLER,
FOYE & SIMMONS, L.L.P.



Michael M. Hickey

MMH:bjc
cc: Client

Trust Building
818 St. Joseph Street
P.O. Box 2670
Rapid City, SD 57709-2670
605-343-1040
Fax: 605-343-1503

Security Bank Building
100 N. Phillips Ave.
Suite 610
P.O. Box 949
Sioux Falls, SD 57101-0949
605-339-6800
Fax: 605-339-6801

www.bangsmccullen.com

FVZ
DB

Attorney General
275442
OCT 14 2005

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MAX MAIN*
DWIGHT A. GUBBRUD
WADE NYBERG*
*ALSO LICENSED IN WYOMING

EST. 1908

RETIRED
DONN BENNETT

October 13, 2005

Diane Best, Assistant Attorney General
Office of the Attorney General
500 East Capitol Ave.
Pierre, SD 57501-5070

RE: City of Spearfish; Water License 43-1.

Dear Diane:

As you are aware, I represent the City of Spearfish, the owner of Water License 43-1. I have received a copy of Mike Hickey's October 4, 2005 request to the Chief Engineer to investigate Water License 43-1. In his letter, Mr. Hickey states that he would like his expert to accompany DENR staff members on an inspection of the diversion system and Hydro No. 1. The City does not give its consent for Mr. Hickey's expert to accompany DENR staff members. Mr. Hickey should contact me regarding any inspection by his expert of City property.

Please consider this letter to be a notice of appearance in this matter for myself and Jim Hood on behalf of the City of Spearfish. We request that we be copied on all pertinent correspondence and documents.

Thank you for your assistance, and please let me know if you have any questions.

Sincerely,

BENNETT, MAIN & GUBBRUD, P.C.



Max Main

MM/njo
cc: Jim Hood

DB

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MAX MAIN*
DWIGHT A. GUBBRUD
WADE NYBERG*
*ALSO LICENSED IN WYOMING

EST. 1908

Attorney General
OCT 31 2005

RETIRED
DONN BENNETT

October 28, 2005

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NOV - 1 2005

WATER RIGHTS
PROGRAM

Diane Best, Assistant Attorney General
Office of the Attorney General
500 East Capitol Ave.
Pierre, SD 57501-5070

RE: City of Spearfish; Water License 43-1.


Dear Diane:

I received your October 27 letter. After my October 13 letter to you, I spoke by telephone with Mike Hickey and confirmed with him that the City prefers that the Chief Engineer's investigation pursuant to SDCL 46-5-37.1 be conducted independently by the Water Rights Program, without the accompaniment of possibly adversarial experts or other persons. If, at a later date, Mr. Hickey's expert needs access to the premises, we will do our best to accommodate him.

Thank you for your assistance, and please let me know if you have any questions.

Sincerely,

BENNETT, MAIN & GUBBRUD, P.C.



Max Main

MM/njo

cc: Mike Hickey
Jim Hood



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

November 15, 2005

Cheryl Johnson, Public Works Director
City of Spearfish
625 5th Street
Spearfish SD 57783

Dear Ms. Johnson:

Thank you for meeting with Water Rights staff to discuss the investigation of Water Right No. 43-1, Hydro Plant No. 1. We found the meeting and inspection of the facility beneficial. The investigation of the water right is being initiated as a result of a request from Michael Hickey to determine if the water right is subject to abandonment or forfeiture. I am requesting the city's assistance by providing information on the configuration of the system and past power production.

Specifically, copies of plan drawings and specifications of the intake, tunnel, forebay, penstocks and generators. Reference elevations in feet mean seal level or to a local datum are also necessary to determine slopes and head. This information will be used to calculate the system's capacity. In addition, I request a copy of any prior engineering studies conducted by Homestake or consultant that provides system capacity of the hydropower facility.

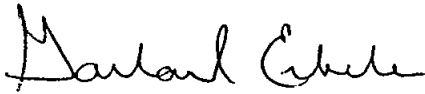
The city indicated that the past power production records are available at Barrick's facilities in Lead. We agreed to provide you dates and in turn the city will compile the power production records to the best of its ability. For each day, the total power production and conversion to cubic feet of water per second is requested. The following provides lists of the dates.

- The date each year on the attached "Peak Streamflow for South Dakota" for the USGS gage at Spearfish (period of record 1947 through 2004).
- The date each year on the attached "Peak Streamflow for South Dakota" for the USGS gage above Spearfish (period of record 1989 through 2004).
- The power production records for the peak day during the month of May for each year from 1909 to 1946.

- The power production records for the dates on the enclosed list when flow in Spearfish Creek is near the 120 cfs authorized by Water Right No. 43-1.
- The formula used to calculate flow based on power production records. It is our understanding that as efficiencies changed this formula changes accordingly. This will require knowing dates when efficiencies were implemented.
- A representative copy of a day power production record is requested.

Please contact Don Stroup at 773-3352 if there are questions on the requested information and to coordinate when Spearfish personnel plan to review of Homestake's records. Don would like to accompany them to view the records.

Sincerely,



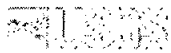
Garland Erbele, Chief Engineer
Water Rights Program, DENR

Enclosure

C: Diane Best, Assistant Attorney
Max Main, 618 State Street, Belle Fourche SD 57717

Dates by Year when Spearfish Creek flows were near 120 cfs

DATE	FLOW (cfs)
June 27, 1947	127
May 6, 1949	144
May 27, 1952	123
May 8, 1953	126
June 12, 1955	136
May 30, 1962	130
May 5, 1963	124
June 25, 1964	120
June 5, 1965	124
June 15, 1967	124
May 8, 1969	133
April 29, 1970	122
May 18, 1971	121
May 11, 1972	123
June 10, 1973	122
May 5, 1975	120
June 25, 1976	120
May 6, 1977	125
May 5, 1978	122
June 10, 1982	121
June 2, 1983	120
June 26, 1984	121
May 9, 1994	122
June 2, 1995	120
June 8, 1996	121
April 5, 1997	120
October 22, 1998	120
August 8, 1999	120
April 19, 2000	120
September 19, 2002	123
June 7, 2003	122



Water Resources

Data Category:
Surface Water

Geographic Area:
South Dakota

go

Peak Streamflow for South Dakota

USGS 06431500 SPEARFISH CR AT SPEARFISH,SD

Available data for this site | [Site home page](#)

GO

Lawrence County, South Dakota Hydrologic Unit Code 10120203 Latitude 44°28'57", Longitude 103°51'40" NAD27 Drainage area 168.00 square miles Gage datum 3,640.00 feet above sea level NGVD29				Output formats			
				Table			
				Graph			
				Tab-separated file			
				WATSTORE formatted file			
				Reselect output format			
Water Year	Date	Gage Height (feet)	Stream-flow (cfs)	Water Year	Date	Gage Height (feet)	Stream-flow (cfs)
1904	Jun. 05, 1904		5,000 ⁷	1975	May 07, 1975		143 ^{1,6}
1947	Jun. 22, 1947	6.73	891 ⁶	1976	Jun. 15, 1976	10.54	3,870 ⁶
1948	Jun. 24, 1948	5.89	417 ⁶	1977	May 02, 1977	5.65	167 ⁶
1949	May 06, 1949	5.32	176 ⁶	1978	May 11, 1978	5.92	230 ⁶
1950	May 22, 1950	5.09	116 ⁶	1979	Aug. 07, 1979	5.73	182 ⁶
1951	Jun. 17, 1951	5.37	215 ⁶	1980	Apr. 21, 1980	5.35	85.0 ⁶
1952	May 22, 1952	6.81	947 ⁶	1981	Jul. 01, 1981	5.49	102 ⁶
1953	Jun. 19, 1953	5.56	301 ⁶	1982	May 22, 1982	8.81	2,110 ⁶
1954	May 30, 1954	5.15	147 ⁶	1983	May 08, 1983	7.66	500 ⁶
1955	Jun. 11, 1955	5.20	181 ⁶	1984	Jun. 17, 1984	7.31	285 ⁶
1956	Jul. 16, 1956	5.61	300 ⁶	1985	Apr. 17, 1985	6.59	89.0 ⁶
1957	Jul. 14, 1957	5.22	158 ⁶	1986	Apr. 28, 1986	6.66	104 ⁶
1958	Jul. 03, 1958	6.23	571 ⁶	1987	Apr. 18, 1987	6.64	86.0 ⁶
1959	May 04, 1959	4.95	83.0 ⁶	1988	May 14, 1988	6.75	118 ⁶
1960	May 10, 1960	5.02	86.0 ⁶	1989	May 09, 1989	6.66	106 ⁶
1961	Nov. 15, 1960	5.07	100 ⁶	1990	May 05, 1990	6.62	82.0 ⁶
1962	May 22, 1962	6.64	830 ⁶	1991	May 22, 1991	6.69	106 ⁶

1963	Apr. 29, 1963	6.47	662 ⁶	1992	Apr. 29, 1992	6.57	70.0 ⁶
1964	Jun. 09, 1964	7.97	3,040 ⁶	1993	Jun. 08, 1993	6.69	100 ⁶
1965	May 15, 1965	10.53	4,240 ⁶	1994	Apr. 25, 1994	6.90	175 ⁶
1966	Apr. 17, 1966	6.47	112 ⁶	1995	May 08, 1995	10.11	1,900 ⁶
1967	Jun. 16, 1967	7.02	230 ⁶	1996	May 30, 1996	7.19	204 ⁶
1968	Jun. 25, 1968	6.60	106 ⁶	1997	May 08, 1997	7.67	322 ⁶
1969	May 15, 1969	7.71	466 ⁶	1998	Jun. 18, 1998	8.84	899 ⁶
1970	Jun. 12, 1970	8.21	884 ⁶	1999	Jun. 13, 1999	7.12	187 ⁶
1971	May 10, 1971	6.85	234 ⁶	2000	Apr. 26, 2000	6.96	152 ⁶
1972	May 13, 1972	6.74	163 ⁶	2001	Apr. 07, 2001	6.79	117 ⁶
1973	May 31, 1973	7.09	287 ⁶	2002	Sep. 18, 2002	7.05	171 ⁶
1974	Jan. 01, 1974	7.29	175 ⁶	2003	Jun. 07, 2003	7.25	209 ⁶
				2004	Jul. 05, 2004	6.73	75 ⁶

Peak Streamflow Qualification Codes.

- 1 -- Discharge is a Maximum Daily Average
- 6 -- Discharge affected by Regulation or Diversion
- 7 -- Discharge is an Historic Peak

[Questions about data](#) [South Dakota NWISWeb Data Inquiries](#)
[Feedback on this website](#) [South Dakota NWISWeb Maintainer](#)
Surface Water for South Dakota: Peak Streamflow
<http://waterdata.usgs.gov/sd/nwis/peak?>

[Top](#)
[Explanation of terms](#)

Retrieved on 2005-11-10 09:45:42 EST
 Department of the Interior, U.S. Geological Survey
 USGS Water Resources of South Dakota
[Privacy Statement](#) || [Disclaimer](#) || [Accessibility](#) || [FOIA](#)
 1.16 1.15 nadww01



Water Resources

Data Category:
Surface Water

Geographic Area:
South Dakota

go

Peak Streamflow for South Dakota

USGS 06430900 SPEARFISH CREEK ABOVE SPEARFISH, SD

Available data for this site | [Site home page](#)

GO

Lawrence County, South Dakota Hydrologic Unit Code 10120203 Latitude 44°24'06", Longitude 103°53'40" NAD27 Drainage area 139.0 square miles Contributing drainage area 139.0 square miles Gage datum 4,440.0 feet above sea level NGVD29				Output formats Table Graph Tab-separated file WATSTORE formatted file Reselect output format																																																																					
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Peak Streamflow Qualification Codes.

- 2 -- Discharge is an Estimate
- 6 -- Discharge affected by Regulation or Diversion

[Questions about data](#) [South Dakota NWISWeb Data Inquiries](#)
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 Surface Water for South Dakota: Peak Streamflow
<http://waterdata.usgs.gov/sd/nwis/peak?>

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Spearfish Hydro Flow Test Date 12-9-2005

Metered Kw	PF	cfs	psi	Kw per cfs	% of rated full load	% of Water rights
Two Generators Running #2 unit being measured						
2190	1	60	277	36.50	109.50%	50.00%
2092	1	54.47	277	38.41	104.60%	45.39%
2015	1	51.02	278	39.49	100.75%	42.52%
1890	1	47.54	278	39.76	94.50%	39.62%
1809	1	46.13	279	39.22	90.45%	38.44%
1709	1	43.05	279	39.70	85.45%	35.88%
1615	0.99	40.09	280	40.28	80.75%	33.41%
1515	0.99	38.2	280	39.66	75.75%	31.83%
1399	0.99	36.21	279	38.64	69.95%	30.18%
1302	0.99	34.5	289	37.74	65.10%	28.75%
1213	0.97	33.2	280	36.54	60.65%	27.67%
1109	0.95	30.54	280	36.31	55.45%	25.45%
1000	1	27.7	279	36.10	50.00%	23.08%
895	1	24.87	279	35.99	44.75%	20.73%
814	1	22.64	279	35.95	40.70%	18.87%
				avg. kw per cfs		
					38.02	
This table shows the flow test with one generator being measured						
Generator #2 was tested, flow was measured in app 100 kw steps, each step was charted with the flow through the flowmeter						
This table shows that the water flow through one generator requires 60 cfs (50% of water rights) to reach the 2000kw rating of generation						
Thus showing if water flows are at 120 cfs (100% total water rights) then we could generate 2000kw per generator or 4000kw plant total						
Note: 38 Kw = 1 cfs						



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
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PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

June 2, 2006

Mr. Michael Hickey
Bangs McCullen Law Firm
PO Box 2670
Rapid City, SD 57709-2670

Mayor Jerry Krambeck
City of Spearfish
625 5th Street
Spearfish, SD 57783

Mr. Max Main
Bennett, Main & Gubbrud
618 St Street
Belle Fourche, SD 57717

Dear Sirs:

Enclosed please find a copy of a report on the investigation and analysis of Water Right No. 43-1. This report was completed by the staff of the Water Rights Program, DENR, at the request of Mr. Hickey.

The report concludes that Water Right No. 43-1 is valid and not subject to abandonment or forfeiture and that there is no basis for the cancellation of this right. In the matter of the transfer of the water right, the court order dismissed the plaintiff's claim for notice of and hearing on the transfer. The filing and subsequent transfer of Water Rights 43-1 was a legal transfer and met the requirements of the law.

If you have any questions concerning the report please contact us at 773-3352.

Thank you.

Sincerely,

A handwritten signature in cursive script that reads "Garland Erbele".

Garland Erbele, Chief Engineer
Water Rights Program

Encl.

Cc: Diane Best, Assistant Attorney General

Investigative Report
Water Right No. 43-1

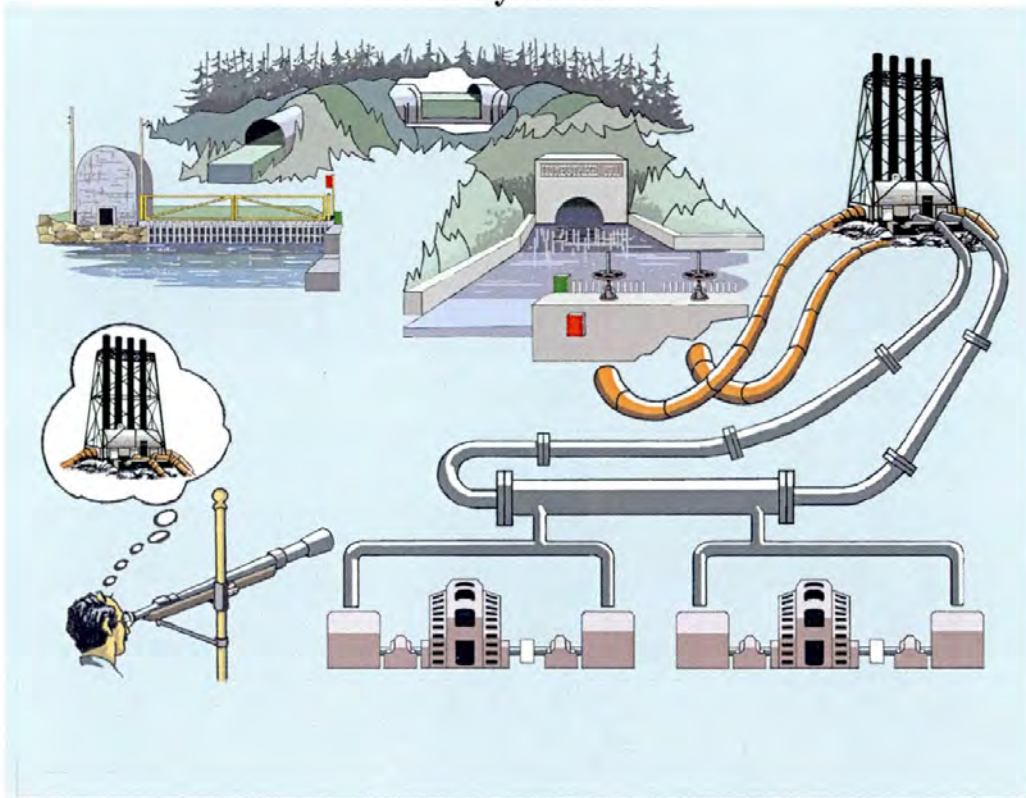


Spearfish Canyon Hydroelectric Power Plant No. 1

Prepared by

State of South Dakota
Department of Environment and Natural Resources
Water Rights Program

May 2006



Garland Erbele, Chief Engineer
Water Rights Program

Contents

Title	Page
Introduction -----	5
Hydroelectric Power Plant No. 1 System-----	5
Licensing and Transfer of Water Right No. 43-1-----	5
Notice of Entry of Order-----	6
Applicable Water Right/Permit -Statutes and Rules -----	7
On-Site Examination -----	8
U.S. Geological Survey Maurice Gaging Station-----	8
Maurice Dam-----	8
Weir Measurements-----	9
Aqueduct-----	10
Aqueduct Capacity-----	10
Forebay Dam-----	11
Collection Cylinder and Standpipes-----	12
Powerhouse-----	12
Historical Records and Data Analysis -----	15
Records Review-----	15
Spearfish Creek-----	16
Analysis of Transfer of Water Right 43-1 -----	21
Conclusions -----	22
Figures	
Spearfish Canyon-----	4
Maurice Dam Weir-----	9
Spearfish Creek Aqueduct Flow-----	11
Generator No. 2 Measured Output-----	14
Lower Spearfish Canyon Geological Setting-----	17
Spearfish Creek Maurice Hydrograph-----	19
Spearfish Creek Spearfish Hydrograph-----	20
Photographs	
USGS Maurice Gage. Data Transmitter Site-----	8
USGS Maurice Gage. Sensor Location Site-----	8
Maurice Dam. Diversion Grates-----	10
Maurice Dam. Diversion Gate Controls-----	10
Aqueduct. Interior-----	10
Forebay Dam. Entrance Portal-----	12
Forebay Dam. Outflow Trash Grates-----	12
Cylinder and Standpipes-----	12
Pelton Wheel and Nozzle-----	13
Pelton Wheel and Generator-----	13
Powerhouse-----	13
Powerhouse. Water Return-----	13
Powerhouse. Generator and Pelton Wheels-----	14

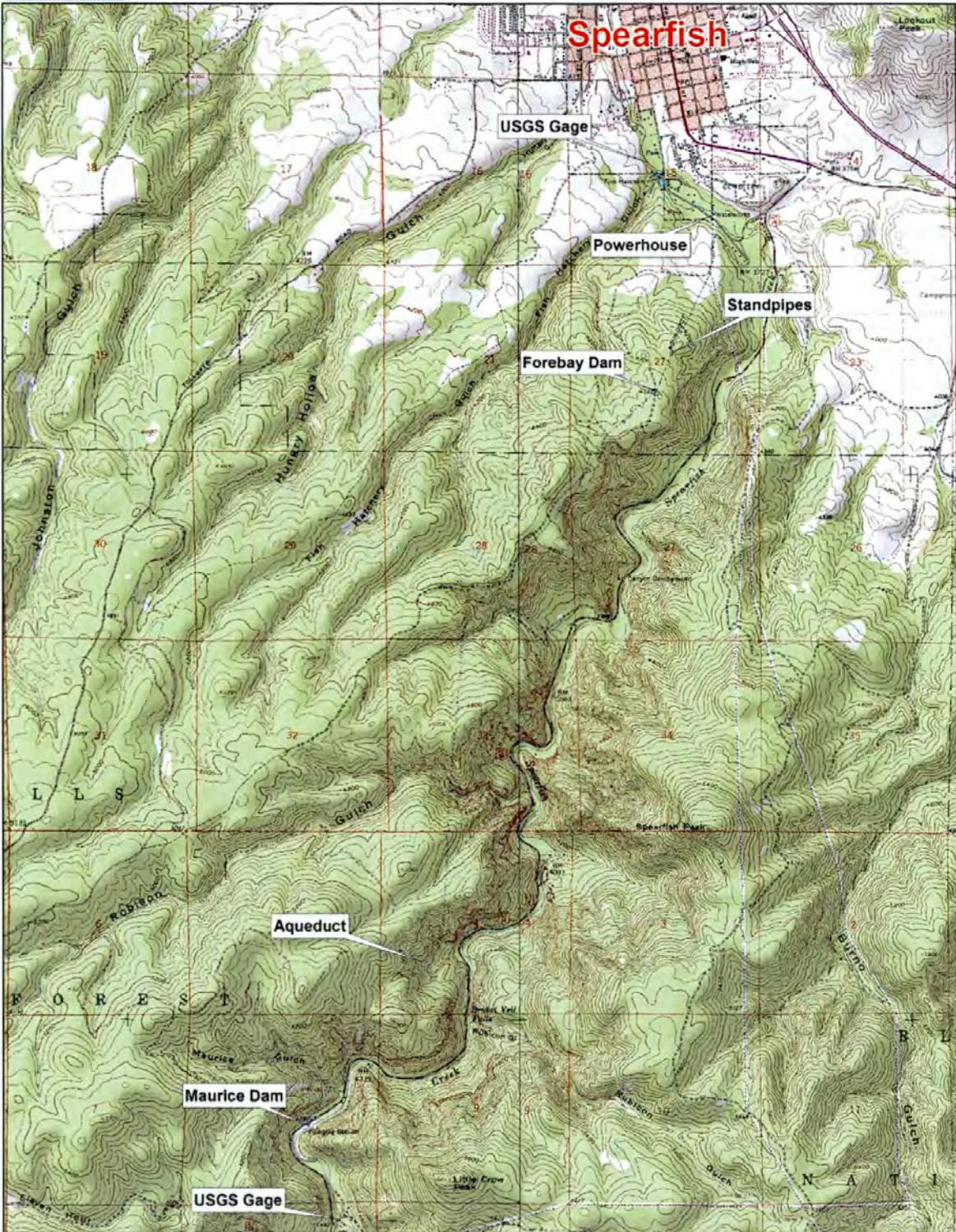
Powerhouse. System Monitor-----	14
Logbook-----	15
Logbook. Production Record-----	15
Logbook. Stream Flow Footnote-----	15
Logbook. Stream Flow Footnote-----	15

Glossary -----	23
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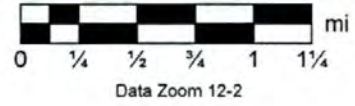
Appendix

Water Right No. 43-1-----	A
Notice of Transfer of Ownership-----	B
Judge Order -----	C
Letter from Michael M. Hickey Requesting Investigation -----	D
Spearfish Hydrol Flow Test Data-----	E
HMC Power Production Records Database-----	F
PSIPlot Hydrol Weir-kWh Correlation-----	G
Lower Spearfish Valley Irrigation Ditches-----	H

References



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Spearfish Canyon Hydroelectric Power Plant No. 1

Introduction

This report is a summary and analysis of an investigation conducted by the water rights staff of Water Permit No. 43-1. This investigation was initiated at the request of attorney Michael Hickey, representing plaintiffs Keith and Dianna Williamson landowners on Spearfish Creek in Lawrence County. The plaintiffs filed a complaint claiming, among other things, a right to the domestic use of water in Spearfish Creek and that Water Right No. 43-1 was subject to abandonment. In a May 2005 ruling, Judge Timothy Johns ruled that the plaintiffs must exhaust their available administrative remedies before proceeding with the complaint. South Dakota Codified Laws (SDCL) 46-5-37.1 grants the Chief Engineer the authority to investigate whether a water permit or right has been abandoned or forfeited.

Hydroelectric Power Plant No. 1 System

Construction of the Homestake Mining Company (HMC) Hydroelectric Power Plant No. 1 system was completed and brought online in 1911. The system consists of a diversion dam on Spearfish Creek at Maurice, SD, a tunnel (aqueduct), a forebay dam, collection cylinder standpipes, and powerhouse. Hydroelectric Power Plant No. 1 is a run-of-the-river system that operates on available inflow and a limited amount of short-term storage.

The 200-foot concrete diversion dam near Maurice, SD, has inlet gates for the control of water conveyed through a flume to the aqueduct entrance. The amount of water diverted into the aqueduct is measured at a weir in the flume.

Water is conveyed from the diversion dam through the concrete-lined aqueduct 23,800 feet (4.5 miles) to the forebay dam.

The 40 x 70 foot concrete forebay dam has built-in gates that regulate the flow at 40 to 120 cubic feet per second (cfs) depending on the stream flow diverted into the aqueduct. An overflow is also built into the forebay dam to divert flow greater than 120-cfs into Spearfish Creek.

From the forebay dam the water is conveyed through two lines, 1200 feet long, to a large collection cylinder with four standpipes for balancing the pressure and relieving the water of accumulated air.

Two steel pressure pipelines or penstocks, each 4000-foot long, convey the water to the Pelton wheels at the powerhouse. The water is then returned to Spearfish Creek. The system has an operating head of 655 feet or 288 pounds per square inch (psi).

Originally, three 2000 kilovolt ampere (kVA) or 1600 kilowatt (kW) at 80 percent power factor, Westinghouse generators driven by double overhung Pelton wheels were installed in the powerhouse along with two water or electrically driven exciter generators. Transformers and switching equipment were also installed in the powerhouse.

In 1917 one of the Westinghouse generators was removed and installed in Hydroelectric Power Plant No. 2. In 1989 the standpipes were upgraded and insulated, and a new substation north of the powerhouse replaced the water-cooled transformers and old switching gear.

Licensing and Transfer of Water Right No. 43-1

The South Dakota State Engineer received the HMC application for the right to appropriate 100 cfs of water from Spearfish Creek for power generation on January 4, 1909. A water license was issued to HMC for Water Right No. 43-1 on January 3, 1913, after the applicant made proof of the completion of adequate works for the diversion of 120-cfs (Appendix A). Water Right No. 43-1 was issued with a priority date of January 4, 1909, for

the diversion of 120-cfs for power generation. Water Right No. 43-1 is junior in priority to all of the irrigation ditches diverting Spearfish Creek water downstream of the powerhouse.

The city of Spearfish, SD, purchased the HMC Hydroelectric Power Plant No. 1 system on May 5, 2004. The Notice of Transfer of Ownership of Water Right No. 43-1 was filed on May 5, 2004 (Appendix B).

Notice of Entry of Order

On May 16, 2005, the Circuit Court of Lawrence County, SD, entered an order in an action (Civil Case No. 05-114) initiated by Keith D. Williamson and Dianna L. Williamson (plaintiffs) versus the city of Spearfish, Homestake Mining Co., and the SD Department of Environment and Natural Resources, Water Management Board (Appendix C). The court ordered that the plaintiffs: (A) do not have a legal right to compel notice and hearing on the transfer of Water Right No. 43-1 and (B) must exhaust their available administrative remedies as to all other claims in their complaint by filing a petition with the Chief Engineer of the Water Rights Program requesting an investigation of Water Right No. 43-1.

In accordance with SDCL 46-5-37.1 and the court's decision in the action cited, a request was submitted by Michael Hickey, on behalf of his clients, to conduct an investigation and issue a report concerning the validity and extent of Water Right No. 43-1 (Appendix D). Based on his request, an investigation was conducted on the validity and extent of Water Right No. 43-1 and the permit holder's compliance with the rules, regulations and laws relating to water rights. Mr. Hickey's request also stated that the transfer of the water right between Homestake and the city of Spearfish was improper.

Applicable Water Right/Permit - Statutes and Rules

The following statutes and rules are deemed applicable to the validity and ownership transfer of Water Right No. 43-1 from HMC to the city of Spearfish by the Department of Environment and Natural Resources' Chief Engineer:

SDCL 46-5-30.3. Sale or transfer of permit or license – Notice to Chief Engineer

Notice of any sale, grant, lease, conveyance, or other transfer of a permit or license to appropriate water issued under the provisions of this title shall be filed with the Chief Engineer within ninety days.

SDCL 46-5-32. Assignment of permit or license. Subject to the limitations provided in §§46-5-33 and 46-5-34, any permit or license to appropriate water, including a permit issued under §46-5-8.1, may be assigned, but no assignment is binding, except upon the parties thereto, unless filed for record in the division of water rights. No assignment may carry with it the right to use the water for any purpose or in any manner other than that specified in the permit or license without the approval of the water management board. The evidence of the right to use water from any works constructed by the United States, or its duly authorized agencies, shall in like manner be filed with the division, upon assignment. A sale, grant, conveyance, assignment, lease other transfer of a permit or license issued under §46-5-8.1 may be assigned only in accordance with the terms of the contract or instrument of conveyance between the district and the energy industry user.

SDCL 46-5-36. Abandonment of use of water appurtenant to land – Public water subject to general appropriation.

If the owner of the land to which water has become appurtenant abandons the use of such water upon such land, such water shall become public water, subject to general appropriation.

SDCL 46-5-37. Failure to use beneficially appropriated water – Forfeiture for nonuse – Reversion to public.

When any person entitled to the use of appropriated water fails to use beneficially all or any part of such water for the purpose for which it was appropriated, for a period of three years, such unused water shall revert to the public and shall be regarded as unappropriated public water.

SDCL 46-5-37.1. Abandonment or forfeiture of permits or rights – Recommendation of Chief Engineer for cancellation.

Upon the initiative of the Chief Engineer or upon petition by an interested person and after reasonable notice to the holder of the right or permit, if he can be located, the Chief Engineer may investigate whether or not a permit or right has been abandoned or forfeited. After the investigation, the Chief Engineer may recommend cancellation of the permit or right for reason of abandonment or forfeiture. The recommendation, notice and hearing shall be conducted pursuant to the procedure contained in chapter 46-2A.

General Rule 74:02:01:37.01. Legal Excuse for non-use of water.

Legal excuse for non-use of water suspends the period of non-use specified in SDCL 46-5-37. Legal excuses for non-use of water include but are not limited to the following:

- (1) Unavailability of water to satisfy a permit, right, or vested right;
- (2) Legal proceedings which prevent the use of water; and
- (3) Water use under existing climatic conditions would result in the waste of water.

On-Site Examination

On November 3, 2005, DENR Water Rights Program staff accompanied by the city of Spearfish Hydroelectric Power Plant No. 1 Superintendent, Gary Lillehaug, made an on-site examination of the Hydroelectric Power Plant No. 1 system. The examination included the U.S. Geological Survey (USGS) gaging stations, Maurice Dam, the aqueduct, the forebay dam, and the power plant. Water Rights Program staff included:

<u>Name</u>	<u>Position</u>
Garland Erbele	Chief Engineer
Eric Gronlund	Natural Resources Engineering Specialist
Mark Rath	Natural Resources Engineering Specialist
Don Stroup	Natural Resources Project Engineer

U.S. Geological Survey Maurice Gaging Station

The USGS has maintained a gaging station on Spearfish Creek at Maurice, SD, since October 1, 1988. Spearfish Creek's average daily flows upstream of the Maurice Dam are available except for the period August 18, 1998 to September 30, 2001, when it was only used for recording yearly peak flow due to limited funding. For the 1988 to 2004 period of record, the Maurice USGS gage median and mean flows are 54.00 and 63.13 cfs, respectively. The median and mean flows from this gage are skewed high as the area received above normal precipitation during the 1990s.



USGS Maurice Gage. Data Transmitter Site



USGS Maurice Gage. Sensor Location Site

Maurice Dam

The surface area of Maurice Dam is approximately 0.4 acre with storage less than 2 acre feet. Originally, the headworks consisted of four inlet gates with steel trash grates for the regulation of the amount of water diverted into the aqueduct. A concrete flume, with a device to measure the height of the water flowing over the 12.5-foot wide weir, extends about 100 feet from the headworks to the aqueduct entrance. Originally, there was a house at the site for a dam tender to take measurements and control the water diverted into the aqueduct. The area was severely damaged during a flooding episode in 1965. At that time, the dam was repaired, the house was removed and the dam tender position ended.

The Maurice Dam intake presently has four gate valves, two manual valves that are normally closed and two electrically controlled valves. The diversion rate is regulated by opening and closing the electrically controlled valves for two reasons: one, to keep the pond level high for fishermen; and two, to regulate the flow through the aqueduct to be 120-cfs or less as measured at the weir's height gage located 50 feet downstream of the gate valves.

Weir Measurements

The Maurice Dam contracted-rectangular weir notch is 12.5 feet wide (L) and about 2.5 feet high (h). Historically, the volume speed (cfs) of the water flow entering the aqueduct was determined using two prepared tables. Both tables determined cfs, one using inches and one using feet for the height (h) of water passing through the weir notch.

The table using feet measurement has two notes: one to “Divide the total of hourly readings by 24 and apply this average to the above “chart,” and two that “Whenever weir averages exceed 2.50 use 2.50 sec. ft. figure of 161.90 no matter how much higher it goes.” The second note was probably put into effect due to the inability to accurately measure flow when the height (h) was at or greater than 2.5 feet. From the audit of the historical HMC records, it appears these procedures were initiated in 1962.

The accuracy of the tables was checked using the following formula for a contracted-rectangular weir, with the results of each graphed for comparison.

$$Q = 3.33h^{3/2}(L - 0.2h)$$

where:

Q=flow (cfs)

h=height of water through weir notch

L=weir notch length



The comparison graph shows no significant difference between the tables used to historically determine the flow of water entering the aqueduct and the calculated flow for a contracted-rectangular weir.

Future plans for the Maurice Dam intake control include installation of an automatic system similar to the one installed at the forebay dam. This system will measure the height of the water over the weir and automatically adjust the intake valves accordingly to limit flows to 120-cfs or less.

Aqueduct

The concrete lined 23,800-foot tunnel extends in a practically straight line from Maurice Dam to the forebay dam. Aqueduct dimensions are 6.5 feet wide, 5 feet high sidewalls, and a 3.25 feet radius arch. The aqueduct is protected by iron trash grates at the intake. The floor and sidewalls of the tunnel are concrete-lined the entire length and the arched roof similarly lined three-fifths of the entire length. The tunnel was driven through solid rock in sections with access crosscuts made from suitable points along the route. Work began in May 1909 and finished in October 1910.



Maurice Dam. Diversion Grates



Maurice Dam. Diversion Gate Controls



Aqueduct. Interior

Aqueduct Capacity

The USGS estimates the maximum flow capacity of the aqueduct to be 115 to 135 cfs. Using the following equation for uniform flow in an open channel and graphing the results for various depths of water in an open channel, with the depth of water in the tunnel remaining below the sidewall height of five-foot, the aqueduct is capable of maximum flow greater than the USGS estimate.

$$Q = CA\sqrt{r_h S}$$

where:

Q=flow (cfs)

$$C = \text{Manning Formula} = \frac{1.49}{n} (r_h)^{1/6}$$

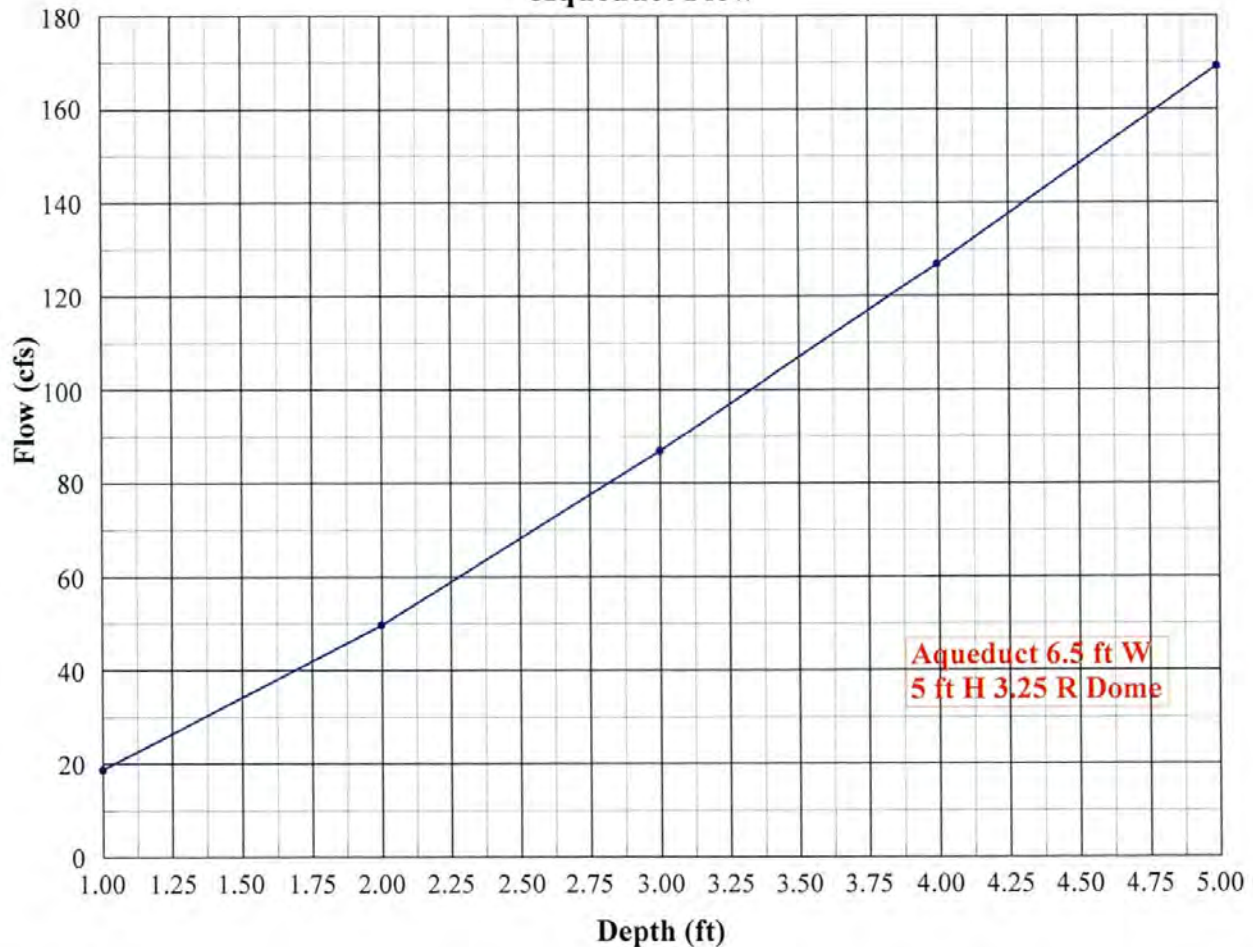
n=roughness constant=0.016

r_h = hydraulic radius

A=Area of wetted perimeter

$$S = \text{Slope} \frac{dE}{dL} = \frac{30}{23800} = 0.00126$$

Spearfish Creek Aqueduct Flow



Forebay Dam

The aqueduct terminates in a 40- x 70-foot open concrete forebay dam with built-in gates that are electronically controlled to automatically regulate the flow at 40 to 120 cfs depending on the stream flow diverted into the aqueduct at Maurice Dam. An overflow is also built into the forebay dam to return any flow greater than 120-cfs to Spearfish Creek. Water is conveyed from the forebay dam through two 1200-foot redwood stave pipes, 48-inch inside diameter, to a collection cylinder and standpipes.



Forebay Dam. Entrance Portal



Forebay Dam. Outflow Trash Grates

Collection Cylinder and Standpipes

The lines from the forebay dam connect to a 25-foot long x 74-inch diameter steel cylinder with four open standpipes, each 36 inches in diameter and 54 feet high. The cylinder and standpipes serve to dampen surges and remove accumulated air from the water. Water is then transported to the powerhouse via two pressure lines or penstocks, each 4000 feet long, to the Pelton wheels in the powerhouse. In 1989 the standpipes were upgraded and insulated.



Cylinder and Standpipes

Powerhouse

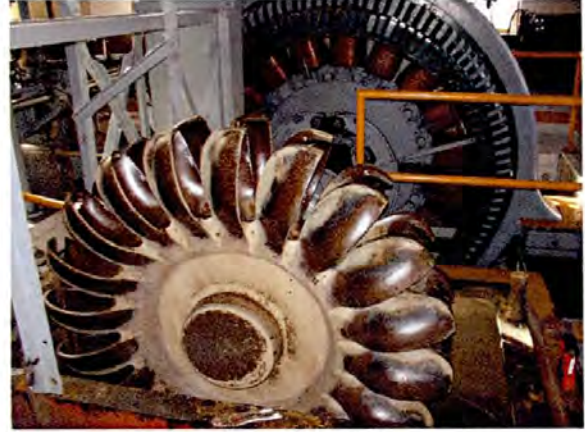
The powerhouse originally contained the main generating plant in one leg, the switchboard room in the connecting bar, and the transformer house in the other leg of the H-shaped building. The pipelines pass under the transformer and switchboard rooms to the generating room through the basement. Three 2000 kVA, or 1600

kW at 80 percent power factor, Westinghouse generators driven by double overhung Pelton wheels were installed in the powerhouse along with two water or electrically driven exciter generators.

In 1917 one of the Westinghouse generators and associated equipment was removed and installed in Hydroelectric Power Plant No. 2. In addition, in 1989 the water-cooled transformers and old switching gear were replaced by a new substation north of the powerhouse.



Pelton Wheel and Nozzle



Pelton Wheel and Generator

Water presently enters the powerhouse through two branches of 30-inch pipe, each of which divides, and the water impinges through 6-inch nozzles directly upon the two runners of the overhung Pelton Wheel impulse turbines. The wheels are placed on either side of the electric generator it drives. After upgrades to the generators and driving wheels, the two generators are presently rated at 2000 kW each. Excitation of the field coils comes from two 125 kW direct current generators which are connected to a Pelton Wheel and an electric motor. The system has an operating head of 655 feet or 288 psi. Water is returned to the Spearfish Creek channel at the powerhouse on the south end of the Spearfish City Park.



Powerhouse



Powerhouse. Water Return



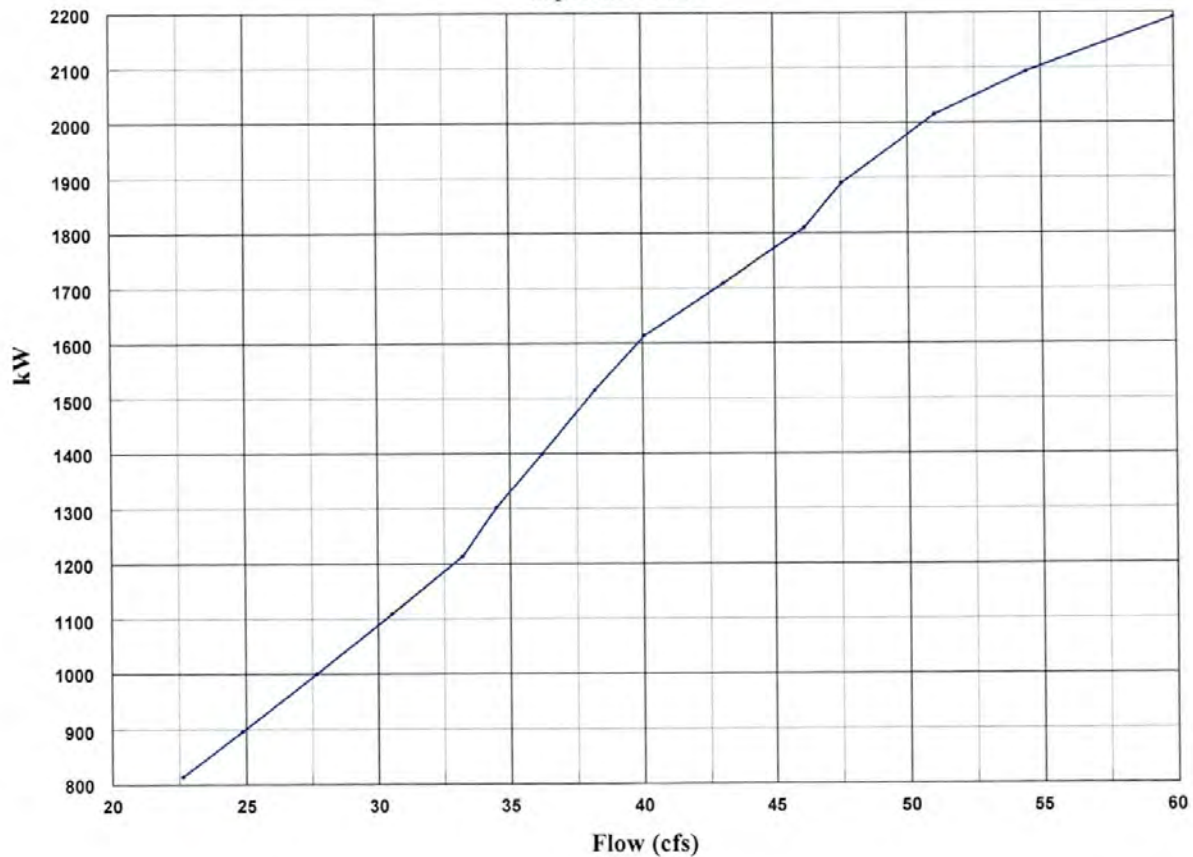
Powerhouse. Generator and Pelton Wheels



Powerhouse. System Monitor

In September 2005 based on input flow and electrical measurements supplied by the city of Spearfish Hydroelectric Plant Superintendent, the consulting firm of Mead and Hunt, Madison, WI, completed an analysis of the kW output of the powerhouse generator No. 2. Appendix E provides flow test data. The graph of the data shows generator No. 2 is capable of producing more than 2000 kW at a flow rate of 60-cfs. This analysis also indicates each generator can, when available, utilize a flow rate of 60-cfs for a combined total of 120-cfs. At the Water Right No. 43-1 authorized diversion rate of 120-cfs, the two generators are capable of producing more than 4000 kW.

**Generator No. 2 Measured Output
September 2005**



Historical Records and Stream Flow Data

The examination and analysis of historical HMC production records and USGS stream flow data were conducted to substantiate the validity of Water Right No. 43-1 in concordance with the criteria in **SDCL 46-5-37. Failure to use beneficially appropriated water – Forfeiture for nonuse – Reversion to public** that states “When any person entitled to the use of appropriated water fails to use beneficially all or any part of such water for the purpose for which it was appropriated, for a period of three years, such unused water shall revert to the public and shall be regarded as un-appropriated public water.” Appendix F is a table that provides gaging station flows based on weir measurements and historical power production records.

Records Review

Power production records from 1912 to 2002 for the hydroelectric power plants were retained by HMC at the Lead SD, facility. These records contain data for Hydroelectric Power Plant No. 1 including the weir flow at Maurice Dam, kilowatts produced, and in most cases, Spearfish Creek stream flow conditions or other issues affecting production.

In January 2006 the HMC power production records were audited by the city of Spearfish Hydroelectric Plant Superintendent and a DENR Water Rights Program staff member. The Maurice Dam weir measurements and the produced power information were extracted from the HMC records beginning in 1912 and entered into a database, along with the historical USGS stream flow measurements for the Spearfish and Maurice gaging stations, when they came online in 1947 and 1988, respectively.



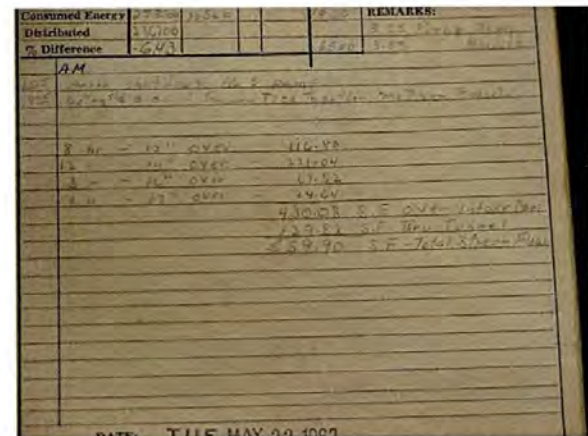
Logbook



Logbook. Production Record



Logbook. Stream Flow Footnote



Logbook. Stream Flow Footnote

Information from HMC records created before 1947 was selected using the highest yearly stream flow recorded at the Maurice Dam weir. After 1947 records were selected when either the USGS Spearfish or Maurice stream flow gages recorded yearly flows at the diversion rate of 120-cfs or greater. If the yearly stream flow did not reach 120-cfs, the date with the highest recorded flow was selected. Before 1947 only one date was selected for each year. After 1947 the historical USGS stream flow data was used to select yearly episodes with flows 120-cfs or greater, except as noted above. When available, pertinent footnotes for selected dates were also entered in the database.

The HMC records and USGS data show that when 120-cfs or greater of Spearfish Creek stream flow was available, maximum power production at Hydroelectric Power Plant No. 1 was realized except for maintenance problems, flooding, or stream debris difficulties. A statistical analysis called the "goodness of fit" shows good correlation between the Maurice Dam weir data and power production. Appendix G provides the statistics used to determine the goodness of fit. Hydroelectric Power Plant No.1 system was used every year for power production until the time of sale to the city of Spearfish. Even during the Second World War when the mining of gold at Homestake Mine was shut down, the plant was used to produce electrical power. The city of Spearfish has continued power production since purchasing the power plant.

Beginning in 2000 HMC power production records were maintained on a computerized database system. In 2003 HMC load dispatchers were laid off and system input-output data was monitored and maintained in the Supervisory Control and Data Acquisition (SCADA) computer system. The database of selected HMC and city of Spearfish power production records is contained in the Appendix F to this report.

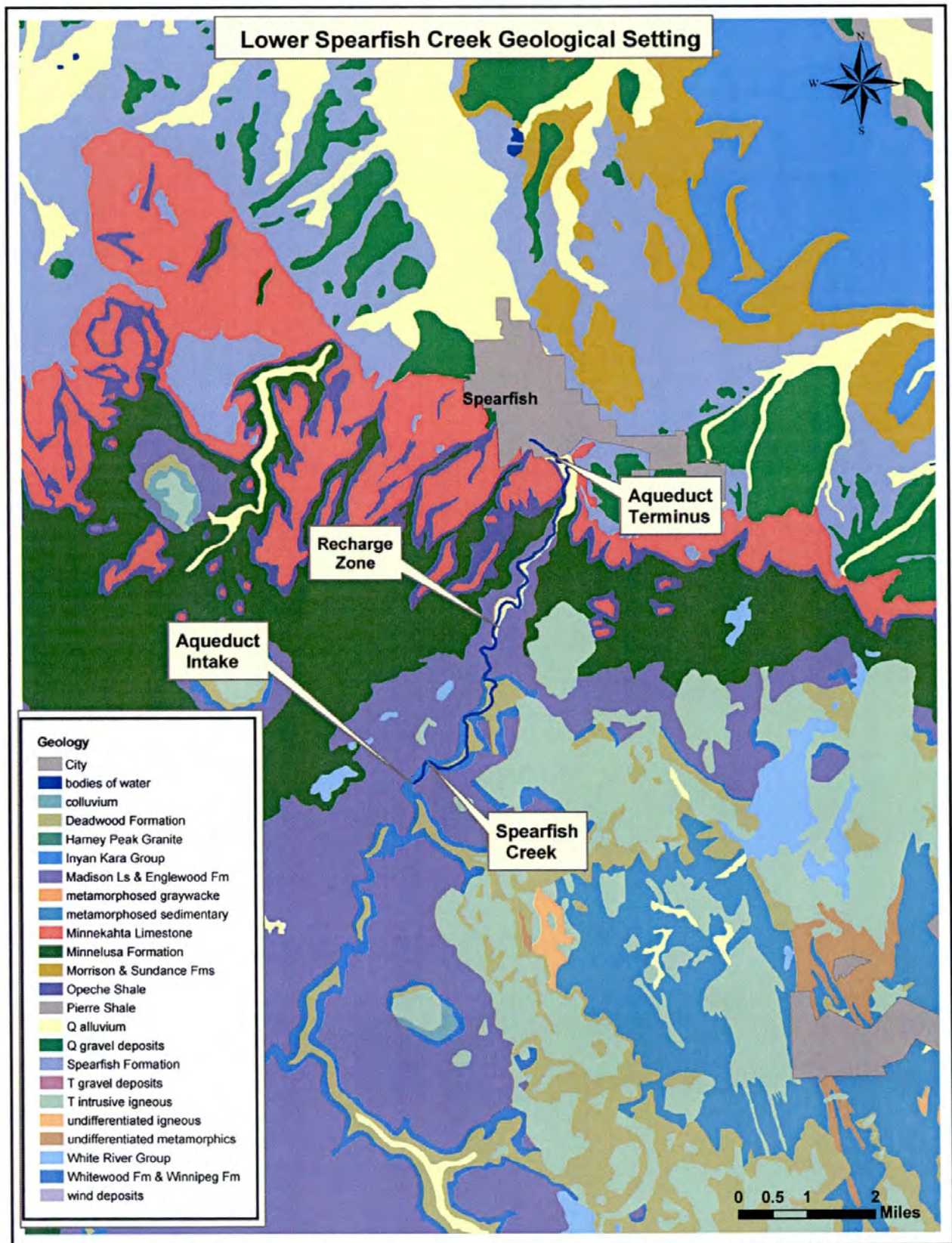
Spearfish Creek

Originating in the northern Black Hills of SD, Spearfish Creek flows north joining the Redwater River approximately six and one-half miles north of Spearfish. The Redwater River is a major tributary of the Belle Fourche River, the main water source for the U.S. Department of Agriculture, Bureau of Reclamation, Belle Fourche Irrigation Project. Little Spearfish and Iron creeks join Spearfish Creek upstream of the Maurice Dam diversion point. Downstream of the Maurice Dam diversion point there are no significant perennial streams contributing flow to Spearfish Creek.

The USGS has maintained a gaging station on Spearfish Creek at Maurice, SD, since October 1, 1988. Spearfish Creek's average daily flows upstream of the Maurice Dam are available except for the period August 18, 1998 to September 30, 2001, when it was only used for recording yearly peak flow due to limited funding. For the 1988 to 2004 period of record, the Maurice USGS gage median and mean flows are 54.00 and 63.13 cfs, respectively. Minimum and maximum values recorded during the period of record are 18 and 1,470 cfs, respectively. The median and mean flows from this gage are skewed high as the area received above normal precipitation during the 1990s.

A yearly duration hydrograph of the median Maurice gaging station stream flow data show the typical pattern for the Black Hills, with the higher stream flow occurring from April to July due to snowmelt and higher precipitation during this period (see Spearfish Creek @ Maurice Hydrograph).

The USGS also maintains a stream flow gaging station in the Spearfish City Park downstream of the powerhouse and the D.C. Booth Historical National Fish Hatchery. This gaging station has a period of record from October 1, 1946, to the present. The median and mean flows for this period of record are 47.0 and 55.7 cfs, respectively. Minimum and maximum values recorded during the period of record are 9 and 1,880 cfs, respectively. Again, a yearly duration hydrograph of the median Spearfish gaging station stream flow data show the typical pattern for the Black Hills, with the higher stream flow occurring from April to July due to snowmelt and higher precipitation during this period (see Spearfish Creek @ Spearfish Hydrograph).

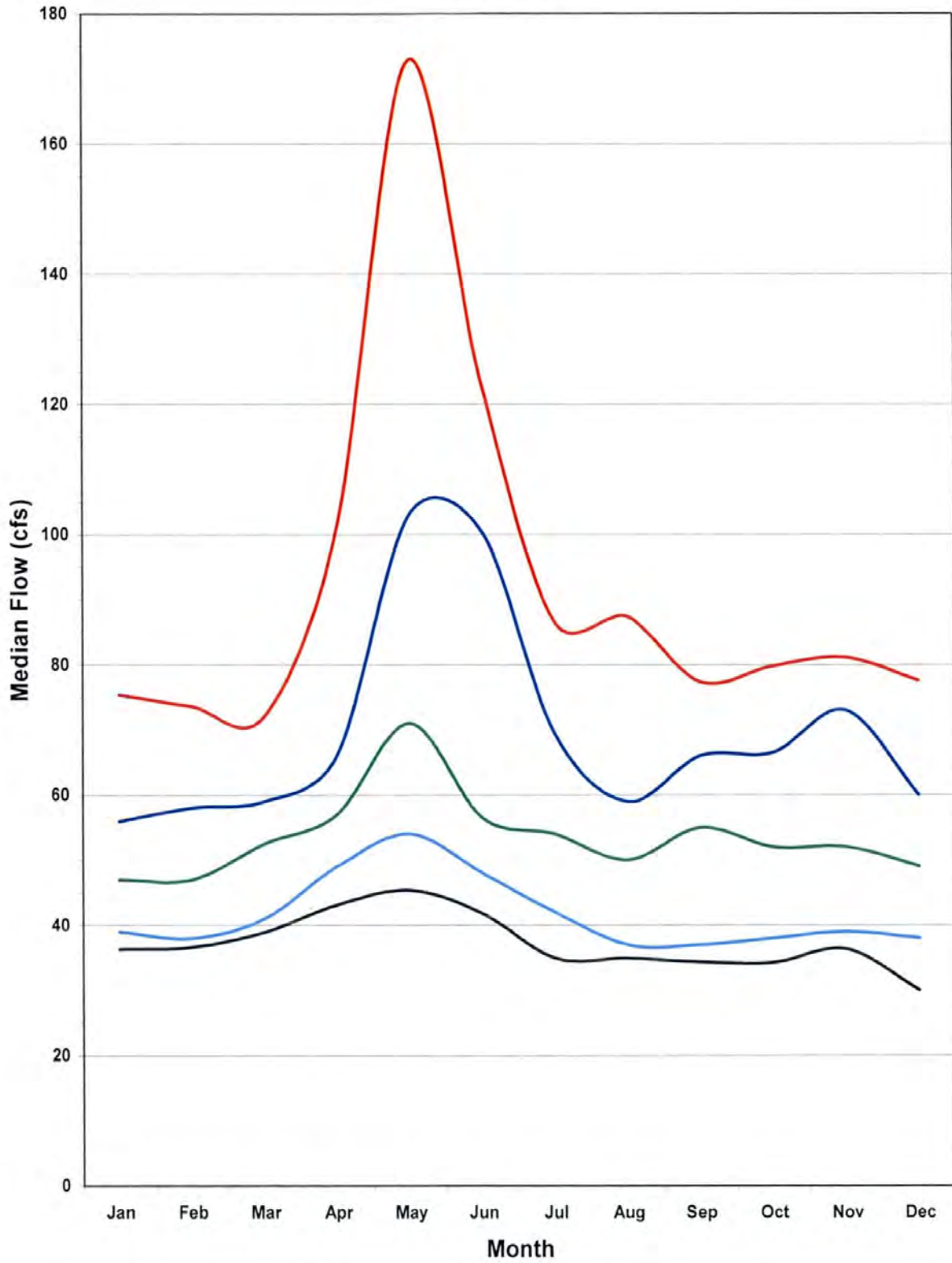


Approximately three and one-half miles below Maurice Dam, Spearfish Creek flows over the Pahasapa (Madison) and Minnelusa Limestone formations' aquifer recharge zone. This is a very porous section of stream channel where based on USGS estimates, approximately 21-cfs of Spearfish Creek flow is lost to the aquifer. When the total Spearfish Creek flow is diverted into the aqueduct, a portion of Spearfish creek approximately two miles immediately above the aquifer recharge zone and downstream of the Maurice Dam will regain 2- to 5-cfs of flow within the natural channel from small tributaries and Deadwood formation springs. In transporting the water through the aqueduct the USGS estimates approximately 2-cfs is lost from the aqueduct to the aquifer recharge zone. This provides a net gain of 19-cfs to the creek below the powerhouse that would otherwise be lost. This 19-cfs represents a significant portion of the base flow of Spearfish Creek. With a mean flow of approximately 56-cfs at the Spearfish gage, the 19-cfs represents approximately 34 percent of the mean flow.

Water returned to the Spearfish Creek channel below the powerhouse provides the base flow of Spearfish Creek through the city. This water is used at D.C. Booth Historical National Fish Hatchery and during the irrigation season by lower Spearfish Valley irrigation ditches. These lower Spearfish Valley irrigation ditches have senior water rights dating back to the 1870s that total approximately 100-cfs. With a mean flow of 56-cfs, the more junior of these irrigation ditches are often short of water. The additional 19-cfs makes up a significant portion of the flow to these irrigators.

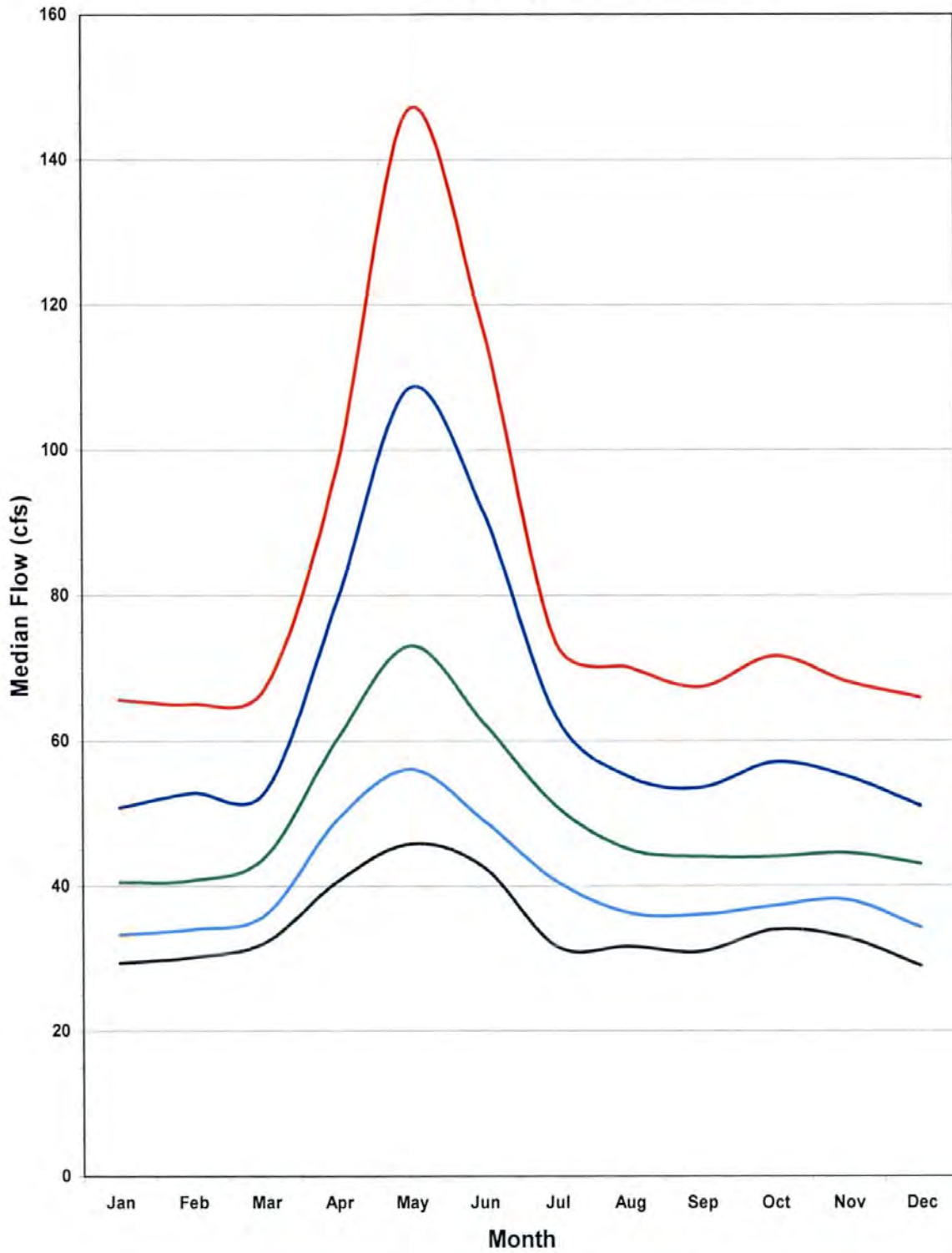
Spearfish Creek ultimately confluences with the Redwater River, which in turn confluences with the Belle Fourche River where a substantial portion is diverted to the Belle Fourche Reservoir. Appendix H is a table summary of the lower Spearfish Valley irrigation ditches.

Spearfish Creek
Maurice, SD
1988-2004



— 10 Percentile — 25 Percentile — 50 Percentile — 75 Percentile — 90 Percentile

Spearfish Creek
Spearfish, SD
1946-2004



— 10 Percentile — 25 Percentile — 50 Percentile — 75 Percentile — 90 Percentile

Analysis of Transfer of Water Right No. 43-1

The plaintiffs have raised the question of whether the transfer of Water Right No. 43-1 met the requirements of South Dakota law since no formal hearing on the transfer was held before the Water Management Board and no official notice was given to the plaintiffs or other interested parties.

In the court order in *Williamson v. City* the Court found that the plaintiff did not have a right to compel notice and hearing. The South Dakota Water Management Board was a party. The Court's ruling is a final binding decision that was not appealed. Accordingly, the Chief Engineer will not initiate a hearing on the transfer.

Moreover, the Court's determination is consistent with the longstanding practice and interpretation of the Chief Engineer. Two South Dakota laws (SDCL 46-5-30.3 and SDCL 46-5-32) address the transfer of title to a water right. SDCL 46-5-30.3 provides that any sale, grant, lease, conveyance or other transfer of a permit or license to appropriate water issued under the provisions of this title shall be filed with the Chief Engineer within 90 days. This statute imposes no obligation on the Chief Engineer other than to file the documents received.

Spearfish hand delivered the notice of transfer of ownership of Water Right No. 43-1 to the Water Rights Program's office on May 5, 2004. The Water Rights Program acknowledged the transfer of Water Right No. 43-1 on May 6, 2004. Clearly the actions of the city and Chief Engineer met the requirements of SDCL 46-5-30.3.

The second statute pertaining to title transfers or transfer of a leaseholder's interest is SDCL 46-5-32. It provides, among other things, that an "assignment" of rights is restricted to the same use under the same conditions as the original use. The statute imposes no duty or discretion on the Chief Engineer or the Water Management Board unless the assignment includes a request to use the water for a different purpose or in a different manner.

Because additional statutes in South Dakota water law dictate the standard for water board consideration of changes of use or changes in diversion points, those statutes would govern such changes. Consequently, a filing under SDCL 46-5-32 necessarily involves only a transfer of title unless it is accompanied by an application to amend the water right.

If the parties to a title transfer intend to change the use, location of the use or make another amendment an application must be filed. It is clear under SDCL 46-2A-1(2) that amendments of water rights and water permits must be undertaken according to the due process procedure for water proceedings in SDCL Chapter 46-2A. Accordingly, the Chief Engineer is required to investigate the matter, issue a recommendation, and provide notice of hearing. In a contested case the Water Management Board must hear the case and consider whether the change in use, change in point of diversion or other change would unlawfully impair existing rights, whether it is a beneficial use, and whether it is in the public interest.

Under South Dakota law, a "transfer" that involves only the recording of a change in title or leaseholder interest does not require a hearing. Water Right No. 43-1 involved the transfer of title from HMC to the city of Spearfish. The filing was not a request for an amendment to change the diversion, point of diversion, change of use or other change. The water right was originally issued for the purpose of power generation and this use continues with the city. The fact that the end use of the power has changed does not change the use of the water.

Conclusions

1. Homestake Mining Company (HMC) obtained Water Right No. 43-1, with a priority date of January 4, 1909, for the purpose of power generation at Hydroelectric Plant No 1.
2. Water Right No. 43-1 was licensed for 120 cubic feet per second (cfs) on January 3, 1913.
3. HMC operated an intake at Maurice on Spearfish Creek for the diversion of water to the hydroelectric plant. The records show that this intake was capable of diverting the appropriated amount.
4. HMC operated the hydroelectric plant continuously for the generation of power from 1911 until the sale to the city of Spearfish. The available flow up to 120-cfs of water was diverted and used beneficially for the purpose of power generation.
5. On May 5, 2004, HMC sold the hydroelectric plant to the city of Spearfish.
6. The city of Spearfish filed the transfer of Water Right No. 43-1 on May 5, 2004, to the DENR Water Rights Program. The filing and subsequent transfer was a legal transfer and met the requirements of SDCL 46-5-30.3.
7. The transfer of Water Right No. 43-1 was a transfer of title and did not involve a change of use, change in diversion, or other change that would qualify as an amendment to the water right.
8. The city of Spearfish has operated the hydroelectric plant continuously for the generation of power since its purchase. Under Water Right No. 43-1, the available flow up to 120-cfs of water is being diverted and used beneficially for power generation.
9. Based upon the authority granted in SDCL 46-5-37.1, the Chief Engineer makes a determination that Water Right No. 43-1 has not been abandoned and there is no evidence of forfeiture due to nonuse. Therefore, Water Right No. 43-1 is a valid water right and there is no basis for the cancellation of this right.

Glossary

Forebay: part of a dam's reservoir that is immediately upstream from the powerhouse.

Goodness of Fit Correlation: a measure of adequacy of fit in linear regression, a number ranging from +1 to -1 with values of exactly ± 1 corresponding to a perfect fit and those of zero corresponding to no linear fit.

Headgate: gate that controls water flow into canals and ditches.

Headworks: flow control structure.

Kilowatt: electrical unit of power that equals 1000 watts or 1.341 horsepower.

kWh (kilowatt-hour): 3.6 mega joule. An energy measure that indicates a watt consumed or generated in one hour equivalent.

kVA: kilovolt ampere (one thousand volt amperes), the current flowing in a circuit multiplied by the voltage of that circuit, usually measured on a transformer. A measure of power whereby 1-kVA typically equals approximately 0.8-kWh (depending upon the phase).

Pelton Wheel: high pressure impulse water turbine in which one or more free jets of water are directed against the rotor buckets.

Penstock: conduit for conveying water to a power plant.

Standpipe: vertical pipe or tower into which water is pumped or fed to obtain a required head.

Weir: in this report, a dam in a stream or sluiceway to raise the water level and channel the flow for the purpose of speed-volume measurement.

STATE OF SOUTH DAKOTA

WATER LICENSE NO. 43-1

WHEREAS, On the fourth day of January A.D. 1909

THE HOMESTAKE MINING COMPANY

ofLead City.....County ofLawrence..... And State of
....South Dakota.....duly made application No.....43-1..... to me for a permit to use100.....
cubic feet per second of the waters ofSpearfish Creek.....
County ofLawrence.....State of South Dakota forpower
generating.....purposes and

WHEREAS, On thesixth..... day ofFebruary.....A.D. 19...09...
Permit No.43-1.... was issued to said applicant...for the diversion of said water, and providing for the
completion of works of diversion herein described on or before the5th.....date if
.....February.....A.D. 19....11... and for the application to beneficial use of said
water on or before thefifth.....day of.....February.....A.D. 19....12...
and whereas on the 26th day of November, 1910, the time for completing the diversion works and for the
application to beneficial use of said water, was extended for three years from dates first designated; and

WHEREAS, On thesecond.....day ofJanuary.....A.D. 19..17..the
holder.....of said permit duly made proof of the completion of adequate works for the diversion of
....120.... cubic feet per second of said water, as evidenced by my Certificate No.....43-1..... dated
....January 2, 1913..... Confirming the completion of works of sufficient capacity for diverting and
conveying to the place of intended use120.....cubic feet per second of water, and with
date of priority ofJanuary 4, 1909.....and,

WHEREAS, On thesecond.....day ofJanuary.....A.D. 19...13....
proof was duly made of the application to beneficial use of120..... cubic feet per second of said
water;

.....for the development of power for electrical transmission to the company's works at Lead
City,.....

.....
.....
.....
.....
.....
.....

NOW, THEREFORE, By virtue of the authority vested in me by the laws of the State of South Dakota. I hereby grant and confirm tothe HOMESTAKE MINING COMPANY..... of ...Lead City, South Dakota..... the holderand owner.....of said permit No.43-1..... A water right, dating from.....January 4th, 1909.....to the use of120..... cubic feet per second of the waters ofSpearfish Creek..... In the county ofLawrence..... and the Sate of South Dakota, or so much thereof as may be necessary for the purposes herein below mentioned, to be diverted at....headworks of NW ¼ of SE ¼ of Sec. 8, Twp. 5N, R 2E, B.H.M. Lawrence County and conducted topoer atation on S ½ of NE ¼ of SE ¼ of Sec. 15, Twp. 5N R. 2 E, B. E. M. Lawrence County for the purposeof..... generating power..... subject, however, to the laws of the State of South Dakota applicable to a license for the use of the waters of the Sate, and subject also, to the local or community customs, rules and regulations which have been or may be adopted from time to time by a majority of the users from a common source of supply, canal or lateral from which such water may be taken when such rules and regulations have for their object the economical use of such water.

WITNESS, My hand and the seal of my office at Pierre, South Dakota,
This.....3rd.....day ofJanuary.....and. Nineteen
Hundred andthirteen...

.....
State Engineer

Date of Priority January 4th, 1909
Recorded in Book 3, Page 111.

Permit No.....

Water Division No..... Water District

Certificate of Examination of Works

Report of Examining Engineer

To the Sate Engineer, Pierre, South Dakota:

Dear Sir: I hereby certify that in accordance with your letter of authorization dated ..December 30, 19...12.. I have this day made a thorough examination of the diversion works constructed by..... Homestake Mining Company, a corporation organized under the laws of California and transacting business in LawrenceCounty, South Dakota, holder... of permit No.43-1.....issued upon application No. ..43-1..... bearing date of priority ofJanuary 4..... 19...09.... authorizing the manufacturing, transportation and other purposes. I have to report on the condition of the same as follows:

The Diversion works comprise:.....

One massive re-inforced concrete dam, 200 feet long from the head gates across the main Valley of the creek, resting on steel sheet piling, driven to an impervious stratum. Substantial concrete head works with four cast iron inlet gates for the control and regulation of the water; an open concrete frame extending from the head gates to the tunnel entrance about 100 feet; thence through a concrete lined tunnel 6 ½ feet wide by 8 feet 3 inches high in the center of the arch, 23,800 feet long, discharging into a concrete forbay 30 feet by 70 feet, in the walls of which the regulating gates are built. The water is conducted from this forbay through these regulating gates into two lines of wood staved pipe, 4 feet internal diameter, substantially built into the walls of said forbay, extending thence 1200 feet to a large collecting cylinder upon which are erected 4 steel stand pipes for the purpose of balancing the pressure and relieving the water of accumulated air, substantially covered and braced, and connected to this collecting cylinder are three steel pressure pipe lines or penstocks, varying in diameter from 34 inches to 30 inches at the power house, each line 4000 feet long. From those penstocks water is led direct by nozzles to the pelton wheels sinuate in the power station hereinafter described.

Substantial concrete, fire proof power house, in which are installed three 2000 KVA Westinghouse generators, driven by double overhung pelton water wheels; two exciter generators, both water and electrically driven; three banks of step-up transformers having capacity of the generators; switch board control, oil switches and duplicate transmission line from the power station to the sub-station in Lead City, from which the power is distributed to motors in the various works of the Homestake Mining Company. The location of the power plant is on the S ½ of the NE ¼ or the SE !/4 of Section 15 T 6N. R. 2 East, B.H.M., Lawrence County, S.D. and about one mile south of the Town of Spearfish. The transmission line is eleven miles long, carrying current at 33,000 volts.

The utilization for power, mining, or other beneficial uses comprises:.....
.....
.....

Witness my hand this2nd.....day of.....January....., A.D. 19...13...

.....Richard Blackstone.....

Examining Engineer

ATTORNEY AND COUNSELORS AT LAW
LEAD CITY, SOUTH DAKOTA

1/2/13.

Hon. Samuel H. Lea,

Pierre, S.D.

Dear Sir:

I beg to enclose herewith, properly executed, certificate of examination of works by Engineer, Form 23, and certificate of application of water to beneficial use, Form 24, all in connection with Permit No. 43-1, of Homestake Mining Company. I trust you will find these executed in due form. The showing only goes to the extent of obtaining 100 second feet of water, although as a matter of fact the works are susceptible of using 120 second feet at high water. At the time of making our application, however, we felt that 100 second-feet would probably cover any ordinary normal conditions and we assume now that you cannot issue permit for more than that amount. At the same time we do use and are prepared to use all of the water in the stream up to 120 second-feet. In view of the fact that we are really the owners of all of the riparian lands between our intake and power plant, and in view of the further fact that we are proving ourselves quite a public benefactor to all water users below us, in that we are delivering the water of Spearfish Creek into the creek free of ice and in larger quantities than heretofore, five miles nearer to such water users, it occurred to me that possibly the permit could be for the full quantity that our present works are susceptible of using to-wit, 120 second-feet instead of 100.

Yours respectfully.

January
Third,
1913.

Mr. Chambers Kellar,
Lead, So. Dak.

Dear Sir:-

This is to acknowledge receipt of your letter of the 2nd inst together with certificate of examination of works and certificate of application of water to beneficial use in connection with permit No. 43-1 of the Homestake Mining Company.

I note what you say about the application having been made to comprise the use of only 100 second feet of water, whereas the works are capable of using 120 second feet of water. I note that you would like to have the license cover the larger amount, since this amount can be made use of when the water is available.

I hand you herewith Water License No. 43-1; this completes the water right of the Homestake Mining Company under its permit bearing same number. In accordance with the statement of capacity and the request made by you that the larger quantity of water be designated I have made the license to cover the use of 120 second feet of water.

The fees covering the filing and issuance of the papers in connection with Water License No. 43-1 amount to \$3.00. These fees, which are turned into the State Treasury, should be sent direct to this office.

Your very truly,

State Engineer

NOTICE OF TRANSFER OF OWNERSHIP

To: Chief Engineer
Water Rights Program, DENR
523 E. Capitol
Pierre, SD 57501-3181

Water Right/Permit No. 43-1

Date: May 3, 2004

I/We request that Water Right/Permit No. 43-1 formerly owned by:
HOMESTAKE MINING COMPANY OF CALIFORNIA be transferred to:

New Owner Name: CITY OF SPEARFISH
Address: 625 FIFTH STREET
City, State Zip: SPEARFISH SD 57783 Telephone No. (605) 642-1325

Title to the following described land(s)/property has been transferred as described above:

N/A

I understand that the validity of Water Right/Permit No. 43-1 has not been determined by this transfer action. If I have any questions on validity, I understand that only the Water Management Board has the authority to determine if a water permit/right is valid (see note below).

You are requested to file this "Notice of Transfer" in the appropriate file with the Water Rights Program, as evidence of the change of ownership.

A fee of Two Dollars and Fifty Cents (\$2.50) is required to cover the filing fees as required under SDCL 46-2-13.

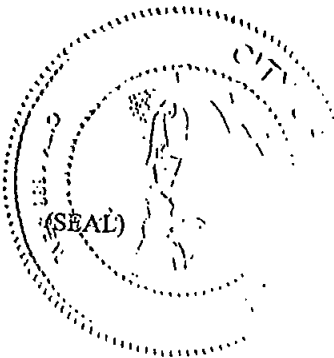
I, CITY OF SPEARFISH, the new owner, certify that the above information is true and correct.

CITY OF SPEARFISH

By: Jerry A. Krambeck
Jerry A. Krambeck
Mayor

ATTEST:

Elizabeth A. Benning
Elizabeth A. Benning
Finance Officer



NOTE: Water permits may be cancelled for nonconstruction after the five year construction period has expired. Once a water permit is developed and the water used, the permit becomes a right. A water right may be lost for three reasons:

1. Abandonment - no intent to use water and use is abandoned.
2. Forfeiture - no use of water for three year period without legal excuse.
3. For a third violation of a condition of a water permit/right.

11/2002

RECEIPT

Received for filing at 2:20 o'clock P.M., CDT, this ⁵~~X~~th day of May, 2004,
Notice of Transfer of Ownership of Water Right No. 43-1, together with check #4181
drawn on the account of Hood, Nies & Dardis, P.C., in the amount of \$2.50 for the filing
fee.

STATE OF SOUTH DAKOTA DEPARTMENT
OF ENVIRONMENTAL & NATURAL RESOURCES
OFFICE OF THE CHIEF ENGINEER
WATER RIGHTS PROGRAM

By: *Eric S. Hamlund*
Its: *Water Rights Program*



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

May 6, 2004

Jerry A Krambeck, Mayor
City of Spearfish
625 Fifth St
Spearfish SD 57783

RE: Water Right No. 43-1
Homestake Mining Company – City of Spearfish

Dear Mayor Krambeck:

I am writing to acknowledge receipt of the ownership change for Water Right No. 43-1. The transfer has been completed. The water right formerly held by Homestake Mining Company of California is now held by the City of Spearfish.

If I can answer any questions for you, please contact me.

Sincerely,

Genny McMath
Environmental Scientist
Water Rights Program
(605) 773-3352
email: genny.mcmath@state.sd.us

c: E James Hood, w/Hood, Nies & Dardis, PC
Karl Burke, w/Homestake Mining Company

STATE OF SOUTH DAKOTA	)	IN CIRCUIT COURT
	) SS.	
COUNTY OF LAWRENCE	)	FOURTH JUDICIAL DISTRICT
KEITH D. WILLIAMSON and)	
DIANNA L. WILLIAMSON,)	
	)	Civ. Case No. 05-114
Plaintiffs,)	
)	
vs.)	
)	
CITY OF SPEARFISH,	)	ORDER
HOMESTAKE MINING COMPANY,)	
INC., and SOUTH DAKOTA)	
DEPARTMENT OF)	
ENVIRONMENT & NATURAL)	
RESOURCES, WATER)	
MANAGEMENT BOARD,)	
)	
Defendants.)	

The motion to dismiss by the City of Spearfish ("City") came on regularly to be heard before this Court on April 29, 2005, in the Lawrence County Courthouse in Deadwood, South Dakota. Attorneys Max Main and Wade Nyberg appeared personally for City, Attorney Michael M. Hickey appeared personally for the plaintiffs, and Assistant Attorney General John P. Guhin appeared telephonically for defendant Water Management Board. The Court having considered the pleadings and papers on file herein, and the arguments of counsel, and good cause appearing therefore, it is hereby

ORDERED, that the City's Rule 12(b)(5) motion to dismiss plaintiffs' claim for notice of and a hearing on the transfer of Water License No. 43-1 from Homestake Mining Company of California to the City be, and the same hereby is, granted. Such claim fails to state a claim upon which relief can be granted; and it is further

ORDERED, that plaintiffs must exhaust their available administrative remedies as to all other claims alleged in their complaint by filing with the Chief Engineer of the

FILED

MAY 16 2005

SOUTH DAKOTA UNIFIED JUDICIAL SYSTEM
4TH CIRCUIT CLERK OF COURT

By _____

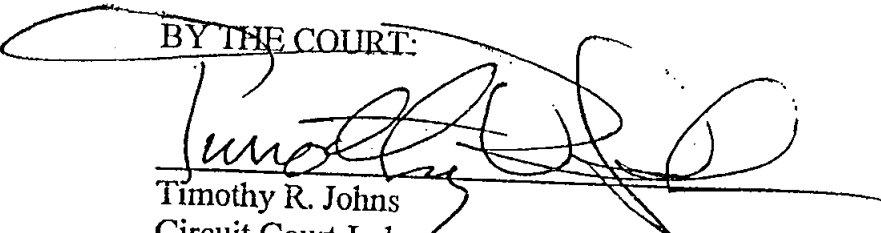
Williamson v. City of Spearfish, et al / ORDER

South Dakota Water Rights Program a petition requesting an investigation of Water License No. 43-1; and it is further

ORDERED, that the Court retains jurisdiction over this matter consistent with the terms of this Order.

DATED this 16th day of May, 2005.

BY THE COURT:


Timothy R. Johns
Circuit Court Judge

ATTEST:


Clerk of Courts

(CLERK'S SEAL)

FILED

MAY 16 2005

SOUTH DAKOTA UNIFIED JUDICIAL SYSTEM
4TH CIRCUIT CLERK OF COURT

By _____

Bangs McCullen Law Firm

Bangs, McCullen, Butler, Foye & Simmons, L.L.P.

Rapid City

Thomas H. Foye
Thomas E. Simmons
Charles L. Riter
Allen G. Nelson
James P. Hurley
Michael M. Hickey
Terry L. Hofer
Rod Schlauger
Daniel F. Duffy
Jeffrey G. Hurd
John H. Raforth
Terry G. Westergaard
Steven R. Nolan
Gregory J. Erlandson
Eric J. Pickar
Sara L. Larson

Sioux Falls

Michael A. Hauck
John P. Mullen
Brian K. Kirby
Victoria M. Duehr
Kara C. Van Bockern
Patrick J. Knecht

Attorneys also admitted in
Nebraska, North Dakota,
Iowa and Minnesota.

Trust Building
818 St. Joseph Street
P.O. Box 2670
Rapid City, SD 57709-2670
605-343-1040
Fax: 605-343-1503

Security Bank Building
100 N. Phillips Ave.
Suite 610
P.O. Box 949
Sioux Falls, SD 57101-0949
605-339-6800
Fax: 605-339-6801

www.bangsmccullen.com

Reply to Rapid City Office

Writer's e-mail address: mhickey@bangsmccullen.com

RECEIVED

OCT - 6 2005

WATER RIGHTS
PROGRAM

October 4, 2005

Garland Erbele
Chief Engineer
Water Rights Program
Department of Environment and Natural Resources
Joe Foss Building
523 E. Capitol
Pierre, SD 57501-3182

Re: Water License 43-1

Dear Mr. Erbele:

In accordance with the provisions of SDCL 46-5-37.1 and the decision of Judge Johns, this is to request that your office conduct an investigation and issue a report concerning the validity and extent of this license and the permit holder's compliance with the rules, regulations and laws relating to water rights.

In addition, it is our belief and position that the purported transfer of the water license between Homestake Mining Company and the City of Spearfish was improper and should be set aside.

Please contact my office prior to the time your office intends to inspect the diversion system and the hydroelectric plant, as I would like our expert to accompany your staff members during any such inspection.

Thank you for your cooperation. If you have any questions or need any additional information, please advise.

Sincerely,

BANGS, McCULLEN, BUTLER,
FOYE & SIMMONS, L.L.P.


Michael M. Hickey

MMH:bjc
cc: Client

Spearfish Hydro Flow Test Date 12-9-2005

Metered Kw	PF	cfs	psi	Kw per cfs	% of rated full load	% of Water rights
Two Generators Running #2 unit being measured						
2190	1	60	277	36.50	109.50%	50.00%
2092	1	54.47	277	38.41	104.60%	45.39%
2015	1	51.02	278	39.49	100.75%	42.52%
1890	1	47.54	278	39.76	94.50%	39.62%
1809	1	46.13	279	39.22	90.45%	38.44%
1709	1	43.05	279	39.70	85.45%	35.88%
1615	0.99	40.09	280	40.28	80.75%	33.41%
1515	0.99	38.2	280	39.66	75.75%	31.83%
1399	0.99	36.21	279	38.64	69.95%	30.18%
1302	0.99	34.5	289	37.74	65.10%	28.75%
1213	0.97	33.2	280	36.54	60.65%	27.67%
1109	0.95	30.54	280	36.31	55.45%	25.45%
1000	1	27.7	279	36.10	50.00%	23.08%
895	1	24.87	279	35.99	44.75%	20.73%
814	1	22.64	279	35.95	40.70%	18.87%
				avg. kw per cfs		
				38.02		
This table shows the flow test with one generator being measured						
Generator #2 was tested, flow was measured in app 100 kw steps, each step was charted with the flow through the flowmeter						
This table shows that the water flow through one generator requires 60 cfs (50% of water rights) to reach the 2000kw rating of generation						
Thus showing if water flows are at 120 cfs (100% total water rights) then we could generate 2000kw per generator or 4000kw plant total						
Note: 38 Kw = 1 cfs						

Spearfish Creek-Hydro 1 Aqueduct Flows

Date	USGS Spearfish		USGS Maurice		Homestake Weir (cfs)		Hydro 1		Remarks
	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(kw)	(kwh)	Power (kwh)	
07/01/1912	ND	ND	ND	ND	49.60	32700	1363	No Notes-from indicated weir flows, assume normal operations	
05/30/1913	ND	ND	ND	ND	64.00	42200	1758	No Notes-from indicated weir flows, assume normal operations	
05/27/1914	ND	ND	ND	ND	71.63	62700	2613	No Notes-from indicated weir flows, assume normal operations	
05/16/1915	ND	ND	ND	ND	78.75	59700	2488	No Notes-from indicated weir flows, assume normal operations	
05/31/1916	ND	ND	ND	ND	89.43	70602	2942	May Average Water 18.69 inches 81.18-cfs	
06/13/1917	ND	ND	ND	ND	73.98	73003	3042	No Notes-from indicated weir flows, assume normal operations	
05/21/1918	ND	ND	ND	ND	76.35	42075	1753	No Notes-from indicated weir flows, assume normal operations	
05/03/1919	ND	ND	ND	ND	94.50	61555	2565	No Notes-from indicated weir flows, assume normal operations	
05/13/1920	ND	ND	ND	ND	95.97	69400	2892	No Notes-from indicated weir flows, assume normal operations	
06/22/1921	ND	ND	ND	ND	48.90	48440	2018	No Notes-from indicated weir flows, assume normal operations	
06/01/1922	ND	ND	ND	ND	102.59	68960	2873	No Notes-from indicated weir flows, assume normal operations	
04/21/1923	ND	ND	ND	ND	84.45	61000	2542	No Notes-from indicated weir flows, assume normal operations	
05/15/1924	ND	ND	ND	ND	125.00	72600	3025	No Notes-from indicated weir flows, assume normal operations	
06/28/1925	ND	ND	ND	ND	76.35	70300	2929	No Notes-from indicated weir flows, assume normal operations	
05/11/1926	ND	ND	ND	ND	77.95	69000	2875	No Notes-from indicated weir flows, assume normal operations	
05/21/1927	ND	ND	ND	ND	117.36	66000	2750	No Notes-from indicated weir flows, assume normal operations	
05/15/1928	ND	ND	ND	ND	102.59	64800	2700	No Notes-from indicated weir flows, assume normal operations	
06/14/1929	ND	ND	ND	ND	110.17	62500	2604	No Notes-from indicated weir flows, assume normal operations	
06/02/1930	ND	ND	ND	ND	101.35	76700	3196	No Notes-from indicated weir flows, assume normal operations	
05/05/1931	ND	ND	ND	ND	70.08	69800	2908	No Notes-from indicated weir flows, assume normal operations	
06/08/1932	ND	ND	ND	ND	89.43	75500	3146	No Notes-from indicated weir flows, assume normal operations	
05/21/1933	ND	ND	ND	ND	113.77	82600	3442	No Notes-from indicated weir flows, assume normal operations	
05/15/1934	ND	ND	ND	ND	37.73	40000	1667	No Notes-from indicated weir flows, assume normal operations	
05/20/1935	ND	ND	ND	ND	41.55	48200	2008	No Notes-from indicated weir flows, assume normal operations	
05/20/1936	ND	ND	ND	ND	40.28	44000	1833	No Notes-from indicated weir flows, assume normal operations	
06/12/1922	ND	ND	ND	ND	102.59	85300	3554	No Notes-from indicated weir flows, assume normal operations	
05/11/1938	ND	ND	ND	ND	38.98	44000	1833	No Notes-from indicated weir flows, assume normal operations	
05/21/1939	ND	ND	ND	ND	30.43	34000	1417	No Notes-from indicated weir flows, assume normal operations	
05/15/1940	ND	ND	ND	ND	37.10	43500	1813	No Notes-from indicated weir flows, assume normal operations	
04/30/1941	ND	ND	ND	ND	76.35	78500	3271	No Notes-from indicated weir flows, assume normal operations	
06/15/1942	ND	ND	ND	ND	43.50	48000	2000	WW2 Mine Shutdown 1942-1945	
06/24/1943	ND	ND	ND	ND	44.18	37500	1563	No Notes-from indicated weir flows, assume normal operations	
05/14/1944	ND	ND	ND	ND	65.50	48200	2008	No Notes-from indicated weir flows, assume normal operations	
06/13/1945	ND	ND	ND	ND	95.97	48300	2013	No Notes-from indicated weir flows, assume normal operations	
05/24/1946	ND	ND	ND	ND	102.59	82500	3438	No Notes-from indicated weir flows, assume normal operations	
USGS Spearfish Gage Data Start 10/1/1946									
06/22/1947	456.00	ND	ND	ND	61.00	62000	2583	No Notes	
06/23/1947	609.00	ND	ND	ND	87.75	81500	3396	No Notes	

Spearfish Creek-Hydro 1 Aqueduct Flows

04/13/2006

Date	USGS		USGS Maurice (cfs)	Homestake Weir (cfs)	Hydro 1		Remarks
	Spearfish (cfs)	Power (kw)			Power (kwh)		
06/24/1947	315.00	ND	78.75	79500	3313	1 inch over dam	
06/25/1947	205.00	ND	61.00	66500	2771	cut out water at intake	
06/26/1947	151.00	ND	95.97	86500	3604	16 inches low at forebay	
06/27/1947	127.00	ND	94.50	84000	3500	2 inches over dam	
05/13/1948	62.00	ND	41.55	60000	2500	Flow not at 120-cfs or greater. High flow for year selected Homestake records	
05/06/1949	144.00	ND	68.55	96000	4000	Forebay 11 inches low	
05/07/1949	147.00	ND	67.00	96000	4000	Forebay 11 inches low	
05/11/1950	58.00	ND	49.60	65000	2708	Flow not at 120-cfs or greater. High flow for year selected Homestake records	
05/22/1951	38.00	ND	46.85	57000	2375	Flow not at 120-cfs or greater. High flow for year selected Homestake records	
05/23/1952	521.00	ND	ND	97000	4042	Weir Out	
05/24/1952	290.00	ND	ND	96000	4000	Weir Out Forebay running over	
05/25/1952	188.00	ND	ND	70000	2917	Weir Out Forebay running over	
05/26/1952	145.00	ND	ND	84000	3500	Weir Out Forebay running over	
05/27/1952	123.00	ND	81.18	97000	4042		
05/08/1953	126.00	ND	77.95	94000	3917		
05/09/1953	184.00	ND	89.43	94000	3917		
05/10/1953	146.00	ND	77.95	87000	3625		
05/11/1953	132.00	ND	81.18	89000	3708		
05/20/1953	133.00	ND	74.78	95000	3958		
05/21/1953	144.00	ND	74.78	94000	3917	3.75 inches over dam	
05/22/1953	139.00	ND	125.00	95000	3958	Intake and forebay overflowing	
05/23/1953	139.00	ND	81.18	94000	3917	Forebay overflowing	
05/24/1953	136.00	ND	82.80	95000	3958	Forebay full	
05/25/1953	139.00	ND	ND	94000	3917	Over weir/Forebay overflowing	
05/26/1953	128.00	ND	81.18	93000	3875		
05/27/1953	121.00	ND	81.18	94000	3917		
05/24/1954	64.00	ND	73.20	68000	2833	Flow not at 120-cfs or greater. High flow for year selected	
06/11/1955	164.00	ND	94.50	94000	3917	Intake overflowing Forebay full	
06/12/1955	136.00	ND	91.13	94000	3917	Forebay overflowing	
05/22/1956	43.00	ND	58.00	51000	2125	Flow not at 120-cfs or greater. High flow for year selected Homestake records	
05/02/1957	92.00	ND	125.00	92000	3833	Flow not at 120-cfs or greater. High flow for year selected Homestake records	
05/19/1958	43.00	ND	44.18	47000	1958	Flow not at 120-cfs or greater. High flow for year selected Homestake records	
05/08/1959	47.00	ND	44.18	52000	2167	Flow not at 120-cfs or greater. High flow for year selected Homestake records	
05/29/1960	38.00	ND	34.00	37000	1542	Flow not at 120-cfs or greater. High flow for year selected Homestake records	
05/24/1961	26.00	ND	24.78	25000	1042	Flow not at 120-cfs or greater. High flow for year selected Homestake records	
05/22/1962	521.00	ND	161.90	89000	3708	Forebay overflowing Water 4-17 inches over intake	
05/23/1962	558.00	ND	161.90	93000	3875	13 inches over intake forebay 1 inch over	

Spearfish Creek-Hydro 1 Aqueduct Flows

04/13/2006

Date	USGS		USGS Maurice (cfs)	Homestake Weir (cfs)	Hydro 1		Remarks
	Spearfish (cfs)	Power (kw)			Power (kwh)		
05/24/1962	237.00	ND	ND	161.90	92000	3833	8 inches over intake going down
05/25/1962	266.00	ND	ND	161.90	93000	3875	Intake 5 inches over
05/26/1962	212.00	ND	ND	161.90	94000	3917	Intake 4 inch over
05/27/1962	166.00	ND	ND	161.90	93000	3875	Intake 3 inches over
05/28/1962	130.00	ND	ND	161.90	94000	3917	Intake 2 inches over
05/30/1962	130.00	ND	ND	161.90	94000	3917	Intake 2 inches over
04/28/1963	127.00	ND	ND	161.90	98000	4083	1 inch over intake
04/29/1963	438.00	ND	ND	161.90	97000	4042	13 inches over weir
04/30/1963	406.00	ND	ND	161.90	97000	4042	8 inches average over intake
05/01/1963	285.00	ND	ND	161.90	97000	4042	7 inches over intake
05/02/1963	242.00	ND	ND	161.90	98000	4083	5 inches over intake
05/03/1963	196.00	ND	ND	161.90	97000	4042	5.5 inches over intake
05/04/1963	172.00	ND	ND	161.90	97000	4042	
05/05/1963	155.00	ND	ND	161.90	97000	4042	3.5 inches over intake
05/06/1963	145.00	ND	ND	161.90	98000	4083	Line 1 tripped Water over dam
05/07/1963	133.00	ND	ND	161.90	98000	4083	
05/08/1963	124.00	ND	ND	161.90	97000	4042	
06/15/1963	132.00	ND	ND	55.20	61000	2542	No Notes-from indicated USGS flows, assume normal operations
06/16/1963	312.00	ND	ND	53.78	58000	2417	No Notes-from indicated USGS flows, assume normal operations
06/17/1963	237.00	ND	ND	50.98	59000	2458	No Notes-from indicated USGS flows, assume normal operations
06/18/1963	178.00	ND	ND	49.60	58000	2417	No Notes-from indicated USGS flows, assume normal operations
06/19/1963	145.00	ND	ND	47.53	56000	2333	No Notes-from indicated USGS flows, assume normal operations
06/20/1963	129.00	ND	ND	44.18	53000	2208	No Notes-from indicated USGS flows, assume normal operations
06/09/1964	1480.00	ND	ND	161.90	76000	3167	24 inches over intake
06/10/1964	493.00	ND	ND	161.90	98000	4083	14 inches over intake
06/11/1964	252.00	ND	ND	161.90	96000	4000	13 inches over intake
06/12/1964	166.00	ND	ND	161.90	98000	4083	12 inches over intake
06/13/1964	140.00	ND	ND	161.90	97000	4042	Forebay 1.5 inches over 8-inches over at intake
06/14/1964	151.00	ND	ND	161.90	97000	4042	Throttle down intake. Forebay 4 inches intake 6 inches over
06/15/1964	135.00	ND	ND	161.90	98000	4083	Intake 5 inches over
06/22/1964	164.00	ND	ND	161.90	94000	3917	3.75 inches over intake
06/23/1964	248.00	ND	ND	161.90	97000	4042	3 inches over intake
06/24/1964	151.00	ND	ND	161.90	98000	4083	Forebay 3.5 Intake 4.5 inches over
06/25/1964	120.00	ND	ND	161.90	98000	4083	2 inches over at intake forebay 3 inches over
05/14/1965	1260.00	ND	ND	161.90	75000	3125	Intake overflowing Forebay 6.5 inches over
05/15/1965	1880.00	ND	ND		2000	83	Flood conditions Intake plugged. Closed gate valves
05/16/1965	820.00	ND	ND	161.90	88000	3667	
05/17/1965	504.00	ND	ND	161.90	92000	3833	

Spearfish Creek-Hydro 1 Aqueduct Flows

04/13/2006

Date	USGS		USGS Maurice (cfs)	Homestake Weir (cfs)	Hydro 1		Remarks
	Spearfish (cfs)	Power (kw)			Power (kwh)		
05/18/1965	357.00	ND	ND	102.59	85000	3542	Throttling
05/19/1965	288.00	ND	ND	82.80	71000	2958	Forebay spilling over
05/20/1965	229.00	ND	ND	86.10	83000	3458	Intake still closed
05/21/1965	194.00	ND	ND	161.90	97000	4042	Forebay 6 inches over
05/22/1965	175.00	ND	ND	161.90	97000	4042	Forebay 7 inches over
05/23/1965	153.00	ND	ND	161.90	98000	4083	Forebay 1 inch low
05/24/1965	202.00	ND	ND	161.90	98000	4083	Forebay 8.5 inches over
05/25/1965	249.00	ND	ND	161.90	98000	4083	Forebay 4 inches over
05/26/1965	237.00	ND	ND	161.90	96000	4000	Forebay 8 inches over
05/27/1965	211.00	ND	ND	161.90	95000	3958	
05/28/1965	191.00	ND	ND	161.90	98000	4083	Forebay 10 inches over
05/29/1965	185.00	ND	ND	161.90	98000	4083	
05/30/1965	166.00	ND	ND	161.90	98000	4083	Forebay 8 inches over
05/31/1965	158.00	ND	ND	161.90	96000	4000	Forebay 8 inches over
06/01/1965	158.00	ND	ND	161.90	98000	4083	Forebay 7 inches over
06/02/1965	150.00	ND	ND	161.90	98000	4083	Forebay 5.5 inches over
06/03/1965	135.00	ND	ND	161.90	98000	4083	Forebay 2 inches over
06/04/1965	128.00	ND	ND	161.90	98000	4083	
06/05/1965	124.00	ND	ND	161.90	98000	4083	Forebay 4 inches over
05/23/1966	57.00	ND	ND	70.08	66000	2750	F-flow not at 120-cfs or greater. High flow for year selected Homestake records
06/15/1967	124.00	ND	ND	161.90	96000	4000	Intake 12 inches over
06/16/1967	190.00	ND	ND	161.90	99000	4125	Forebay 3.25 inches over 11 inches over at intake
06/17/1967	130.00	ND	ND	161.90	97000	4042	Intake overflowing
05/02/1968	75.00	ND	ND	108.45	72000	3000	F-flow not at 120-cfs or greater. High flow for year selected Homestake records
05/03/1969	338.00	ND	ND	161.90	97000	4042	Forebay 4.5 inches over 6 inches over intake
05/04/1969	269.00	ND	ND	161.90	94000	3917	
05/05/1969	250.00	ND	ND	161.90	97000	4042	4 inches over at intake Forebay 3 inches over
05/06/1969	197.00	ND	ND	161.90	96000	4000	Forebay 1.25 over Intake overflowing
05/07/1969	159.00	ND	ND	161.90	96000	4000	Intake 5.5 over Forebay 4 over
05/08/1969	133.00	ND	ND	161.90	97000	4042	Intake 4.5 over Forebay 3 over
04/28/1970	126.00	ND	ND	125.65	86000	3583	
04/29/1970	122.00	ND	ND	116.75	82000	3417	
05/04/1970	133.00	ND	ND	116.75	100000	4167	
05/05/1970	135.00	ND	ND	161.90	95000	3958	Forebay 4.5 over
05/06/1970	141.00	ND	ND	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations
05/07/1970	223.00	ND	ND	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations
05/08/1970	343.00	ND	ND	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations
05/09/1970	303.00	ND	ND	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations

Spearfish Creek-Hydro 1 Aqueduct Flows

Date	USGS		USGS Maurice		Hydro 1		Hydro 1		Remarks
	Spearfish (cfs)	USGS (cfs)	Homestake Weir (cfs)	Power (kw)	Power (kwh)	USGS (cfs)	Power (kwh)		
05/10/1970	227.00	ND	161.90	95000	3958	161.90	95000	No Notes-from indicated USGS flows, assume normal operations	
05/11/1970	248.00	ND	161.90	98000	4083	161.90	98000	No Notes-from indicated USGS flows, assume normal operations	
05/12/1970	263.00	ND	161.90	94000	3917	161.90	94000	No Notes-from indicated USGS flows, assume normal operations	
05/13/1970	263.00	ND	161.90	96000	4000	161.90	96000	No Notes-from indicated USGS flows, assume normal operations	
05/14/1970	245.00	ND	161.90	96000	4000	161.90	96000	No Notes-from indicated USGS flows, assume normal operations	
05/15/1970	207.00	ND	161.90	95000	3958	161.90	95000	No Notes-from indicated USGS flows, assume normal operations	
05/16/1970	201.00	ND	161.90	83000	3458	161.90	83000	No Notes-from indicated USGS flows, assume normal operations	
05/17/1970	230.00	ND	161.90	110000	4583	161.90	110000	No Notes-from indicated USGS flows, assume normal operations	
05/18/1970	267.00	ND	161.90	96000	4000	161.90	96000	No Notes-from indicated USGS flows, assume normal operations	
05/19/1970	252.00	ND	161.90	96000	4000	161.90	96000	No Notes-from indicated USGS flows, assume normal operations	
05/20/1970	227.00	ND	161.90	96000	4000	161.90	96000	No Notes-from indicated USGS flows, assume normal operations	
05/21/1970	207.00	ND	161.90	96000	4000	161.90	96000	No Notes-from indicated USGS flows, assume normal operations	
05/22/1970	188.00	ND	161.90	96000	4000	161.90	96000	No Notes-from indicated USGS flows, assume normal operations	
05/23/1970	171.00	ND	161.90	96000	4000	161.90	96000	No Notes-from indicated USGS flows, assume normal operations	
05/24/1970	153.00	ND	161.90	96000	4000	161.90	96000	No Notes-from indicated USGS flows, assume normal operations	
05/25/1970	140.00	ND	161.90	95000	3958	161.90	95000	No Notes-from indicated USGS flows, assume normal operations	
05/26/1970	129.00	ND	161.90	96000	4000	161.90	96000	No Notes-from indicated USGS flows, assume normal operations	
05/27/1970	126.00	ND	161.90	96000	4000	161.90	96000	No Notes-from indicated USGS flows, assume normal operations	
05/28/1970	125.00	ND	161.90	95000	3958	161.90	95000	No Notes-from indicated USGS flows, assume normal operations	
05/29/1970	124.00	ND	161.90	96000	4000	161.90	96000	No Notes-from indicated USGS flows, assume normal operations	
05/30/1970	122.00	ND	161.90	96000	4000	161.90	96000	No Notes-from indicated USGS flows, assume normal operations	
05/31/1970	158.00	ND	161.90	96000	4000	161.90	96000	Weir indicator out	
06/01/1970	194.00	ND	161.90	95000	3958	161.90	95000	Forebay 2 inch over	
06/02/1970	159.00	ND	161.90	96000	4000	161.90	96000	Forebay 2 inch over	
06/03/1970	138.00	ND	161.90	96000	4000	161.90	96000	Forebay 2 inch over	
06/04/1970	128.00	ND	161.90	96000	4000	161.90	96000	Forebay 2 inch over	
06/05/1970	124.00	ND	161.90	95000	3958	161.90	95000	Forebay 2 inch over	
06/06/1970	126.00	ND	161.90	96000	4000	161.90	96000	Forebay 2 inch over	
06/07/1970	126.00	ND	161.90	95000	3958	161.90	95000	Forebay 1 inch over	
06/08/1970	121.00	ND	152.60	95000	3958	152.60	95000		
06/12/1970	510.00	ND	161.90	95000	3958	161.90	95000		
06/13/1970	386.00	ND	161.90	96000	4000	161.90	96000	Forebay 2 inch over	
06/14/1970	291.00	ND	161.90	96000	4000	161.90	96000		
06/15/1970	234.00	ND	161.90	96000	4000	161.90	96000	Forebay 4 inch over	
06/16/1970	201.00	ND	161.90	96000	4000	161.90	96000	Forebay 3 inch over	
06/17/1970	171.00	ND	161.90	96000	4000	161.90	96000	Forebay 3 inch over	
06/18/1970	153.00	ND	161.90	96000	4000	161.90	96000	Forebay 2 inch over	
06/19/1970	137.00	ND	161.90	96000	4000	161.90	96000	Forebay 2 inch over	
06/20/1970	131.00	ND	161.90	96000	4000	161.90	96000	Forebay 2 inch over	

Spearfish Creek-Hydro 1 Aqueduct Flows

04/13/2006

Date	USGS		USGS Maurice Weir (cfs)		Hydro 1		Remarks
	Spearfish (cfs)	Maurice (cfs)	Homestake Weir (cfs)	Power (kw)	Power (kwh)		
06/21/1970	128.00	ND	161.90	96000	4000	Forebay 2 inch over	
06/22/1970	126.00	ND	161.90	96000	4000	Forebay 2 inch over	
06/23/1970	120.00	ND	161.90	95000	3958		
04/17/1971	125.00	ND	152.60	90000	3750		
04/18/1971	136.00	ND	161.90	90000	3750	Forebay 2 over	
04/19/1971	137.00	ND	161.90	93000	3875	Forebay 1 inch over	
04/20/1971	137.00	ND	161.90	96000	4000	Forebay 1 inch over	
04/21/1971	137.00	ND	161.90	96000	4000	Forebay 1 inch over	
04/22/1971	137.00	ND	161.90	96000	4000	Forebay 2 inch over	
04/23/1971	137.00	ND	161.90	96000	4000	Forebay 2 inch over	
04/24/1971	137.00	ND	161.90	95000	3958	Forebay 2 inch over	
04/25/1971	135.00	ND	161.90	92000	3833	Forebay 0.2 inch over	
04/26/1971	135.00	ND	161.90	96000	4000		
04/27/1971	135.00	ND	161.90	96000	4000	Forebay 2 inch over	
04/28/1971	135.00	ND	161.90	96000	4000		
04/29/1971	135.00	ND	161.90	94000	3917		
04/30/1971	137.00	ND	161.90	96000	4000		
05/01/1971	137.00	ND	161.90	96000	4000	Forebay 1 inch over	
05/02/1971	138.00	ND	161.90	96000	4000		
05/03/1971	136.00	ND	161.90	96000	4000	Forebay 4 inch over	
05/04/1971	158.00	ND	161.90	95000	3958	Forebay 4 inch over	
05/05/1971	167.00	ND	161.90	96000	4000	Forebay 2 inch over	
05/06/1971	149.00	ND	161.90	96000	4000	Forebay 2 inch over	
05/07/1971	135.00	ND	161.90	96000	4000	Forebay 2 inch over	
05/08/1971	131.00	ND	161.90	96000	4000	Forebay 2 inch over	
05/09/1971	129.00	ND	161.90	94000	3917	Forebay 2 inch over	
05/10/1971	169.00	ND	161.90	97000	4042	Forebay 4 inch over	
05/11/1971	220.00	ND	161.90	96000	4000	Forebay 3 inch over	
05/12/1971	194.00	ND	161.90	96000	4000	Forebay 3 inch over	
05/13/1971	176.00	ND	161.90	96000	4000	Forebay 3 inch over	
05/14/1971	163.00	ND	161.90	96000	4000	Forebay 4 inch over	
05/15/1971	150.00	ND	161.90	96000	4000	Forebay 4 inch over	
05/16/1971	140.00	ND	161.90	96000	4000	Forebay 4 inch over	
05/17/1971	127.00	ND	161.90	96000	4000	Forebay 4 inch over	
05/18/1971	121.00	ND	161.90	94000	3917	Forebay 3 inch over	
05/23/1971	128.00	ND	161.90	70000	2917	Intake shutdown 24 inches over weir	
05/24/1971	172.00	ND	161.90	103000	4292	Forebay 4 inch over	
05/25/1971	164.00	ND	161.90	97000	4042	Forebay 2 inch over	
05/26/1971	146.00	ND	161.90	96000	4000	Forebay 2 inch over	

Spearfish Creek-Hydro 1 Aqueduct Flows

04/13/2006

Date	USGS		USGS Maurice (cfs)	Homestake Weir (cfs)	Hydro 1		Remarks
	Spearfish (cfs)	Power (kw)			Power (kwh)		
05/27/1971	131.00	ND	161.90	161.90	96000	4000	Forebay 2 inch over
05/11/1972	123.00	ND	91.90	91.90	81000	3375	No Notes-from indicated USGS flows, assume normal operations
05/12/1972	146.00	ND	116.75	116.75	88000	3667	No Notes-from indicated USGS flows, assume normal operations
05/13/1972	160.00	ND	132.75	132.75	92000	3833	No Notes-from indicated USGS flows, assume normal operations
05/14/1972	159.00	ND	116.75	116.75	93000	3875	No Notes-from indicated USGS flows, assume normal operations
05/15/1972	149.00	ND	116.75	116.75	93000	3875	No Notes-from indicated USGS flows, assume normal operations
05/16/1972	139.00	ND	108.45	108.45	90000	3750	No Notes-from indicated USGS flows, assume normal operations
05/17/1972	129.00	ND	108.45	108.45	85000	3542	No Notes-from indicated USGS flows, assume normal operations
05/06/1973	149.00	ND	161.90	161.90	99000	4125	Forebay 0.4 over Intake 6 inch over
05/07/1973	166.00	ND	161.90	161.90	107000	4458	Forebay 4 over
05/08/1973	180.00	ND	161.90	161.90	102000	4250	Forebay 2 over
05/09/1973	213.00	ND	161.90	161.90	102000	4250	Forebay 5 over
05/10/1973	185.00	ND	161.90	161.90	102000	4250	Forebay 4 over
05/11/1973	171.00	ND	161.90	161.90	102000	4250	Forebay 4 over
05/12/1973	153.00	ND	161.90	161.90	102000	4250	Forebay 4 over
05/13/1973	144.00	ND	161.90	161.90	102000	4250	Forebay 4 over
05/14/1973	144.00	ND	161.90	161.90	102000	4250	Forebay 6 over
05/15/1973	149.00	ND	161.90	161.90	100000	4167	Forebay 6 over
05/16/1973	166.00	ND	161.90	161.90	99000	4125	Forebay 3.5 over
05/17/1973	180.00	ND	161.90	161.90	98000	4083	Forebay 3.5 over
05/18/1973	194.00	ND	161.90	161.90	101000	4208	Forebay 4 over
05/19/1973	180.00	ND	161.90	161.90	95000	3958	Forebay 0.4 over
05/20/1973	163.00	ND	161.90	161.90	102000	4250	Forebay 0.3 over
05/21/1973	153.00	ND	161.90	161.90	103000	4292	Forebay 3 over
05/22/1973	137.00	ND	161.90	161.90	102000	4250	Forebay 4 over
05/23/1973	126.00	ND	161.90	161.90	102000	4250	Forebay 4 over
05/24/1973	122.00	ND	161.90	161.90	102000	4250	Forebay 5 over
05/25/1973	122.00	ND	161.90	161.90	100000	4167	Forebay 5 over
05/26/1973	124.00	ND	161.90	161.90	100000	4167	Forebay 0.5 over
05/27/1973	153.00	ND	161.90	161.90	100000	4167	Forebay 5 over
05/28/1973	210.00	ND	161.90	161.90	100000	4167	
05/29/1973	248.00	ND	161.90	161.90	101000	4208	Forebay 5 over
05/30/1973	245.00	ND	161.90	161.90	101000	4208	Forebay 5 over
05/31/1973	273.00	ND	161.90	161.90	101000	4208	Forebay 5 over
06/01/1973	248.00	ND	161.90	161.90	102000	4250	Forebay 5 over
06/02/1973	241.00	ND	161.90	161.90	101000	4208	Forebay 5 over
06/03/1973	227.00	ND	161.90	161.90	85000	3542	Forebay 4 over
06/04/1973	204.00	ND	161.90	161.90	113000	4708	Forebay 5 over

Spearfish Creek-Hydro 1 Aqueduct Flows

Date	USGS Spearfish (cfs)	USGS Maurice (cfs)	USGS Homestake Weir (cfs)	Hydro 1 Power (kw)	Hydro 1 Power (kwh)	Remarks
06/05/1973	177.00	ND	161.90	101000	4208	Forebay 5 over
06/06/1973	158.00	ND	161.90	101000	4208	Forebay 5 over
06/07/1973	144.00	ND	161.90	101000	4208	Forebay 5 over
06/08/1973	133.00	ND	161.90	99000	4125	Forebay 5 over
06/09/1973	124.00	ND	161.90	99000	4125	Forebay 4 over
06/10/1973	122.00	ND	161.90	99000	4125	Forebay 5 over
06/11/1973	122.00	ND	161.90	103000	4292	Forebay 5 over
06/12/1973	124.00	ND	161.90	101000	4208	Forebay 5 over
05/20/1974	66.00	ND	91.90	78000	3250	Flow not at 120-cfs or greater. High flow for year selected Homestake records
05/06/1975	120.00	ND	161.90	101000	4208	Forebay 6 over
05/07/1975	143.00	ND	161.90	101000	4208	Forebay 4 over
05/08/1975	135.00	ND	161.90	101000	4208	Forebay 4 over
05/09/1975	131.00	ND	161.90	101000	4208	Forebay 4 over
05/10/1975	133.00	ND	161.90	101000	4208	Forebay 4 over
05/11/1975	140.00	ND	161.90	101000	4208	Forebay 4 over
05/12/1975	138.00	ND	161.90	98000	4083	Forebay 4 over
05/13/1975	128.00	ND	161.90	101000	4208	Forebay 3 over
05/14/1975	123.00	ND	161.90	100000	4167	Forebay 0.3 over
05/15/1975	120.00	ND	161.90	99000	4125	
06/14/1976	561.00	ND	161.90	77000	3208	
06/15/1976	1500.00	ND	161.90	41000	1708	Forebay 6 over
06/16/1976	309.00	ND	161.90	63000	2625	Forebay 3 over Dam overflowing grates plugged
06/17/1976	447.00	ND	161.90	99000	4125	Forebay 4 over
06/18/1976	365.00	ND	161.90	100000	4167	Forebay 4 over
06/19/1976	223.00	ND	161.90	100000	4167	Forebay 5 over
06/20/1976	153.00	ND	161.90	100000	4167	Forebay 4 over
06/21/1976	135.00	ND	161.90	102000	4250	Forebay 3 over
06/22/1976	144.00	ND	161.90	98000	4083	Forebay 4 over
06/23/1976	163.00	ND	161.90	99000	4125	Forebay 5 over
06/24/1976	139.00	ND	161.90	101000	4208	Forebay 4 over
06/25/1976	120.00	ND	161.90	101000	4208	Forebay 4 over
04/29/1977	134.00	ND	161.90	99000	4125	No Notes-from indicated USGS flows, assume normal operations
04/30/1977	150.00	ND	161.90	99000	4125	No Notes-from indicated USGS flows, assume normal operations
05/01/1977	162.00	ND	161.90	99000	4125	No Notes-from indicated USGS flows, assume normal operations
05/02/1977	162.00	ND	161.90	101000	4208	No Notes-from indicated USGS flows, assume normal operations
05/03/1977	158.00	ND	161.90	99000	4125	No Notes-from indicated USGS flows, assume normal operations
05/04/1977	153.00	ND	161.90	100000	4167	No Notes-from indicated USGS flows, assume normal operations
05/05/1977	140.00	ND	161.90	100000	4167	No Notes-from indicated USGS flows, assume normal operations

Spearfish Creek-Hydro 1 Aqueduct Flows

04/13/2006

Date	USGS		USGS Maurice (cfs)	Homestake Weir (cfs)	Hydro 1		Remarks
	Spearfish (cfs)	Power (kw)			Power (kwh)		
05/06/1977	125.00	ND	ND	161.90	100000	4167	No Notes-from indicated USGS flows, assume normal operations
04/29/1978	160.00	ND	ND	152.60	100000	4167	
04/30/1978	187.00	ND	ND	161.90	90000	3750	
05/01/1978	155.00	ND	ND	161.90	104000	4333	Forebay 2 over
05/02/1978	137.00	ND	ND	161.90	99000	4125	
05/04/1978	123.00	ND	ND	161.90	100000	4167	
05/05/1978	122.00	ND	ND	161.90	99000	4125	
05/07/1978	121.00	ND	ND	161.90	96000	4000	
05/10/1978	141.00	ND	ND	161.90	100000	4167	
05/11/1978	219.00	ND	ND	161.90	99000	4125	Forebay 0.5 over
05/12/1978	215.00	ND	ND	161.90	98000	4083	Forebay 0.1 over
05/13/1978	189.00	ND	ND	161.90	97000	4042	
05/14/1978	179.00	ND	ND	161.90	99000	4125	
05/15/1978	170.00	ND	ND	161.90	102000	4250	Forebay 1 over
05/16/1978	170.00	ND	ND	161.90	99000	4125	
05/17/1978	160.00	ND	ND	161.90	98000	4083	Forebay 0.5 over
05/18/1978	170.00	ND	ND	161.90	98000	4083	
05/19/1978	170.00	ND	ND	161.90	99000	4125	
05/20/1978	160.00	ND	ND	161.90	76000	3167	Line trouble
05/21/1978	175.00	ND	ND	161.90	99000	4125	
05/22/1978	170.00	ND	ND	161.90	91000	3792	
05/23/1978	165.00	ND	ND	161.90	99000	4125	Forebay 1 over
05/24/1978	160.00	ND	ND	161.90	99000	4125	
05/25/1978	145.00	ND	ND	161.90	100000	4167	
05/26/1978	125.00	ND	ND	161.90	100000	4167	
04/20/1979	65.00	ND	ND	161.90	81000	3375	Flow not at 120-cfs or greater. High flow for year selected Homestake records
04/20/1980	67.00	ND	ND	108.45	76000	3167	Flow not at 120-cfs or greater. High flow for year selected Homestake records
06/05/1981	66.00	ND	ND	76.35	45000	1875	Flow not at 120-cfs or greater. High flow for year selected Homestake records
05/14/1982	189.00	ND	ND	161.90	82000	3417	No Notes-from indicated USGS flows, assume normal operations
05/15/1982	983.00	ND	ND	161.90	103000	4292	No Notes-from indicated USGS flows, assume normal operations
05/16/1982	957.00	ND	ND	161.90	92000	3833	No Notes-from indicated USGS flows, assume normal operations
05/17/1982	1000.00	ND	ND	161.90	86000	3583	No Notes-from indicated USGS flows, assume normal operations
05/18/1982	856.00	ND	ND	161.90	83000	3458	No Notes-from indicated USGS flows, assume normal operations
05/19/1982	826.00	ND	ND	161.90	97000	4042	Forebay 2 over
05/20/1982	1180.00	ND	ND	161.90	99000	4125	Forebay 2 over
05/21/1982	1210.00	ND	ND	161.90	87000	3625	Forebay 4 over
05/22/1982	1430.00	ND	ND	161.90	87000	3625	
05/23/1982	1030.00	ND	ND	161.90	90000	3750	Forebay 1 over

Spearfish Creek-Hydro 1 Aqueduct Flows

04/13/2006

Date	USGS Spearfish		USGS Maurice		USGS Homestake		Hydro 1		Remarks
	(cfs)	(cfs)	(cfs)	(cfs)	Weir (cfs)	Power (kw)	Power (kwh)		
05/24/1982	838.00	ND	ND	152.60	77000	3208	No Notes-from indicated USGS flows, assume normal operations		
05/25/1982	790.00	ND	ND	161.90	83000	3458	No Notes-from indicated USGS flows, assume normal operations		
05/26/1982	868.00	ND	ND	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations		
05/27/1982	868.00	ND	ND	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations		
05/28/1982	732.00	ND	ND	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations		
05/29/1982	457.00	ND	ND	161.90	86000	3583	No Notes-from indicated USGS flows, assume normal operations		
05/30/1982	412.00	ND	ND	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations		
05/31/1982	369.00	ND	ND	161.90	84000	3500	No Notes-from indicated USGS flows, assume normal operations		
06/01/1982	377.00	ND	ND	108.45	100000	4167	Strike		
06/02/1982	287.00	ND	ND	108.45	77000	3208			
06/03/1982	297.00	ND	ND	95.95	72000	3000			
06/04/1982	343.00	ND	ND	100.30	42000	1750			
06/05/1982	297.00	ND	ND	88.00	77000	3208			
06/06/1982	190.00	ND	ND	84.15	37000	1542			
06/07/1982	170.00	ND	ND	91.90	68000	2833	Generator shutdown		
06/08/1982	132.00	ND	ND	76.35	70000	2917			
06/09/1982	128.00	ND	ND	72.60	67000	2792			
06/10/1982	121.00	ND	ND	72.60	60000	2500	Replacing generator brushes		
04/25/1983	136.00	ND	ND	161.90	94000	3917	No Notes-from indicated USGS flows, assume normal operations		
04/26/1983	222.00	ND	ND	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations		
04/27/1983	167.00	ND	ND	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations		
04/28/1983	166.00	ND	ND	161.90	100000	4167	No Notes-from indicated USGS flows, assume normal operations		
04/29/1983	156.00	ND	ND	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations		
04/30/1983	153.00	ND	ND	161.90	89000	3708	No Notes-from indicated USGS flows, assume normal operations		
05/01/1983	163.00	ND	ND	161.90	93000	3875	No Notes-from indicated USGS flows, assume normal operations		
05/02/1983	177.00	ND	ND	161.90	114000	4750	No Notes-from indicated USGS flows, assume normal operations		
05/03/1983	177.00	ND	ND	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations		
05/04/1983	177.00	ND	ND	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations		
05/05/1983	174.00	ND	ND	161.90	99000	4125	No Notes-from indicated USGS flows, assume normal operations		
05/06/1983	182.00	ND	ND	161.90	100000	4167	No Notes-from indicated USGS flows, assume normal operations		
05/07/1983	356.00	ND	ND	161.90	94000	3917	No Notes-from indicated USGS flows, assume normal operations		
05/08/1983	317.00	ND	ND	161.90	99000	4125	No Notes-from indicated USGS flows, assume normal operations		
05/09/1983	325.00	ND	ND	161.90	93000	3875	No Notes-from indicated USGS flows, assume normal operations		
05/10/1983	310.00	ND	ND	161.90	99000	4125	No Notes-from indicated USGS flows, assume normal operations		
05/11/1983	230.00	ND	ND	161.90	99000	4125	No Notes-from indicated USGS flows, assume normal operations		
05/12/1983	182.00	ND	ND	161.90	99000	4125	No Notes-from indicated USGS flows, assume normal operations		
05/13/1983	156.00	ND	ND	161.90	99000	4125	No Notes-from indicated USGS flows, assume normal operations		
05/14/1983	140.00	ND	ND	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations		
05/15/1983	137.00	ND	ND	161.90	100000	4167	No Notes-from indicated USGS flows, assume normal operations		

Spearfish Creek-Hydro 1 Aqueduct Flows

04/13/2006

Date	USGS		USGS Maurice (cfs)	Homestake Weir (cfs)	Hydro 1		Remarks
	Spearfish (cfs)	Power (kw)			Power (kwh)		
05/16/1983	123.00	ND	ND	161.90	87000	3625	No Notes-from indicated USGS flows, assume normal operations
05/17/1983	143.00	ND	ND	161.90	110000	4583	No Notes-from indicated USGS flows, assume normal operations
05/18/1983	154.00	ND	ND	161.90	100000	4167	No Notes-from indicated USGS flows, assume normal operations
05/19/1983	160.00	ND	ND	161.90	99000	4125	No Notes-from indicated USGS flows, assume normal operations
05/20/1983	179.00	ND	ND	161.90	99000	4125	No Notes-from indicated USGS flows, assume normal operations
05/21/1983	180.00	ND	ND	161.90	99000	4125	No Notes-from indicated USGS flows, assume normal operations
05/22/1983	175.00	ND	ND	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations
05/23/1983	162.00	ND	ND	161.90	101000	4208	No Notes-from indicated USGS flows, assume normal operations
05/24/1983	153.00	ND	ND	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations
05/25/1983	148.00	ND	ND	161.90	101000	4208	No Notes-from indicated USGS flows, assume normal operations
05/26/1983	145.00	ND	ND	161.90	99000	4125	No Notes-from indicated USGS flows, assume normal operations
05/27/1983	137.00	ND	ND	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations
05/28/1983	129.00	ND	ND	161.90	86000	3583	No Notes-from indicated USGS flows, assume normal operations
05/29/1983	125.00	ND	ND	161.90	101000	4208	No Notes-from indicated USGS flows, assume normal operations
05/30/1983	124.00	ND	ND	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations
05/31/1983	126.00	ND	ND	161.90	110000	4583	No Notes-from indicated USGS flows, assume normal operations
06/01/1983	125.00	ND	ND	157.15	101000	4208	No Notes-from indicated USGS flows, assume normal operations
06/02/1983	120.00	ND	ND	143.45	100000	4167	No Notes-from indicated USGS flows, assume normal operations
05/10/1984	125.00	ND	ND	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations
05/11/1984	129.00	ND	ND	161.90	99000	4125	No Notes-from indicated USGS flows, assume normal operations
05/12/1984	124.00	ND	ND	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations
05/13/1984	111.00	ND	ND	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations
05/14/1984	112.00	ND	ND	161.90	104000	4333	No Notes-from indicated USGS flows, assume normal operations
05/15/1984	162.00	ND	ND	161.90	112000	4667	No Notes-from indicated USGS flows, assume normal operations
05/16/1984	180.00	ND	ND	161.90	87000	3625	No Notes-from indicated USGS flows, assume normal operations
05/17/1984	163.00	ND	ND	161.90	108000	4500	No Notes-from indicated USGS flows, assume normal operations
05/18/1984	137.00	ND	ND	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations
05/19/1984	122.00	ND	ND	161.90	99000	4125	No Notes-from indicated USGS flows, assume normal operations
06/10/1984	214.00	ND	ND	161.90	98000	4083	6 inches over intake
06/11/1984	233.00	ND	ND	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations
06/12/1984	199.00	ND	ND	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations
06/13/1984	176.00	ND	ND	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations
06/14/1984	198.00	ND	ND	161.90	99000	4125	No Notes-from indicated USGS flows, assume normal operations
06/15/1984	162.00	ND	ND	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations
06/16/1984	178.00	ND	ND	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations
06/17/1984	181.00	ND	ND	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations
06/18/1984	194.00	ND	ND	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations
06/19/1984	183.00	ND	ND	161.90	99000	4125	No Notes-from indicated USGS flows, assume normal operations
06/20/1984	183.00	ND	ND	152.60	98000	4083	No Explanation

Spearsfish Creek-Hydro 1 Aqueduct Flows

04/13/2006

Date	USGS		USGS Maurice (cfs)	Homestake Weir (cfs)	Hydro 1		Remarks
	Spearsfish (cfs)	Power (kw)			Power (kwh)		
06/21/1984	174.00	ND	ND	143.45	97000	4042	No Notes-from indicated USGS flows, assume normal operations
06/22/1984	146.00	ND	ND	130.10	98000	4083	No Notes-from indicated USGS flows, assume normal operations
06/23/1984	139.00	ND	ND	130.10	87000	3625	No Notes-from indicated USGS flows, assume normal operations
06/24/1984	134.00	ND	ND	116.75	90000	3750	No Notes-from indicated USGS flows, assume normal operations
06/25/1984	122.00	ND	ND	102.80	101000	4208	No Notes-from indicated USGS flows, assume normal operations
06/26/1984	121.00	ND	ND	76.35	87000	3625	No Notes-from indicated USGS flows, assume normal operations
06/27/1984	124.00	ND	ND	68.95	98000	4083	No Notes-from indicated USGS flows, assume normal operations
06/28/1984	120.00	ND	ND	61.65	87000	3625	No Notes-from indicated USGS flows, assume normal operations
05/17/1985	49.00	ND	ND	51.15	44000	1833	Flow not at 120-cfs or greater. High flow for year selected Homestake records
05/20/1986	67.00	ND	ND	84.15	75000	3125	Flow not at 120-cfs or greater. High flow for year selected Homestake records
05/21/1987	52.00	ND	ND	65.25	76000	3167	Flow not at 120-cfs or greater. High flow for year selected Homestake records
05/27/1988	54.00	ND	ND	68.95	79000	3292	Maurice data starts 10/1/1988 Flow not at 120-cfs or greater. High flow for year selected Homestake records
05/19/1989	71.00	67.00	67.00	91.90	65000	2708	Flow not at 120-cfs or greater. High flow for year selected Homestake records
05/18/1990	73.00	79.00	79.00	108.45	84000	3500	Flow not at 120-cfs or greater. High flow for year selected Homestake records
05/23/1991	101.00	120.00	120.00	161.90	87000	3625	No Notes-from indicated USGS flows, assume normal operations
05/20/1992	45.00	40.00	40.00	37.10	43000	1792	Flow not at 120-cfs or greater. High flow for year selected Homestake records
05/20/1993	57.00	60.00	60.00	50.50	67000	2792	Flow not at 120-cfs or greater. High flow for year selected Homestake records
04/18/1994	93.00	137.00	137.00	161.90	11000	458	No Notes-from indicated USGS flows, assume normal operations
04/19/1994	115.00	164.00	164.00	161.90	68000	2833	No Notes-from indicated USGS flows, assume normal operations
04/20/1994	117.00	182.00	182.00	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations
04/21/1994	119.00	190.00	190.00	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations
04/22/1994	128.00	194.00	194.00	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations
04/23/1994	163.00	197.00	197.00	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations
04/24/1994	163.00	191.00	191.00	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations
04/25/1994	171.00	207.00	207.00	161.90	103000	4292	No Notes-from indicated USGS flows, assume normal operations
04/26/1994	169.00	188.00	188.00	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations
04/27/1994	146.00	163.00	163.00	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations
04/28/1994	131.00	146.00	146.00	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations
04/29/1994	118.00	141.00	141.00	161.90	90000	3750	No Notes-from indicated USGS flows, assume normal operations
04/30/1994	109.00	132.00	132.00	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations
05/01/1994	106.00	135.00	135.00	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations
05/02/1994	106.00	145.00	145.00	161.90	120000	5000	No Notes-from indicated USGS flows, assume normal operations
05/03/1994	117.00	155.00	155.00	161.90	101000	4208	No Notes-from indicated USGS flows, assume normal operations
05/04/1994	123.00	160.00	160.00	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations
05/05/1994	128.00	161.00	161.00	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations
05/06/1994	129.00	164.00	164.00	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations

Spearfish Creek-Hydro 1 Aqueduct Flows

04/13/2006

Date	USGS		USGS Maurice (cfs)	Homestake Weir (cfs)	Hydro 1		Remarks
	Spearfish (cfs)	Power (kw)			Power (kwh)		
05/07/1994	126.00	156.00	161.90	90000	3750	No Notes-from indicated USGS flows, assume normal operations	
05/08/1994	125.00	147.00	161.90	90000	3750	No Notes-from indicated USGS flows, assume normal operations	
05/09/1994	122.00	141.00	161.90	110000	4583	No Notes-from indicated USGS flows, assume normal operations	
05/10/1994	115.00	136.00	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations	
05/11/1994	113.00	130.00	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations	
05/12/1994	106.00	124.00	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations	
05/13/1994	107.00	125.00	161.90	94000	3917	No Notes-from indicated USGS flows, assume normal operations	
05/14/1994	106.00	120.00	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations	
05/08/1995	825.00	1470.00	85.00	85000	3542	Forebay filling must of plugged	
05/09/1995	1390.00	1250.00	159.05	46000	1917	Plugging	
05/10/1995	787.00	890.00	161.90	72000	3000		
05/11/1995	530.00	653.00	161.90	92000	3833		
05/12/1995	460.00	507.00	161.90	91000	3792		
05/13/1995	485.00	497.00	102.80	36000	1500	Line trouble	
05/14/1995	387.00	389.00	152.60	65000	2708		
05/15/1995	318.00	308.00	161.90	10600	442	Put two boards in for more water at #1 (Must of pulled boards when plugging)	
05/16/1995	277.00	263.00	161.90	82000	3417	No Notes-from indicated USGS flows, assume normal operations	
05/17/1995	231.00	236.00	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
05/18/1995	203.00	216.00	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations	
05/19/1995	181.00	195.00	161.90	82000	3417	No Notes-from indicated USGS flows, assume normal operations	
05/20/1995	167.00	182.00	161.90	91000	3792	No Notes-from indicated USGS flows, assume normal operations	
05/21/1995	155.00	174.00	161.90	91000	3792	No Notes-from indicated USGS flows, assume normal operations	
05/22/1995	142.00	161.00	161.90	93000	3875	No Notes-from indicated USGS flows, assume normal operations	
05/23/1995	137.00	154.00	160.90	91000	3792	No Notes-from indicated USGS flows, assume normal operations	
05/24/1995	131.00	148.00	155.40	92000	3833	No Notes-from indicated USGS flows, assume normal operations	
05/25/1995	122.00	143.00	161.90	88000	3667	No Notes-from indicated USGS flows, assume normal operations	
05/27/1995	124.00	135.00	159.05	84000	3500	No Notes-from indicated USGS flows, assume normal operations	
05/28/1995	184.00	162.00	161.90	88000	3667	No Notes-from indicated USGS flows, assume normal operations	
05/29/1995	174.00	209.00	161.90	88000	3667	No Notes-from indicated USGS flows, assume normal operations	
05/30/1995	156.00	195.00	161.90	88000	3667	No Notes-from indicated USGS flows, assume normal operations	
05/31/1995	141.00	179.00	161.90	119000	4958	No Notes-from indicated USGS flows, assume normal operations	
06/01/1995	129.00	166.00	161.90	89000	3708	No Notes-from indicated USGS flows, assume normal operations	
06/02/1995	120.00	155.00	161.90	90000	3750	No Notes-from indicated USGS flows, assume normal operations	
06/02/1995	120.00	152.00	161.90	92000	3833	No Notes-from indicated USGS flows, assume normal operations	
06/03/1995	119.00	146.00	161.90	89000	3708	No Notes-from indicated USGS flows, assume normal operations	
06/04/1995	114.00	141.00	160.00	90000	3750	No Notes-from indicated USGS flows, assume normal operations	
06/05/1995	107.00	134.00	154.50	85000	3542	No Notes-from indicated USGS flows, assume normal operations	
06/06/1995	104.00	129.00	152.60	87000	3625	No Notes-from indicated USGS flows, assume normal operations	
06/07/1995	98.00	124.00	149.00	87000	3625	No Notes-from indicated USGS flows, assume normal operations	

Spearfish Creek-Hydro 1 Aqueduct Flows

04/13/2006

Date	USGS		USGS Maurice (cfs)	Homestake Weir (cfs)	Hydro 1		Remarks
	Spearfish (cfs)	Power (kw)			Power (kwh)	Power (kwh)	
06/08/1995	100.00	124.00	161.90	161.90	87000	3625	No Notes-from indicated USGS flows, assume normal operations
06/09/1995	106.00	133.00	161.90	161.90	51000	2125	No Notes-from indicated USGS flows, assume normal operations
06/10/1995	111.00	135.00	161.90	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations
06/11/1995	108.00	136.00	161.90	161.90	104000	4333	No Notes-from indicated USGS flows, assume normal operations
06/12/1995	107.00	134.00	161.90	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations
06/13/1995	103.00	131.00	161.90	161.90	94000	3917	No Notes-from indicated USGS flows, assume normal operations
06/14/1995	105.00	125.00	161.90	161.90	100000	4167	No Notes-from indicated USGS flows, assume normal operations
06/22/1995	122.00	128.00	161.90	161.90	93000	3875	No Notes-from indicated USGS flows, assume normal operations
06/23/1995	149.00	144.00	161.90	161.90	92000	3833	No Notes-from indicated USGS flows, assume normal operations
06/24/1995	128.00	130.00	161.90	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations
06/25/1995	119.00	120.00	161.90	161.90	100000	4167	No Notes-from indicated USGS flows, assume normal operations
04/08/1996	96.00	124.00	161.90	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations
04/09/1996	97.00	141.00	161.90	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations
04/10/1996	97.00	166.00	161.90	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations
04/11/1996	98.00	185.00	161.90	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations
04/12/1996	98.00	157.00	161.90	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations
04/13/1996	97.00	147.00	161.90	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations
04/14/1996	98.00	130.00	161.90	161.90	84000	3500	No Notes-from indicated USGS flows, assume normal operations
04/15/1996	98.00	122.00	161.90	161.90	115000	4792	No Notes-from indicated USGS flows, assume normal operations
04/16/1996	98.00	127.00	161.90	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations
04/17/1996	100.00	145.00	161.90	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations
04/18/1996	100.00	157.00	161.90	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations
04/19/1996	99.00	153.00	161.90	161.90	94000	3917	No Notes-from indicated USGS flows, assume normal operations
04/20/1996	98.00	144.00	161.90	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations
04/21/1996	99.00	137.00	161.90	161.90	94000	3917	No Notes-from indicated USGS flows, assume normal operations
04/22/1996	98.00	127.00	161.90	161.90	101000	4208	No Notes-from indicated USGS flows, assume normal operations
04/23/1996	97.00	123.00	161.90	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations
04/24/1996	96.00	128.00	161.90	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations
04/25/1996	97.00	138.00	161.90	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations
04/26/1996	97.00	131.00	161.90	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations
04/27/1996	101.00	127.00	161.90	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations
04/28/1996	98.00	119.00	160.90	160.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations
04/29/1996	95.00	114.00	154.50	154.50	98000	4083	No Notes-from indicated USGS flows, assume normal operations
04/30/1996	95.00	115.00	161.90	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations
05/01/1996	95.00	112.00	161.90	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations
05/02/1996	100.00	121.00	161.90	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations
05/03/1996	105.00	123.00	161.90	161.90	99000	4125	No Notes-from indicated USGS flows, assume normal operations
05/04/1996	105.00	125.00	161.90	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations
05/05/1996	105.00	125.00	161.90	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations

Spearfish Creek-Hydro 1 Aqueduct Flows

Date	USGS		USGS Maurice (cfs)	Homestake Weir (cfs)	Hydro 1		Remarks
	Spearfish (cfs)	Power (kw)			Power (kw)	Power (kwh)	
05/06/1996	105.00	126.00	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations	
05/07/1996	105.00	131.00	161.90	86000	3583	No Notes-from indicated USGS flows, assume normal operations	
05/08/1996	110.00	140.00	161.90	101000	4208	No Notes-from indicated USGS flows, assume normal operations	
05/09/1996	110.00	150.00	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations	
05/10/1996	110.00	146.00	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
05/11/1996	110.00	140.00	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations	
05/12/1996	110.00	139.00	161.90	100000	4167	No Notes-from indicated USGS flows, assume normal operations	
05/13/1996	110.00	141.00	161.90	94000	3917	No Notes-from indicated USGS flows, assume normal operations	
05/14/1996	115.00	148.00	161.90	91000	3792	No Notes-from indicated USGS flows, assume normal operations	
05/15/1996	115.00	148.00	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations	
05/16/1996	115.00	147.00	161.90	119000	4958	No Notes-from indicated USGS flows, assume normal operations	
05/17/1996	115.00	146.00	161.90	74000	3083	No Notes-from indicated USGS flows, assume normal operations	
05/18/1996	115.00	142.00	161.90	91000	3792	No Notes-from indicated USGS flows, assume normal operations	
05/19/1996	110.00	136.00	161.90	90000	3750	No Notes-from indicated USGS flows, assume normal operations	
05/20/1996	110.00	131.00	161.90	107000	4458	No Notes-from indicated USGS flows, assume normal operations	
05/21/1996	110.00	126.00	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations	
05/22/1996	110.00	124.00	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations	
05/23/1996	110.00	133.00	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
05/24/1996	110.00	148.00	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
05/25/1996	110.00	152.00	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations	
05/26/1996	110.00	166.00	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
05/27/1996	127.00	197.00	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
05/28/1996	150.00	211.00	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
05/29/1996	164.00	216.00	161.90	100000	4167	No Notes-from indicated USGS flows, assume normal operations	
05/30/1996	182.00	229.00	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
05/31/1996	185.00	221.00	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations	
06/01/1996	174.00	203.00	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations	
06/02/1996	158.00	188.00	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations	
06/03/1996	143.00	177.00	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations	
06/04/1996	135.00	171.00	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
06/05/1996	127.00	164.00	161.90	100000	4167	No Notes-from indicated USGS flows, assume normal operations	
06/06/1996	126.00	165.00	161.90	105000	4375	No Notes-from indicated USGS flows, assume normal operations	
06/07/1996	126.00	159.00	161.90	87000	3625	No Notes-from indicated USGS flows, assume normal operations	
06/08/1996	121.00	150.00	161.90	87000	3625	No Notes-from indicated USGS flows, assume normal operations	
06/09/1996	117.00	145.00	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations	
06/10/1996	117.00	140.00	161.90	110000	4583	No Notes-from indicated USGS flows, assume normal operations	
06/11/1996	119.00	136.00	161.90	87000	3625	No Notes-from indicated USGS flows, assume normal operations	
06/12/1996	119.00	131.00	161.90	100000	4167	No Notes-from indicated USGS flows, assume normal operations	
06/13/1996	118.00	127.00	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations	

Spearfish Creek-Hydro 1 Aqueduct Flows

Date	USGS Spearfish		USGS Maurice		Homestake Weir (cfs)		Hydro 1 Power		Remarks
	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(kw)	(kwh)	
06/14/1996	118.00	122.00	161.90	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations		
06/15/1996	118.00	120.00	161.90	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations		
06/16/1996	115.00	120.00	161.90	161.90	94000	3917	No Notes-from indicated USGS flows, assume normal operations		
04/04/1997	110.00	124.00	161.90	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations		
04/05/1997	120.00	119.00	161.90	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations		
04/18/1997	117.00	136.00	161.90	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations		
04/19/1997	116.00	165.00	161.90	161.90	84000	3500	No Notes-from indicated USGS flows, assume normal operations		
04/20/1997	117.00	193.00	161.90	161.90	85000	3542	No Notes-from indicated USGS flows, assume normal operations		
04/21/1997	219.00	245.00	161.90	161.90	127000	5292	No Notes-from indicated USGS flows, assume normal operations		
04/22/1997	222.00	233.00	161.90	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations		
04/23/1997	199.00	216.00	161.90	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations		
04/24/1997	182.00	201.00	161.90	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations		
04/25/1997	172.00	189.00	161.90	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations		
04/26/1997	166.00	186.00	161.90	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations		
04/27/1997	171.00	188.00	161.90	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations		
04/28/1997	201.00	213.00	161.90	161.90	100000	4167	No Notes-from indicated USGS flows, assume normal operations		
04/29/1997	222.00	222.00	161.90	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations		
04/30/1997	202.00	212.00	161.90	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations		
05/01/1997	199.00	205.00	161.90	161.90	99000	4125	No Notes-from indicated USGS flows, assume normal operations		
05/02/1997	199.00	199.00	161.90	161.90	100000	4167	No Notes-from indicated USGS flows, assume normal operations		
05/03/1997	173.00	185.00	161.90	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations		
05/04/1997	174.00	187.00	161.90	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations		
05/05/1997	209.00	218.00	161.90	161.90	94000	3917	No Notes-from indicated USGS flows, assume normal operations		
05/06/1997	241.00	239.00	161.90	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations		
05/07/1997	280.00	265.00	161.90	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations		
05/08/1997	288.00	261.00	161.90	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations		
05/09/1997	257.00	248.00	161.90	161.90	94000	3917	No Notes-from indicated USGS flows, assume normal operations		
05/10/1997	245.00	243.00	161.90	161.90	100000	4167	No Notes-from indicated USGS flows, assume normal operations		
05/11/1997	257.00	247.00	161.90	161.90	99000	4125	No Notes-from indicated USGS flows, assume normal operations		
05/12/1997	235.00	232.00	161.90	161.90	94000	3917	No Notes-from indicated USGS flows, assume normal operations		
05/13/1997	219.00	222.00	161.90	161.90	93000	3875	No Notes-from indicated USGS flows, assume normal operations		
05/14/1997	209.00	223.00	161.90	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations		
05/15/1997	198.00	218.00	161.90	161.90	93000	3875	No Notes-from indicated USGS flows, assume normal operations		
05/16/1997	189.00	215.00	161.90	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations		
05/17/1997	189.00	215.00	161.90	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations		
05/18/1997	188.00	214.00	161.90	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations		
05/19/1997	174.00	199.00	161.90	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations		
05/20/1997	158.00	187.00	161.90	161.90	119000	4958	No Notes-from indicated USGS flows, assume normal operations		

Spearfish Creek-Hydro 1 Aqueduct Flows

Date	USGS		USGS Maurice		Hydro 1		Remarks
	Spearfish (cfs)	USGS (cfs)	Homestake Weir (cfs)	Power (kw)	Power (kwh)		
05/21/1997	148.00	180.00	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
05/22/1997	156.00	179.00	161.90	72000	3000	No Notes-from indicated USGS flows, assume normal operations	
05/23/1997	145.00	169.00	161.90	90000	3750	No Notes-from indicated USGS flows, assume normal operations	
05/24/1997	141.00	162.00	161.90	90000	3750	No Notes-from indicated USGS flows, assume normal operations	
05/25/1997	142.00	164.00	161.90	90000	3750	No Notes-from indicated USGS flows, assume normal operations	
05/26/1997	148.00	174.00	161.90	90000	3750	No Notes-from indicated USGS flows, assume normal operations	
05/27/1997	151.00	174.00	161.90	108000	4500	No Notes-from indicated USGS flows, assume normal operations	
05/28/1997	145.00	169.00	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations	
05/29/1997	137.00	163.00	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations	
05/30/1997	134.00	157.00	161.90	88000	3667	No Notes-from indicated USGS flows, assume normal operations	
05/31/1997	129.00	151.00	161.90	94000	3917	No Notes-from indicated USGS flows, assume normal operations	
06/01/1997	121.00	148.00	161.90	94000	3917	No Notes-from indicated USGS flows, assume normal operations	
06/02/1997	119.00	151.00	161.90	105000	4375	No Notes-from indicated USGS flows, assume normal operations	
06/03/1997	121.00	151.00	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
06/04/1997	113.00	144.00	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
06/05/1997	108.00	141.00	161.90	99000	4125	No Notes-from indicated USGS flows, assume normal operations	
06/06/1997	108.00	137.00	161.90	93000	3875	No Notes-from indicated USGS flows, assume normal operations	
06/07/1997	105.00	136.00	161.90	99000	4125	No Notes-from indicated USGS flows, assume normal operations	
06/08/1997	103.00	133.00	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations	
06/09/1997	103.00	131.00	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations	
06/10/1997	106.00	128.00	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations	
06/11/1997	110.00	126.00	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
06/12/1997	103.00	126.00	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations	
06/13/1997	105.00	125.00	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations	
06/14/1997	104.00	123.00	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations	
06/15/1997	102.00	122.00	161.90	94000	3917	No Notes-from indicated USGS flows, assume normal operations	
06/16/1997	105.00	120.00	161.90	99000	4125	No Notes-from indicated USGS flows, assume normal operations	
06/18/1998	390.00	ND	161.90	90000	3750	No Notes-from indicated USGS flows, assume normal operations	
06/19/1998	340.00	ND	160.00	89000	3708	No Notes-from indicated USGS flows, assume normal operations	
06/20/1998	233.00	340.00	148.05	89000	3708	No Notes-from indicated USGS flows, assume normal operations	
06/21/1998	184.00	285.00	141.60	89000	3708	No Notes-from indicated USGS flows, assume normal operations	
06/22/1998	167.00	255.00	155.40	119000	4958	No Notes-from indicated USGS flows, assume normal operations	
06/23/1998	159.00	247.00	152.60	96000	4000	No Notes-from indicated USGS flows, assume normal operations	
06/24/1998	148.00	231.00	155.40	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
06/25/1998	139.00	228.00	158.10	91000	3792	No Notes-from indicated USGS flows, assume normal operations	
06/26/1998	123.00	220.00	160.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations	
06/27/1998	116.00	211.00	155.40	84000	3500	No Notes-from indicated USGS flows, assume normal operations	
06/28/1998	115.00	193.00	152.60	96000	4000	No Notes-from indicated USGS flows, assume normal operations	
06/29/1998	107.00	191.00	148.05	100000	4167	No Notes-from indicated USGS flows, assume normal operations	

Spearfish Creek-Hydro 1 Aqueduct Flows

Date	USGS		USGS Maurice (cfs)	Homestake Weir (cfs)	Hydro 1		Remarks
	Spearfish (cfs)	Power (kw)			Power (kwh)		
06/30/1998	110.00	185.00	146.25	96000	4000	No Notes-from indicated USGS flows, assume normal operations	
07/01/1998	107.00	186.00	142.50	101000	4208	No Notes-from indicated USGS flows, assume normal operations	
07/02/1998	97.00	180.00	152.60	86000	3583	No Notes-from indicated USGS flows, assume normal operations	
07/03/1998	95.00	ND	150.85	98000	4083	No Notes-from indicated USGS flows, assume normal operations	
07/04/1998	98.00	ND	152.60	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
07/05/1998	90.00	152.00	143.45	90000	3750	No Notes-from indicated USGS flows, assume normal operations	
07/06/1998	89.00	141.00	139.80	98000	4083	No Notes-from indicated USGS flows, assume normal operations	
07/07/1998	87.00	122.00	136.30	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
07/08/1998	86.00	127.00	131.85	97000	4042	No Notes-from indicated USGS flows, assume normal operations	
07/09/1998	82.00	134.00	140.75	91000	3792	No Notes-from indicated USGS flows, assume normal operations	
07/10/1998	84.00	138.00	138.05	94000	3917	No Notes-from indicated USGS flows, assume normal operations	
07/11/1998	89.00	140.00	152.60	96000	4000	No Notes-from indicated USGS flows, assume normal operations	
07/12/1998	87.00	141.00	153.55	96000	4000	No Notes-from indicated USGS flows, assume normal operations	
07/13/1998	82.00	135.00	147.15	96000	4000	No Notes-from indicated USGS flows, assume normal operations	
07/14/1998	84.00	132.00	141.60	94000	3917	No Notes-from indicated USGS flows, assume normal operations	
07/15/1998	75.00	128.00	141.60	94000	3917	No Notes-from indicated USGS flows, assume normal operations	
07/16/1998	78.00	127.00	138.04	94000	3917	No Notes-from indicated USGS flows, assume normal operations	
07/17/1998	79.00	129.00	132.75	93000	3875	No Notes-from indicated USGS flows, assume normal operations	
07/18/1998	93.00	128.00	130.10	91000	3792	No Notes-from indicated USGS flows, assume normal operations	
07/19/1998	90.00	127.00	126.50	89000	3708	No Notes-from indicated USGS flows, assume normal operations	
07/25/1998	87.00	122.00	125.65	94000	3917	No Notes-from indicated USGS flows, assume normal operations	
07/26/1998	85.00	116.00	124.75	89000	3708	No Notes-from indicated USGS flows, assume normal operations	
07/27/1998	82.00	113.00	123.80	92000	3833	No Notes-from indicated USGS flows, assume normal operations	
07/28/1998	86.00	113.00	117.75	116000	4833	No Notes-from indicated USGS flows, assume normal operations	
07/29/1998	84.00	124.00	122.90	61000	2542	No Notes-from indicated USGS flows, assume normal operations	
07/30/1998	94.00	121.00	131.00	85000	3542	No Notes-from indicated USGS flows, assume normal operations	
08/03/1998	92.00	130.00	127.35	83000	3458	No Notes-from indicated USGS flows, assume normal operations	
08/04/1998	92.00	146.00	125.65	109000	4542	No Notes-from indicated USGS flows, assume normal operations	
08/05/1998	94.00	141.00	122.90	90000	3750	No Notes-from indicated USGS flows, assume normal operations	
08/06/1998	108.00	132.00	148.05	89000	3708	No Notes-from indicated USGS flows, assume normal operations	
08/07/1998	96.00	128.00	133.60	96000	4000	No Notes-from indicated USGS flows, assume normal operations	
08/08/1998	91.00	126.00	128.25	89000	3708	No Notes-from indicated USGS flows, assume normal operations	
08/09/1998	94.00	127.00	126.50	76000	3167	No Notes-from indicated USGS flows, assume normal operations	
08/10/1998	98.00	131.00	132.75	86000	3583	No Notes-from indicated USGS flows, assume normal operations	
08/11/1998	104.00	132.00	152.60	108000	4500	No Notes-from indicated USGS flows, assume normal operations	
08/12/1998	113.00	129.00	156.35	86000	3583	No Notes-from indicated USGS flows, assume normal operations	
08/13/1998	119.00	130.00	155.40	98000	4083	No Notes-from indicated USGS flows, assume normal operations	
08/14/1998	110.00	127.00	149.90	116000	4833	No Notes-from indicated USGS flows, assume normal operations	
08/15/1998	108.00	127.00	147.15	86000	3583	No Notes-from indicated USGS flows, assume normal operations	

Spearfsh Creek-Hydro 1 Aqueduct Flows

04/13/2006

Date	USGS Spearfish		USGS Maurice		USGS Home Stake		Hydro 1		Remarks
	(cfs)	(cfs)	(cfs)	(cfs)	Weir (cfs)	Power (kw)	Power (kwh)		
08/16/1998	106.00	122.00	144.35	3750	No Notes-from indicated USGS flows, assume normal operations				
08/17/1998	107.00	122.00	138.90	3833	No Notes-from indicated USGS flows, assume normal operations				
No Maurice Data 8/18/1998-9/31/2001 Operated as a seasonal Peak Flow gage due to reduced funding									
10/25/1998	136.00	ND	Out	3013	Communication problems with phone lines to Maurice controls, kw comes from Kirk logs				
10/26/1998	130.00	ND	Out	3013	Communication problems with phone lines to Maurice controls, kw comes from Kirk logs				
10/27/1998	124.00	ND	Out	3013	Communication problems with phone lines to Maurice controls, kw comes from Kirk logs				
10/28/1998	124.00	ND	Out	3013	Communication problems with phone lines to Maurice controls, kw comes from Kirk logs				
10/29/1998	137.00	ND	Out	3013	Communication problems with phone lines to Maurice controls, kw comes from Kirk logs				
10/30/1998	132.00	ND	Out	3013	Communication problems with phone lines to Maurice controls, kw comes from Kirk logs				
10/31/1998	127.00	ND	Out	3013	Communication problems with phone lines to Maurice controls, kw comes from Kirk logs				
11/01/1998	124.00	ND	Out	3013	Communication problems with phone lines to Maurice controls, kw comes from Kirk logs				
11/02/1998	120.00	ND	Out	3013	Communication problems with phone lines to Maurice controls, kw comes from Kirk logs				
11/19/1998	120.00	ND	Out	3013	Communication problems with phone lines to Maurice controls, kw comes from Kirk logs				
06/11/1999	161.00	ND	161.90	3981	No Notes-from indicated USGS flows, assume normal operations				
06/12/1999	166.00	ND	161.90	3976	No Notes-from indicated USGS flows, assume normal operations				
06/13/1999	176.00	ND	161.90	3958	No Notes-from indicated USGS flows, assume normal operations				
06/14/1999	174.00	ND	161.90	3958	No Notes-from indicated USGS flows, assume normal operations				
06/15/1999	174.00	ND	161.90	3958	No Notes-from indicated USGS flows, assume normal operations				
06/16/1999	164.00	ND	161.90	3958	No Notes-from indicated USGS flows, assume normal operations				
06/17/1999	154.00	ND	161.90	3958	No Notes-from indicated USGS flows, assume normal operations				
06/18/1999	145.00	ND	161.90	3958	No Notes-from indicated USGS flows, assume normal operations				
06/19/1999	140.00	ND	161.90	3958	No Notes-from indicated USGS flows, assume normal operations				
06/20/1999	137.00	ND	161.90	3958	No Notes-from indicated USGS flows, assume normal operations				
06/21/1999	134.00	ND	161.90	3958	No Notes-from indicated USGS flows, assume normal operations				
06/22/1999	133.00	ND	161.90	3958	No Notes-from indicated USGS flows, assume normal operations				
06/23/1999	132.00	ND	161.90	3958	No Notes-from indicated USGS flows, assume normal operations				
06/24/1999	131.00	ND	161.90	3958	No Notes-from indicated USGS flows, assume normal operations				
06/25/1999	129.00	ND	161.90	3958	No Notes-from indicated USGS flows, assume normal operations				
06/26/1999	127.00	ND	161.90	3958	No Notes-from indicated USGS flows, assume normal operations				
06/27/1999	128.00	ND	161.90	3958	No Notes-from indicated USGS flows, assume normal operations				
06/28/1999	128.00	ND	161.90	3958	No Notes-from indicated USGS flows, assume normal operations				
06/29/1999	127.00	ND	161.90	3958	No Notes-from indicated USGS flows, assume normal operations				
06/30/1999	127.00	ND	161.90	3958	No Notes-from indicated USGS flows, assume normal operations				
07/01/1999	126.00	ND	161.90	3958	No Notes-from indicated USGS flows, assume normal operations				
07/02/1999	126.00	ND	161.90	3958	No Notes-from indicated USGS flows, assume normal operations				
07/03/1999	125.00	ND	161.90	3958	No Notes-from indicated USGS flows, assume normal operations				
07/04/1999	124.00	ND	Out	3958	Communication problems with phone lines to Maurice controls, kw comes from kirk logs				

Spearfish Creek-Hydro 1 Aqueduct Flows

04/13/2006

Date	USGS		USGS Maurice (cfs)	Homestake Weir (cfs)	Hydro 1		Remarks
	Spearfish (cfs)	Power (kw)			Power (kwh)		
07/05/1999	124.00	ND	ND	Out	95000	3958	Communication problems with phone lines to Maurice controls, kw comes from Kirk logs
07/06/1999	123.00	ND	ND	Out	95000	3958	Communication problems with phone lines to Maurice controls, kw comes from Kirk logs
07/07/1999	123.00	ND	ND	Out	95000	3958	Communication problems with phone lines to Maurice controls, kw comes from Kirk logs
07/08/1999	121.00	ND	ND	Out	95000	3958	Communication problems with phone lines to Maurice controls, kw comes from Kirk logs
07/09/1999	121.00	ND	ND	Out	95000	3958	Communication problems with phone lines to Maurice controls, kw comes from Kirk logs
07/10/1999	120.00	ND	ND	161.90	9500	396	No Notes-from indicated USGS flows, assume normal operations
08/01/1999	121.00	ND	ND	Out	93000	3875	
08/02/1999	122.00	ND	ND	Out	97992	4083	
08/04/1999	121.00	ND	ND	Out		0	Plant is down with Line problems
08/05/1999	121.00	ND	ND	Out		0	Plant is down with Line problems
08/06/1999	122.00	ND	ND	Out	37500	1563	
08/07/1999	121.00	ND	ND	Out	1008	42	Plant is down with Line problems
08/08/1999	120.00	ND	ND	Out	1008	42	Plant is down with Line problems
08/11/1999	120.00	ND	ND	Out	79008	3292	
04/19/2000	120.00	ND	ND	143.45	95184	3966	No Notes-from indicated USGS flows, assume normal operations
04/22/2000	123.00	ND	ND	161.90	95160	3965	No Notes-from indicated USGS flows, assume normal operations
04/23/2000	125.00	ND	ND	161.90	95040	3960	No Notes-from indicated USGS flows, assume normal operations
04/24/2000	125.00	ND	ND	161.90	95040	3960	No Notes-from indicated USGS flows, assume normal operations
04/25/2000	133.00	ND	ND	161.90	95040	3960	No Notes-from indicated USGS flows, assume normal operations
04/26/2000	147.00	ND	ND	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations
04/27/2000	143.00	ND	ND	161.90	95928	3997	No Notes-from indicated USGS flows, assume normal operations
04/28/2000	134.00	ND	ND	161.90	95760	3990	No Notes-from indicated USGS flows, assume normal operations
04/29/2000	135.00	ND	ND	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations
04/30/2000	127.00	ND	ND	161.90	95852	3994	No Notes-from indicated USGS flows, assume normal operations
05/11/2000	120.00	ND	ND	Out	95760	3990	No Notes-from indicated USGS flows, assume normal operations
05/12/2000	125.00	ND	ND	161.90	96120	4005	No Notes-from indicated USGS flows, assume normal operations
04/07/2001	117.00	ND	ND	153.50	38480	1603	No Notes-from indicated USGS flows, assume normal operations
09/19/2002	123.00	82.00	82.00	80.25	88992	3708	No Notes-from indicated USGS flows, assume normal operations
06/07/2003							Load dispatchers were laid off and records were kept in the scada system. Unable to locate records.
06/30/2004	42.00	50.00	50.00			1850	No flow at 120-cfs or higher for year. Records now recorded at Hydro 1.
06/27/2005	49.00	52.00	52.00			2200	No flow at 120-cfs or higher for year. Records now recorded at Hydro 1.
							ND=No Data Available
							Data for the years 1912 through 1946 were taken from Homestake records using the date with the highest flow for the respective year. Only one day for each year was selected.

Hydro1weir-kwh.rpt

=====
Straight Line: $y=ax+b$

Data File Name: C:\Documents and Settings\Don\My Documents\Hydro1weir-kwh.pdw

=====
X column -> HMC weir
Y column -> kwh
Number of used data points: 685

a= 13.26584361
b= 1858.15908599
Sum Sqrs= 130590473.591
StdDev= 437.26568474

Covariance Matrix

cvm[1,1]= 0.0000013956
cvm[1,2]= -0.00020398434
cvm[2,2]= 0.0312746699

Goodness of Fit Statistics ...

R-Sq r2: 0.49124918
Correlation: 0.70089171

Parameter Statistics

Parameter a: 13.26584361
StdErr: 0.51656641
StdDev: 0.00118135593

Parameter b: 1858.15908599
StdErr: 77.32888776
StdDev: 0.176846458

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----Created with PSI-Plot
----Thu Jan 12 12:58:39 2006
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Permit No.	Irrigation Ditch	Priority Date	Diversion Rate (cfs)
1392-1	Mann	03/21/1878	1.45
1403-1	Ramsdell	10/01/1876	2.00
1400-1	Owens-Gay	03/01/1877	2.30
1386-1	Walton-Schuler	03/20/1877	8.50
1387-1	Tonn-Evans	05/01/1876	14.40
1389-1	Cook	05/01/1876	21.60
1388-1	Bowman	06/11/1877	8.00
1394-1	Kemper	07/31/1885	24.00
1399-1	Cook-Burns	06/15/1881	17.80
	Total		100.05

References

Mining and Engineering World, July 1914. The Hydro-Electric Power Plant of the Homestake Mining Co., Richard Blackstone, Chief Engineer and Assistant Superintendent Homestake Mining Co.

Water-Resources Investigations Report 98-4116, Streamflow Losses in the Black Hills of Western South Dakota. U.S. Department of the Interior, Geological Survey, 1998.

State of South Dakota, Department of Environment and Natural Resources, Water Rights Program Records

PSI-Plot, Poly Software International

STATE OF SOUTH DAKOTA)
) SS
COUNTY OF LAWRENCE)

IN CIRCUIT COURT
FOURTH JUDICIAL CIRCUIT

KEITH D. WILLIAMSON and)
DIANNA L. WILLIAMSON,)

File No. _____

Plaintiffs,)

v.)

COMPLAINT

CITY OF SPEARFISH, HOMESTAKE)
MINING COMPANY, INC., and)
SOUTH DAKOTA DEPARTMENT OF)
ENVIRONMENT & NATURAL)
RESOURCES, WATER)
MANAGEMENT BOARD,)

Defendants.)

Plaintiffs allege:

1. Plaintiffs are residents of Loveland, Colorado, who own real property adjacent to Spearfish Creek in Lawrence County, South Dakota. Plaintiffs claim a right to the domestic use of water from Spearfish Creek.

2. Defendants, City of Spearfish and South Dakota Water Management Board, are political subdivisions of the State of South Dakota. Defendant, Homestake Mining Company, Inc., was at all times material hereto a California corporation doing business in the State of South Dakota.

3. This action is for declaratory and injunctive relief only and no claim for monetary damages is being pursued hereunder.

4. Homestake Mining Company was the owner of Water License No. 43 1 which authorized the beneficial use of 120 cubic feet per second from the water from Spearfish Creek for the purpose of the development of power for electrical transmission

to the company's works at Lead City. That said Water License carried a priority date of January 4, 1909.

5. That Water License No. 43-1 has never been administratively or judicially determined to be valid and enforceable by the State of South Dakota.

6. That at no time has Homestake Mining Company utilized the quantity of water authorized by Water License No. 43-1.

7. That Homestake Mining Company has abandoned its rights under Water License No. 43-1 by its failure to use such water for beneficial purposes as required by law.

8. That Homestake Mining Company's water rights under Water License No 43-1 have been forfeited as provided by law.

9. That Homestake Mining Company has failed to properly maintain its diversion works and has committed waste.

10. That on or about May 3, 2004, Homestake Mining Company sold or conveyed its right, title and interest in Water License No. 43-1 to the City of Spearfish.

11. That this transfer was made with no formal hearing and approval by the Defendant South Dakota Department of Environment and Natural Resources, Water Management Board. Moreover no notice of attempted transfer was given to the Plaintiffs or other interested parties.

12. That any water right claimed by Homestake Mining Company and its successors in interest is limited to that amount put to beneficial use.

13. That the transfer of water between Homestake Mining Company and the City of Spearfish is not in the best interests of the citizens of the State of South Dakota, and is contrary to the laws of the State of South Dakota

WHEREFORE, Plaintiffs pray for judgment as follows:

- A. That the Court determine and declare the rights of the parties under Water License No. 43-1;
- B. That the Court enjoin the use of water by the Defendant City of Spearfish, which is inconsistent with the laws of the State of South Dakota;
- C. That the Court order the South Dakota Department of Environment and Natural Resources, Water Management Board to conduct a hearing on the legality of any transfer between Homestake Mining Company and the City of Spearfish;
- D. For their costs and disbursements herein, and
- E. For such other and further relief as the Court deems just and equitable under the circumstances.

BANGS, McCULLEN, BUTLER,
FOYE & SIMMONS, L.L.P.

BY: _____

MICHAEL M. HICKEY
Attorneys for Plaintiffs
818 St. Joseph Street, P.O. Box 2670
Rapid City, SD 57709-2670
(605) 343-1040

CERTIFICATE OF SERVICE


The undersigned hereby certifies that he served copies of this legal document upon the persons herein next designated, all on the date below shown, by depositing copies thereof in the United States mail at Rapid City, South Dakota, postage prepaid, in envelopes addressed to said addressees, to wit:

Mr. Max S. Main
Bennett, Main & Grubbrud
618 State Street
Belle Fourche, SD 57717

Ms. Diane Best
Attorney General's Office
1302 East Hwy. 13, #1
Pierre, SD 57501-8501

which are the last addresses of the addressees known to the subscriber.

Dated this 25th day of July, 2007.


MICHAEL M. HICKEY

STATE OF SOUTH DAKOTA	)	IN CIRCUIT COURT
)	
COUNTY OF LAWRENCE	) SS.	FOURTH JUDICIAL DISTRICT
)	
KEITH D. WILLIAMSON and)	
DIANNA L. WILLIAMSON,)	
	)	Civ. Case No. 05-114
Plaintiffs,)	
)	
vs.)	
)	
CITY OF SPEARFISH,)	
HOMESTAKE MINING COMPANY,	)	ORDER
INC., and SOUTH DAKOTA)	
DEPARTMENT OF)	
ENVIRONMENT & NATURAL)	
RESOURCES, WATER)	
MANAGEMENT BOARD,)	
)	
Defendants.)	

The motion to dismiss by the City of Spearfish ("City") came on regularly to be heard before this Court on April 29, 2005, in the Lawrence County Courthouse in Deadwood, South Dakota. Attorneys Max Main and Wade Nyberg appeared personally for City, Attorney Michael M. Hickey appeared personally for the plaintiffs, and Assistant Attorney General John P. Guhin appeared telephonically for defendant Water Management Board. The Court having considered the pleadings and papers on file herein, and the arguments of counsel, and good cause appearing therefore, it is hereby

ORDERED, that the City's Rule 12(b)(5) motion to dismiss plaintiffs' claim for notice of and a hearing on the transfer of Water License No. 43-1 from Homestake Mining Company of California to the City be, and the same hereby is, granted. Such claim fails to state a claim upon which relief can be granted; and it is further

ORDERED, that plaintiffs must exhaust their available administrative remedies as to all other claims alleged in their complaint by filing with the Chief Engineer of the

FILED
MAY 16 2005
SOUTH DAKOTA UNIFIED JUDICIAL SYSTEM
4TH CIRCUIT CLERK OF COURT

By _____

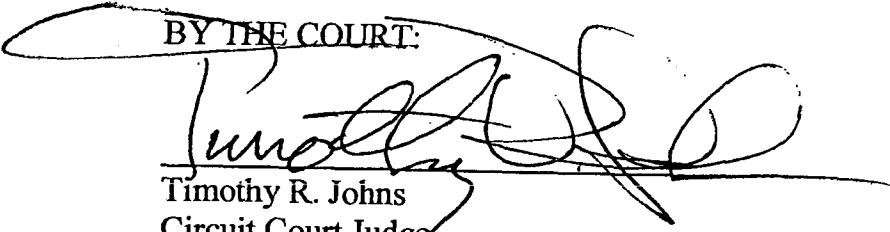
Williamson v. City of Spearfish, et al / ORDER

South Dakota Water Rights Program a petition requesting an investigation of Water License No. 43-1; and it is further

ORDERED, that the Court retains jurisdiction over this matter consistent with the terms of this Order.

DATED this 16th day of May, 2005.

BY THE COURT:


Timothy R. Johns
Circuit Court Judge

ATTEST:


Clerk of Courts

(CLERK'S SEAL)

FILED

MAY 16 2005

SOUTH DAKOTA UNIFIED JUDICIAL SYSTEM
4TH CIRCUIT CLERK OF COURT

By _____

STATE OF SOUTH DAKOTA)
) SS
COUNTY OF LAWRENCE)

IN CIRCUIT COURT
FOURTH JUDICIAL CIRCUIT

KEITH D. WILLIAMSON and)
DIANNA L. WILLIAMSON,)
)
Plaintiffs,)

File No. _____

vs.)

SUMMONS

CITY OF SPEARFISH, HOMESTAKE)
MINING COMPANY, INC., and)
SOUTH DAKOTA DEPARTMENT OF)
ENVIRONMENT & NATURAL)
RESOURCES, WATER)
MANAGEMENT BOARD.)
)
Defendants.)

THE STATE OF SOUTH DAKOTA SENDS GREETINGS TO THE DEFENDANTS ABOVE NAMED:

You are hereby summoned and required to answer the Complaint of the above-named Plaintiffs, a copy of which is served herewith, and to serve a copy of your answer upon the undersigned at their law offices in the City of Rapid City, Pennington County, South Dakota, within thirty (30) days after the service of this Summons upon you, exclusive of the date of such service; and, if you fail to so answer as above required, judgment by default may be rendered against you for the relief demanded in said Complaint.

BANGS, McCULLEN, BUTLER,
FOYE & SIMMONS, L.L.P.

BY: _____
MICHAEL M. HICKEY
Attorneys for Plaintiffs
818 St. Joseph Street; P.O. Box 2670
Rapid City, SD 57709-2670
(605) 343 1040

Attorney General

770609

MAY 18 2005

DB ✓
JPG

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BELLE FOURCHE, SOUTH DAKOTA 57717-1489
TEL (605) 892-2011
FAX (605) 892-4084
EMAIL: bellelaw@bellelaw.com

MAX MAIN*
DWIGHT A. GUBBRUD
WADE NYBERG
*ALSO LICENSED IN WYOMING

EST. 1908

RETIRED
DONN BENNETT

May 17, 2005

COPY

Michael M. Hickey
Attorneys at Law
P.O. Box 2670
Rapid City, SD 57709-2670

John P. Guhin
Assistant Attorney General
500 East Capitol
Pierre, SD 57501

RECEIVED
MAY 20 2005
WATER RIGHTS
PROGRAM

RE: Williamsons v. Spearfish, et al.; Lawrence County Civ. No. 05-114.

Dear Mike and John:

Enclosed for each of you is a copy of a Notice of Entry of Order. This is intended as service by mail upon you.

Sincerely,

BENNETT, MAIN & GUBBRUD, P.C.



Max Main

MM/ra

Enc.

cc (w/Enc.): E. James Hood
Diane Best ✓

STATE OF SOUTH DAKOTA

DRAFT IN CIRCUIT COURT

) SS.

COUNTY OF LAWRENCE

)

FOURTH JUDICIAL DISTRICT

KEITH D. WILLIAMSON and
DIANNA L. WILLIAMSON,

)

)

Plaintiffs,

)

)

Civ. Case No. 05-114

vs.

)

)

CITY OF SPEARFISH,
HOMESTAKE MINING COMPANY,
INC., and SOUTH DAKOTA
DEPARTMENT OF
ENVIRONMENT & NATURAL
RESOURCES, WATER
MANAGEMENT BOARD,

)

)

)

)

)

)

)

)

)

Defendants.

)

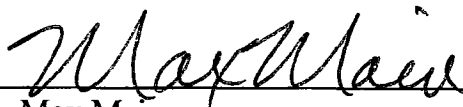
NOTICE OF ENTRY OF
ORDER

TO: KEITH D. WILLIAMSON and DIANNA L. WILLIAMSON, Plaintiffs, and their attorney, MICHAEL M. HICKEY.

YOU ARE HEREBY NOTIFIED that on May 16, 2005, the Circuit Court of Lawrence County, South Dakota entered its ORDER in the above-captioned action. A true and correct copy of the said Order is attached hereto and incorporated herein by this reference. The Order was filed with the Clerk of Courts of Lawrence County, South Dakota on the 16th day of May, 2005.

BENNETT, MAIN & GUBBRUD, P.C.
Attorneys for defendant City of Spearfish

By



Max Main
618 State Street
Belle Fourche, SD 57717-1489
605.892.2011

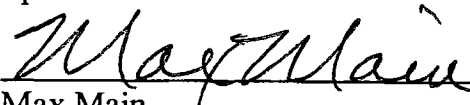
CERTIFICATE OF SERVICE

I, MAX MAIN, one of the attorneys for City of Spearfish, do hereby certify that on the 17th day of May, 2005, I caused full, true, and complete copies of the NOTICE OF ENTRY OF ORDER to be served upon the following named persons at their last known mailing addresses, as follows:

Michael M. Hickey
Attorney at Law
P. O. Box 2670
Rapid City, SD 57709-2670

John P. Guhin
Assistant Attorney General
500 East Capitol
Pierre, SD 57501

by depositing the same in the United States Mail in Belle Fourche, South Dakota with first class postage thereon fully prepaid, in envelopes addressed as above.


Max Main

Bangs McCullen Law Firm

Bangs, McCullen, Butler, Foye & Simmons, L.L.P.

Rapid City

Thomas H. Foye
Thomas E. Simmons
Charles L. Riter
Allen G. Nelson
James P. Hurley
Michael M. Hickey
Terry L. Hofer
Rod Schlauger
Daniel F. Duffy
Jeffrey G. Hurd
John H. Raforth
Terry G. Westergaard
Steven R. Nolan
Gregory J. Erlandson
Eric J. Pickar
Sara L. Larson

Sioux Falls

Michael A. Hauck
John P. Mullen
Brian K. Kirby
Victoria M. Duehr
Kara C. Van Bockern
Patrick J. Knecht

Attorneys also admitted in
Nebraska, North Dakota,
Iowa and Minnesota.

Trust Building
818 St. Joseph Street
P.O. Box 2670
Rapid City, SD 57709-2670
605-343-1040
Fax: 605-343-1503

Security Bank Building
100 N. Phillips Ave.
Suite 610
P.O. Box 949
Sioux Falls, SD 57101-0949
605-339-6800
Fax: 605-339-6801

www.bangsmccullen.com

Reply to Rapid City Office

Writer's e-mail address: mhickey@bangsmccullen.com

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OCT - 6 2005

WATER RIGHTS
PROGRAM

October 4, 2005

Garland Erbele
Chief Engineer
Water Rights Program
Department of Environment and Natural Resources
Joe Foss Building
523 E. Capitol
Pierre, SD 57501-3182

Re: Water License 43-1

Dear Mr. Erbele:

In accordance with the provisions of SDCL 46-5-37.1 and the decision of Judge Johns, this is to request that your office conduct an investigation and issue a report concerning the validity and extent of this license and the permit holder's compliance with the rules, regulations and laws relating to water rights.

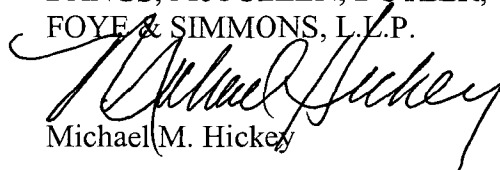
In addition, it is our belief and position that the purported transfer of the water license between Homestake Mining Company and the City of Spearfish was improper and should be set aside.

Please contact my office prior to the time your office intends to inspect the diversion system and the hydroelectric plant, as I would like our expert to accompany your staff members during any such inspection.

Thank you for your cooperation. If you have any questions or need any additional information, please advise.

Sincerely,

BANGS, McCULLEN, BUTLER,
FOYE & SIMMONS, L.L.P.



Michael M. Hickey

MMH:bjc
cc: Client

Attorney General
275442
OCT 14 2005

LAW OFFICES OF
BENNETT, MAIN & GUBBRUD
A PROFESSIONAL CORPORATION
618 STATE STREET
BELLE FOURCHE, SOUTH DAKOTA 57717-1489
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MAX MAIN*
DWIGHT A. GUBBRUD
WADE NYBERG*
*ALSO LICENBED IN WYOMING

EST. 1908

RETIRED
DONN BENNETT

October 13, 2005

Diane Best, Assistant Attorney General
Office of the Attorney General
500 East Capitol Ave.
Pierre, SD 57501-5070

RE: City of Spearfish; Water License 43-1.

Dear Diane:

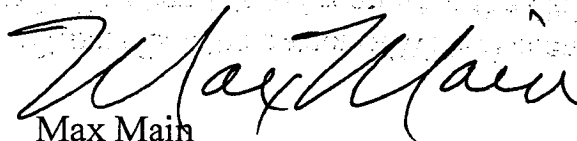
As you are aware, I represent the City of Spearfish, the owner of Water License 43-1. I have received a copy of Mike Hickey's October 4, 2005 request to the Chief Engineer to investigate Water License 43-1. In his letter, Mr. Hickey states that he would like his expert to accompany DENR staff members on an inspection of the diversion system and Hydro No. 1. The City does not give its consent for Mr. Hickey's expert to accompany DENR staff members. Mr. Hickey should contact me regarding any inspection by his expert of City property.

Please consider this letter to be a notice of appearance in this matter for myself and Jim Hood on behalf of the City of Spearfish. We request that we be copied on all pertinent correspondence and documents.

Thank you for your assistance, and please let me know if you have any questions.

Sincerely,

BENNETT, MAIN & GUBBRUD, P.C.


Max Main

MM/njo
cc: Jim Hood

**LAW OFFICES OF
BENNETT, MAIN & GUBBRUD**

A PROFESSIONAL CORPORATION

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EST. 1908

MAX MAIN*
DWIGHT A. GUBBRUD
WADE NYBERG*
*ALSO LICENSED IN WYOMING

Attorney General

OCT 31 2005

RETIRED
DONN BENNETT

October 28, 2005

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NOV - 1 2005

WATER RIGHTS
PROGRAM

Diane Best, Assistant Attorney General
Office of the Attorney General
500 East Capitol Ave.
Pierre, SD 57501-5070

RE: City of Spearfish; Water License 43-1.

Dear Diane:

I received your October 27 letter. After my October 13 letter to you, I spoke by telephone with Mike Hickey and confirmed with him that the City prefers that the Chief Engineer's investigation pursuant to SDCL 46-5-37.1 be conducted independently by the Water Rights Program, without the accompaniment of possibly adversarial experts or other persons. If, at a later date, Mr. Hickey's expert needs access to the premises, we will do our best to accommodate him.

Thank you for your assistance, and please let me know if you have any questions.

Sincerely,

BENNETT, MAIN & GUBBRUD, P.C.



Max Main

MM/njo

cc: Mike Hickey
Jim Hood



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

November 15, 2005

Cheryl Johnson, Public Works Director
City of Spearfish
625 5th Street
Spearfish SD 57783

Dear Ms. Johnson:

Thank you for meeting with Water Rights staff to discuss the investigation of Water Right No. 43-1, Hydro Plant No. 1. We found the meeting and inspection of the facility beneficial. The investigation of the water right is being initiated as a result of a request from Michael Hickey to determine if the water right is subject to abandonment or forfeiture. I am requesting the city's assistance by providing information on the configuration of the system and past power production.

Specifically, copies of plan drawings and specifications of the intake, tunnel, forebay, penstocks and generators. Reference elevations in feet mean seal level or to a local datum are also necessary to determine slopes and head. This information will be used to calculate the system's capacity. In addition, I request a copy of any prior engineering studies conducted by Homestake or consultant that provides system capacity of the hydropower facility.

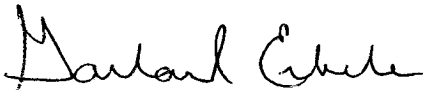
The city indicated that the past power production records are available at Barrick's facilities in Lead. We agreed to provide you dates and in turn the city will compile the power production records to the best of its ability. For each day, the total power production and conversion to cubic feet of water per second is requested. The following provides lists of the dates.

- The date each year on the attached "Peak Streamflow for South Dakota" for the USGS gage at Spearfish (period of record 1947 through 2004).
- The date each year on the attached "Peak Streamflow for South Dakota" for the USGS gage above Spearfish (period of record 1989 through 2004).
- The power production records for the peak day during the month of May for each year from 1909 to 1946.

- The power production records for the dates on the enclosed list when flow in Spearfish Creek is near the 120 cfs authorized by Water Right No. 43-1.
- The formula used to calculate flow based on power production records. It is our understanding that as efficiencies changed this formula changes accordingly. This will require knowing dates when efficiencies were implemented.
- A representative copy of a day power production record is requested.

Please contact Don Stroup at 773-3352 if there are questions on the requested information and to coordinate when Spearfish personnel plan to review of Homestake's records. Don would like to accompany them to view the records.

Sincerely,



Garland Erbele, Chief Engineer
Water Rights Program, DENR

Enclosure

C: Diane Best, Assistant Attorney
Max Main, 618 State Street, Belle Fourche SD 57717

Dates by Year when Spearfish Creek flows were near 120 cfs

DATE	FLOW (cfs)
June 27, 1947	127
May 6, 1949	144
May 27, 1952	123
May 8, 1953	126
June 12, 1955	136
May 30, 1962	130
May 5, 1963	124
June 25, 1964	120
June 5, 1965	124
June 15, 1967	124
May 8, 1969	133
April 29, 1970	122
May 18, 1971	121
May 11, 1972	123
June 10, 1973	122
May 5, 1975	120
June 25, 1976	120
May 6, 1977	125
May 5, 1978	122
June 10, 1982	121
June 2, 1983	120
June 26, 1984	121
May 9, 1994	122
June 2, 1995	120
June 8, 1996	121
April 5, 1997	120
October 22, 1998	120
August 8, 1999	120
April 19, 2000	120
September 19, 2002	123
June 7, 2003	122



Water Resources

Data Category:
Surface Water

Geographic Area:
South Dakota

go

Peak Streamflow for South Dakota

USGS 06431500 SPEARFISH CR AT SPEARFISH,SD

Available data for this site | [Site home page](#)

GO

Lawrence County, South Dakota Hydrologic Unit Code 10120203 Latitude 44°28'57", Longitude 103°51'40" NAD27 Drainage area 168.00 square miles Gage datum 3,640.00 feet above sea level NGVD29				Output formats			
				Table			
				Graph			
				Tab-separated file			
				WATSTORE formatted file			
				Reselect output format			
Water Year	Date	Gage Height (feet)	Stream-flow (cfs)	Water Year	Date	Gage Height (feet)	Stream-flow (cfs)
1904	Jun. 05, 1904		5,000 ⁷	1975	May 07, 1975		143 ^{1,6}
1947	Jun. 22, 1947	6.73	891 ⁶	1976	Jun. 15, 1976	10.54	3,870 ⁶
1948	Jun. 24, 1948	5.89	417 ⁶	1977	May 02, 1977	5.65	167 ⁶
1949	May 06, 1949	5.32	176 ⁶	1978	May 11, 1978	5.92	230 ⁶
1950	May 22, 1950	5.09	116 ⁶	1979	Aug. 07, 1979	5.73	182 ⁶
1951	Jun. 17, 1951	5.37	215 ⁶	1980	Apr. 21, 1980	5.35	85.0 ⁶
1952	May 22, 1952	6.81	947 ⁶	1981	Jul. 01, 1981	5.49	102 ⁶
1953	Jun. 19, 1953	5.56	301 ⁶	1982	May 22, 1982	8.81	2,110 ⁶
1954	May 30, 1954	5.15	147 ⁶	1983	May 08, 1983	7.66	500 ⁶
1955	Jun. 11, 1955	5.20	181 ⁶	1984	Jun. 17, 1984	7.31	285 ⁶
1956	Jul. 16, 1956	5.61	300 ⁶	1985	Apr. 17, 1985	6.59	89.0 ⁶
1957	Jul. 14, 1957	5.22	158 ⁶	1986	Apr. 28, 1986	6.66	104 ⁶
1958	Jul. 03, 1958	6.23	571 ⁶	1987	Apr. 18, 1987	6.64	86.0 ⁶
1959	May 04, 1959	4.95	83.0 ⁶	1988	May 14, 1988	6.75	118 ⁶
1960	May 10, 1960	5.02	86.0 ⁶	1989	May 09, 1989	6.66	106 ⁶
1961	Nov. 15, 1960	5.07	100 ⁶	1990	May 05, 1990	6.62	82.0 ⁶
1962	May 22, 1962	6.64	830 ⁶	1991	May 22, 1991	6.69	106 ⁶

1963	Apr. 29, 1963	6.47	662 ⁶	1992	Apr. 29, 1992	6.57	70.0 ⁶
1964	Jun. 09, 1964	7.97	3,040 ⁶	1993	Jun. 08, 1993	6.69	100 ⁶
1965	May 15, 1965	10.53	4,240 ⁶	1994	Apr. 25, 1994	6.90	175 ⁶
1966	Apr. 17, 1966	6.47	112 ⁶	1995	May 08, 1995	10.11	1,900 ⁶
1967	Jun. 16, 1967	7.02	230 ⁶	1996	May 30, 1996	7.19	204 ⁶
1968	Jun. 25, 1968	6.60	106 ⁶	1997	May 08, 1997	7.67	322 ⁶
1969	May 15, 1969	7.71	466 ⁶	1998	Jun. 18, 1998	8.84	899 ⁶
1970	Jun. 12, 1970	8.21	884 ⁶	1999	Jun. 13, 1999	7.12	187 ⁶
1971	May 10, 1971	6.85	234 ⁶	2000	Apr. 26, 2000	6.96	152 ⁶
1972	May 13, 1972	6.74	163 ⁶	2001	Apr. 07, 2001	6.79	117 ⁶
1973	May 31, 1973	7.09	287 ⁶	2002	Sep. 18, 2002	7.05	171 ⁶
1974	Jan. 01, 1974	7.29	175 ⁶	2003	Jun. 07, 2003	7.25	209 ⁶
				2004	Jul. 05, 2004	6.73	75 ⁶

■ Peak Streamflow Qualification Codes.

- 1 -- Discharge is a Maximum Daily Average
- 6 -- Discharge affected by Regulation or Diversion
- 7 -- Discharge is an Historic Peak

Questions about data [South Dakota NWISWeb Data Inquiries](#)
 Feedback on this website [South Dakota NWISWeb Maintainer](#)
 Surface Water for South Dakota: Peak Streamflow
<http://waterdata.usgs.gov/sd/nwis/peak?>

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 1.16 1.15 nadww01



Water Resources

Data Category:
Surface Water

Geographic Area:
South Dakota

go

Peak Streamflow for South Dakota

USGS 06430900 SPEARFISH CREEK ABOVE SPEARFISH, SD

Available data for this site | [Site home page](#)

GO

Lawrence County, South Dakota Hydrologic Unit Code 10120203 Latitude 44°24'06", Longitude 103°53'40" NAD27 Drainage area 139.0 square miles Contributing drainage area 139.0 square miles Gage datum 4,440.0 feet above sea level NGVD29				Output formats <input type="checkbox"/> Table <input type="checkbox"/> Graph <input type="checkbox"/> Tab-separated file <input type="checkbox"/> WATSTORE formatted file <input type="checkbox"/> Reselect output format																																																																					
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Peak Streamflow Qualification Codes.

- 2 -- Discharge is an Estimate
- 6 -- Discharge affected by Regulation or Diversion

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 Surface Water for South Dakota: Peak Streamflow
<http://waterdata.usgs.gov/sd/nwis/peak?>

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Spearfish Hydro Flow Test Date 12-9-2005

Metered Kw	PF	cfs	psi	Two Generators Running	Kw per cfs	% of rated full load	% of Water rights
Two Generators Running #2 unit being measured							
2190	1	60	277	36.50	109.50%	50.00%	
2092	1	54.47	277	38.41	104.60%	45.39%	
2015	1	51.02	278	39.49	100.75%	42.52%	
1890	1	47.54	278	39.76	94.50%	39.62%	
1809	1	46.13	279	39.22	90.45%	38.44%	
1709	1	43.05	279	39.70	85.45%	35.88%	
1615	0.99	40.09	280	40.28	80.75%	33.41%	
1515	0.99	38.2	280	39.66	75.75%	31.83%	
1399	0.99	36.21	279	38.64	69.95%	30.18%	
1302	0.99	34.5	289	37.74	65.10%	28.75%	
1213	0.97	33.2	280	36.54	60.65%	27.67%	
1109	0.95	30.54	280	36.31	55.45%	25.45%	
1000	1	27.7	279	36.10	50.00%	23.08%	
895	1	24.87	279	35.99	44.75%	20.73%	
814	1	22.64	279	35.95	40.70%	18.87%	
				avg. kw per cfs	38.02		

This table shows the flow test with one generator being measured

Generator #2 was tested, flow was measured in app 100 kw steps. each step was charted with the flow through the flowmeter

This table shows that the water flow through one generator requires 60 cfs (50% of water rights) to reach the 2000kw rating of generation
Thus showing if water flows are at 120 cfs (100% total water rights) then we could generate 2000kw per generator or 4000kw plant total

Note: 38 Kw = 1 cfs



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

June 2, 2006

Mr. Michael Hickey
Bangs McCullen Law Firm
PO Box 2670
Rapid City, SD 57709-2670

Mayor Jerry Krambeck
City of Spearfish
625 5th Street
Spearfish, SD 57783

Mr. Max Main
Bennett, Main & Gubbrud
618 St Street
Belle Fourche, SD 57717

Dear Sirs:

Enclosed please find a copy of a report on the investigation and analysis of Water Right No. 43-1. This report was completed by the staff of the Water Rights Program, DENR, at the request of Mr. Hickey.

The report concludes that Water Right No. 43-1 is valid and not subject to abandonment or forfeiture and that there is no basis for the cancellation of this right. In the matter of the transfer of the water right, the court order dismissed the plaintiff's claim for notice of and hearing on the transfer. The filing and subsequent transfer of Water Rights 43-1 was a legal transfer and met the requirements of the law.

If you have any questions concerning the report please contact us at 773-3352.

Thank you.

Sincerely,

A handwritten signature in black ink that reads "Garland Erbele".

Garland Erbele, Chief Engineer
Water Rights Program

Encl.

Cc: Diane Best, Assistant Attorney General

Investigative Report
Water Right No. 43-1

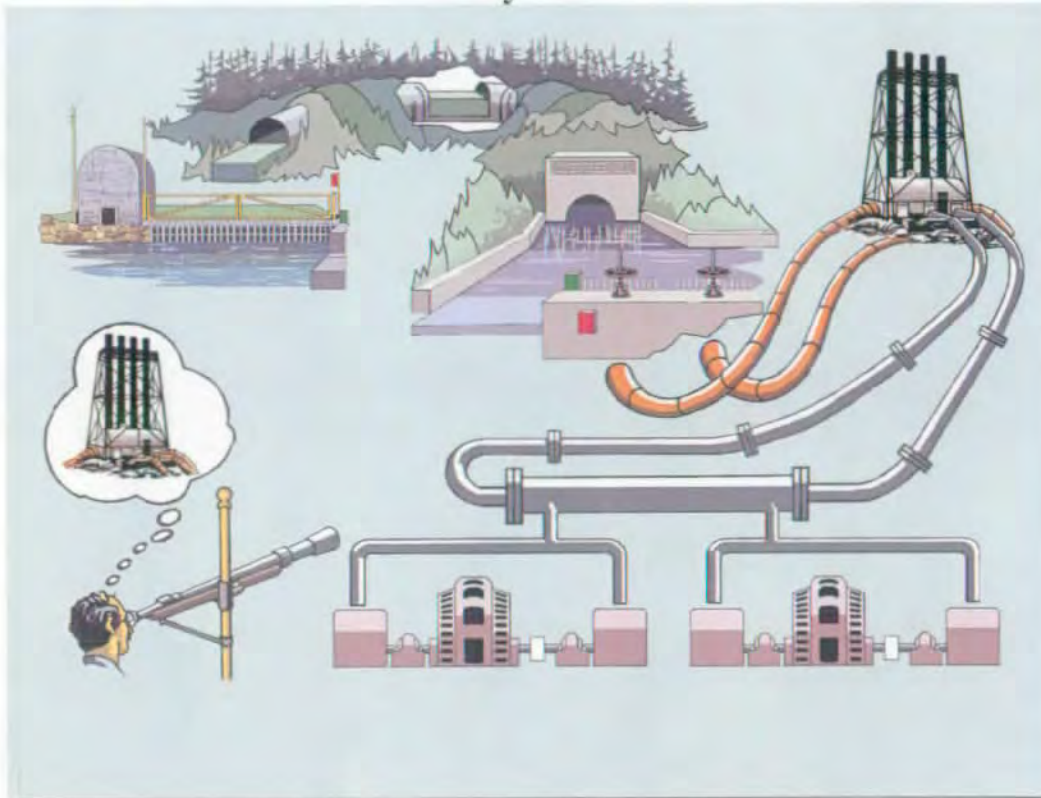


Spearfish Canyon Hydroelectric Power Plant No. 1

Prepared by

State of South Dakota
Department of Environment and Natural Resources
Water Rights Program

May 2006



Garland Erbele, Chief Engineer
Water Rights Program

Contents

Title	Page
Introduction -----	5
Hydroelectric Power Plant No. 1 System-----	5
Licensing and Transfer of Water Right No. 43-1-----	5
Notice of Entry of Order-----	6
Applicable Water Right/Permit -Statutes and Rules -----	7
On-Site Examination -----	8
U.S. Geological Survey Maurice Gaging Station-----	8
Maurice Dam-----	8
Weir Measurements-----	9
Aqueduct-----	10
Aqueduct Capacity-----	10
Forebay Dam-----	11
Collection Cylinder and Standpipes-----	12
Powerhouse-----	12
Historical Records and Data Analysis -----	15
Records Review-----	15
Spearfish Creek-----	16
Analysis of Transfer of Water Right 43-1 -----	21
Conclusions -----	22
Figures	
Spearfish Canyon-----	4
Maurice Dam Weir-----	9
Spearfish Creek Aqueduct Flow-----	11
Generator No. 2 Measured Output-----	14
Lower Spearfish Canyon Geological Setting-----	17
Spearfish Creek Maurice Hydrograph-----	19
Spearfish Creek Spearfish Hydrograph-----	20
Photographs	
USGS Maurice Gage. Data Transmitter Site-----	8
USGS Maurice Gage. Sensor Location Site-----	8
Maurice Dam. Diversion Grates-----	10
Maurice Dam. Diversion Gate Controls-----	10
Aqueduct. Interior-----	10
Forebay Dam. Entrance Portal-----	12
Forebay Dam. Outflow Trash Grates-----	12
Cylinder and Standpipes-----	12
Pelton Wheel and Nozzle-----	13
Pelton Wheel and Generator-----	13
Powerhouse-----	13
Powerhouse. Water Return-----	13
Powerhouse. Generator and Pelton Wheels-----	14

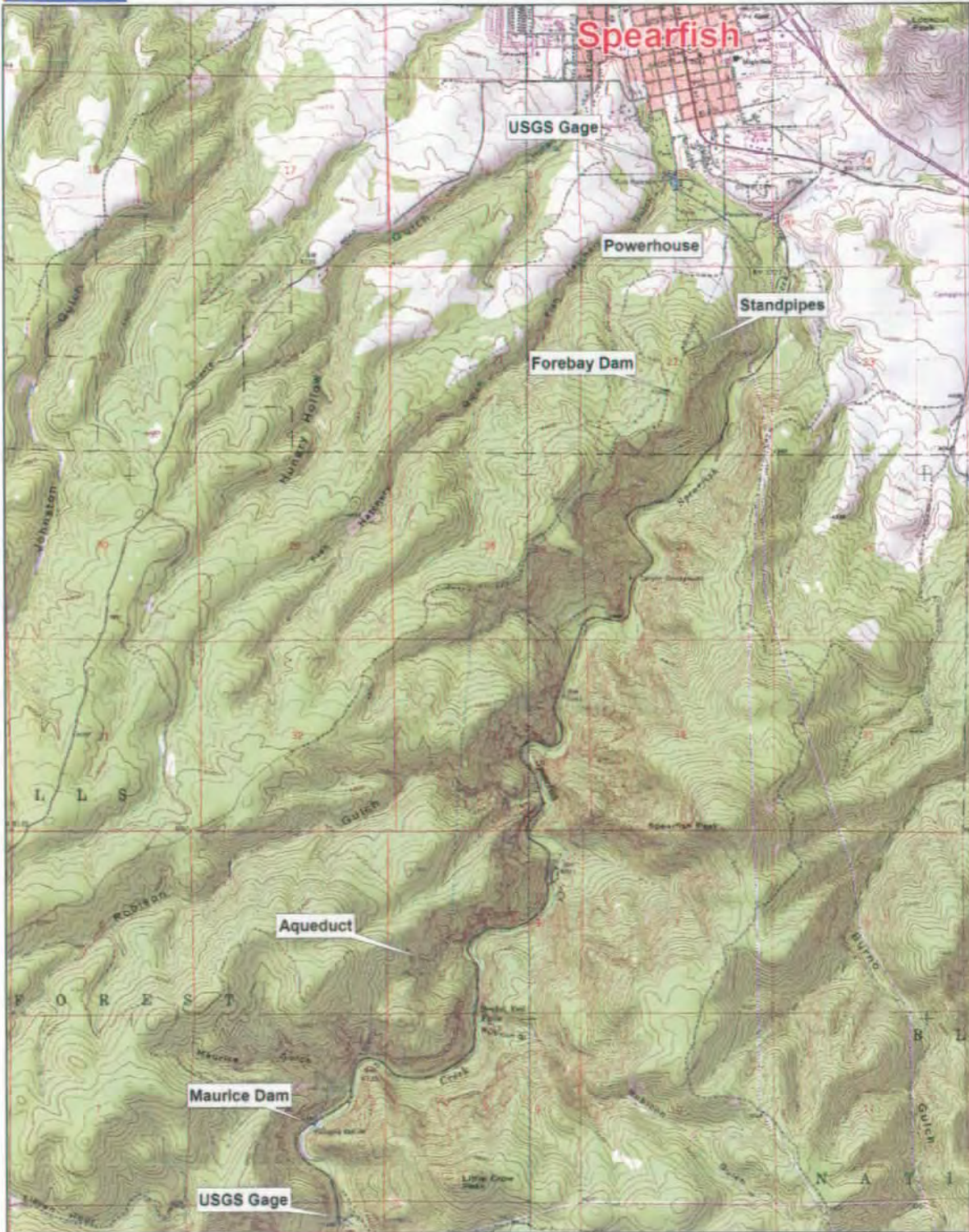
Powerhouse. System Monitor-----	14
Logbook-----	15
Logbook. Production Record-----	15
Logbook. Stream Flow Footnote-----	15
Logbook. Stream Flow Footnote-----	15

Glossary -----	23
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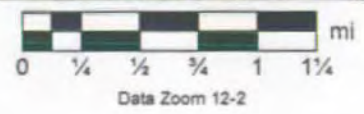
Appendix

Water Right No. 43-1-----	A
Notice of Transfer of Ownership-----	B
Judge Order -----	C
Letter from Michael M. Hickey Requesting Investigation -----	D
Spearfish Hydro1 Flow Test Data-----	E
HMC Power Production Records Database-----	F
PSIPlot Hydro1 Weir-kWh Correlation-----	G
Lower Spearfish Valley Irrigation Ditches-----	H

References



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Spearfish Canyon Hydroelectric Power Plant No. 1

Introduction

This report is a summary and analysis of an investigation conducted by the water rights staff of Water Permit No. 43-1. This investigation was initiated at the request of attorney Michael Hickey, representing plaintiffs Keith and Dianna Williamson landowners on Spearfish Creek in Lawrence County. The plaintiffs filed a complaint claiming, among other things, a right to the domestic use of water in Spearfish Creek and that Water Right No. 43-1 was subject to abandonment. In a May 2005 ruling, Judge Timothy Johns ruled that the plaintiffs must exhaust their available administrative remedies before proceeding with the complaint. South Dakota Codified Laws (SDCL) 46-5-37.1 grants the Chief Engineer the authority to investigate whether a water permit or right has been abandoned or forfeited.

Hydroelectric Power Plant No. 1 System

Construction of the Homestake Mining Company (HMC) Hydroelectric Power Plant No. 1 system was completed and brought online in 1911. The system consists of a diversion dam on Spearfish Creek at Maurice, SD, a tunnel (aqueduct), a forebay dam, collection cylinder standpipes, and powerhouse. Hydroelectric Power Plant No. 1 is a run-of-the-river system that operates on available inflow and a limited amount of short-term storage.

The 200-foot concrete diversion dam near Maurice, SD, has inlet gates for the control of water conveyed through a flume to the aqueduct entrance. The amount of water diverted into the aqueduct is measured at a weir in the flume.

Water is conveyed from the diversion dam through the concrete-lined aqueduct 23,800 feet (4.5 miles) to the forebay dam.

The 40 x 70 foot concrete forebay dam has built-in gates that regulate the flow at 40 to 120 cubic feet per second (cfs) depending on the stream flow diverted into the aqueduct. An overflow is also built into the forebay dam to divert flow greater than 120-cfs into Spearfish Creek.

From the forebay dam the water is conveyed through two lines, 1200 feet long, to a large collection cylinder with four standpipes for balancing the pressure and relieving the water of accumulated air.

Two steel pressure pipelines or penstocks, each 4000-foot long, convey the water to the Pelton wheels at the powerhouse. The water is then returned to Spearfish Creek. The system has an operating head of 655 feet or 288 pounds per square inch (psi).

Originally, three 2000 kilovolt ampere (kVA) or 1600 kilowatt (kW) at 80 percent power factor, Westinghouse generators driven by double overhung Pelton wheels were installed in the powerhouse along with two water or electrically driven exciter generators. Transformers and switching equipment were also installed in the powerhouse.

In 1917 one of the Westinghouse generators was removed and installed in Hydroelectric Power Plant No. 2. In 1989 the standpipes were upgraded and insulated, and a new substation north of the powerhouse replaced the water-cooled transformers and old switching gear.

Licensing and Transfer of Water Right No. 43-1

The South Dakota State Engineer received the HMC application for the right to appropriate 100 cfs of water from Spearfish Creek for power generation on January 4, 1909. A water license was issued to HMC for Water Right No. 43-1 on January 3, 1913, after the applicant made proof of the completion of adequate works for the diversion of 120-cfs (Appendix A). Water Right No. 43-1 was issued with a priority date of January 4, 1909, for

the diversion of 120-cfs for power generation. Water Right No. 43-1 is junior in priority to all of the irrigation ditches diverting Spearfish Creek water downstream of the powerhouse.

The city of Spearfish, SD, purchased the HMC Hydroelectric Power Plant No. 1 system on May 5, 2004. The Notice of Transfer of Ownership of Water Right No. 43-1 was filed on May 5, 2004 (Appendix B).

Notice of Entry of Order

On May 16, 2005, the Circuit Court of Lawrence County, SD, entered an order in an action (Civil Case No. 05-114) initiated by Keith D. Williamson and Dianna L. Williamson (plaintiffs) versus the city of Spearfish, Homestake Mining Co., and the SD Department of Environment and Natural Resources, Water Management Board (Appendix C). The court ordered that the plaintiffs: (A) do not have a legal right to compel notice and hearing on the transfer of Water Right No. 43-1 and (B) must exhaust their available administrative remedies as to all other claims in their complaint by filing a petition with the Chief Engineer of the Water Rights Program requesting an investigation of Water Right No. 43-1.

In accordance with SDCL 46-5-37.1 and the court's decision in the action cited, a request was submitted by Michael Hickey, on behalf of his clients, to conduct an investigation and issue a report concerning the validity and extent of Water Right No. 43-1 (Appendix D). Based on his request, an investigation was conducted on the validity and extent of Water Right No. 43-1 and the permit holder's compliance with the rules, regulations and laws relating to water rights. Mr. Hickey's request also stated that the transfer of the water right between Homestake and the city of Spearfish was improper.

Applicable Water Right/Permit - Statutes and Rules

The following statutes and rules are deemed applicable to the validity and ownership transfer of Water Right No. 43-1 from HMC to the city of Spearfish by the Department of Environment and Natural Resources' Chief Engineer:

SDCL 46-5-30.3. Sale or transfer of permit or license – Notice to Chief Engineer

Notice of any sale, grant, lease, conveyance, or other transfer of a permit or license to appropriate water issued under the provisions of this title shall be filed with the Chief Engineer within ninety days.

SDCL 46-5-32. Assignment of permit or license. Subject to the limitations provided in §§46-5-33 and 46-5-34, any permit or license to appropriate water, including a permit issued under §46-5-8.1, may be assigned, but no assignment is binding, except upon the parties thereto, unless filed for record in the division of water rights. No assignment may carry with it the right to use the water for any purpose or in any manner other than that specified in the permit or license without the approval of the water management board. The evidence of the right to use water from any works constructed by the United States, or its duly authorized agencies, shall in like manner be filed with the division, upon assignment. A sale, grant, conveyance, assignment, lease other transfer of a permit or license issued under §46-5-8.1 may be assigned only in accordance with the terms of the contract or instrument of conveyance between the district and the energy industry user.

SDCL 46-5-36. Abandonment of use of water appurtenant to land – Public water subject to general appropriation.

If the owner of the land to which water has become appurtenant abandons the use of such water upon such land, such water shall become public water, subject to general appropriation.

SDCL 46-5-37. Failure to use beneficially appropriated water – Forfeiture for nonuse – Reversion to public.

When any person entitled to the use of appropriated water fails to use beneficially all or any part of such water for the purpose for which it was appropriated, for a period of three years, such unused water shall revert to the public and shall be regarded as unappropriated public water.

SDCL 46-5-37.1. Abandonment or forfeiture of permits or rights – Recommendation of Chief Engineer for cancellation.

Upon the initiative of the Chief Engineer or upon petition by an interested person and after reasonable notice to the holder of the right or permit, if he can be located, the Chief Engineer may investigate whether or not a permit or right has been abandoned or forfeited. After the investigation, the Chief Engineer may recommend cancellation of the permit or right for reason of abandonment or forfeiture. The recommendation, notice and hearing shall be conducted pursuant to the procedure contained in chapter 46-2A.

General Rule 74:02:01:37.01. Legal Excuse for non-use of water.

Legal excuse for non-use of water suspends the period of non-use specified in SDCL 46-5-37. Legal excuses for non-use of water include but are not limited to the following:

- (1) Unavailability of water to satisfy a permit, right, or vested right;
- (2) Legal proceedings which prevent the use of water; and
- (3) Water use under existing climatic conditions would result in the waste of water.

On-Site Examination

On November 3, 2005, DENR Water Rights Program staff accompanied by the city of Spearfish Hydroelectric Power Plant No. 1 Superintendent, Gary Lillehaug, made an on-site examination of the Hydroelectric Power Plant No. 1 system. The examination included the U.S. Geological Survey (USGS) gaging stations, Maurice Dam, the aqueduct, the forebay dam, and the power plant. Water Rights Program staff included:

<u>Name</u>	<u>Position</u>
Garland Erbele	Chief Engineer
Eric Gronlund	Natural Resources Engineering Specialist
Mark Rath	Natural Resources Engineering Specialist
Don Stroup	Natural Resources Project Engineer

U.S. Geological Survey Maurice Gaging Station

The USGS has maintained a gaging station on Spearfish Creek at Maurice, SD, since October 1, 1988. Spearfish Creek's average daily flows upstream of the Maurice Dam are available except for the period August 18, 1998 to September 30, 2001, when it was only used for recording yearly peak flow due to limited funding. For the 1988 to 2004 period of record, the Maurice USGS gage median and mean flows are 54.00 and 63.13 cfs, respectively. The median and mean flows from this gage are skewed high as the area received above normal precipitation during the 1990s.



USGS Maurice Gage. Data Transmitter Site



USGS Maurice Gage. Sensor Location Site

Maurice Dam

The surface area of Maurice Dam is approximately 0.4 acre with storage less than 2 acre feet. Originally, the headworks consisted of four inlet gates with steel trash grates for the regulation of the amount of water diverted into the aqueduct. A concrete flume, with a device to measure the height of the water flowing over the 12.5-foot wide weir, extends about 100 feet from the headworks to the aqueduct entrance. Originally, there was a house at the site for a dam tender to take measurements and control the water diverted into the aqueduct. The area was severely damaged during a flooding episode in 1965. At that time, the dam was repaired, the house was removed and the dam tender position ended.

The Maurice Dam intake presently has four gate valves, two manual valves that are normally closed and two electrically controlled valves. The diversion rate is regulated by opening and closing the electrically controlled valves for two reasons: one, to keep the pond level high for fishermen; and two, to regulate the flow through the aqueduct to be 120-cfs or less as measured at the weir's height gage located 50 feet downstream of the gate valves.

Weir Measurements

The Maurice Dam contracted-rectangular weir notch is 12.5 feet wide (L) and about 2.5 feet high (h). Historically, the volume speed (cfs) of the water flow entering the aqueduct was determined using two prepared tables. Both tables determined cfs, one using inches and one using feet for the height (h) of water passing through the weir notch.

The table using feet measurement has two notes: one to "Divide the total of hourly readings by 24 and apply this average to the above "chart," and two that "Whenever weir averages exceed 2.50 use 2.50 sec. ft. figure of 161.90 no matter how much higher it goes." The second note was probably put into effect due to the inability to accurately measure flow when the height (h) was at or greater than 2.5 feet. From the audit of the historical HMC records, it appears these procedures were initiated in 1962.

The accuracy of the tables was checked using the following formula for a contracted-rectangular weir, with the results of each graphed for comparison.

$$Q = 3.33h^{3/2}(L - 0.2h)$$

where:

Q=flow (cfs)

h=height of water through weir notch

L=weir notch length



The comparison graph shows no significant difference between the tables used to historically determine the flow of water entering the aqueduct and the calculated flow for a contracted-rectangular weir.

Future plans for the Maurice Dam intake control include installation of an automatic system similar to the one installed at the forebay dam. This system will measure the height of the water over the weir and automatically adjust the intake valves accordingly to limit flows to 120-cfs or less.

Aqueduct

The concrete lined 23,800-foot tunnel extends in a practically straight line from Maurice Dam to the forebay dam. Aqueduct dimensions are 6.5 feet wide, 5 feet high sidewalls, and a 3.25 feet radius arch. The aqueduct is protected by iron trash grates at the intake. The floor and sidewalls of the tunnel are concrete-lined the entire length and the arched roof similarly lined three-fifths of the entire length. The tunnel was driven through solid rock in sections with access crosscuts made from suitable points along the route. Work began in May 1909 and finished in October 1910.



Maurice Dam. Diversion Grates



Maurice Dam. Diversion Gate Controls



Aqueduct. Interior

Aqueduct Capacity

The USGS estimates the maximum flow capacity of the aqueduct to be 115 to 135 cfs. Using the following equation for uniform flow in an open channel and graphing the results for various depths of water in an open channel, with the depth of water in the tunnel remaining below the sidewall height of five-foot, the aqueduct is capable of maximum flow greater than the USGS estimate.

$$Q = CA\sqrt{r_h S}$$

where:

Q=flow (cfs)

$$C = \text{Manning Formula} = \frac{1.49}{n} (r_h)^{1/6}$$

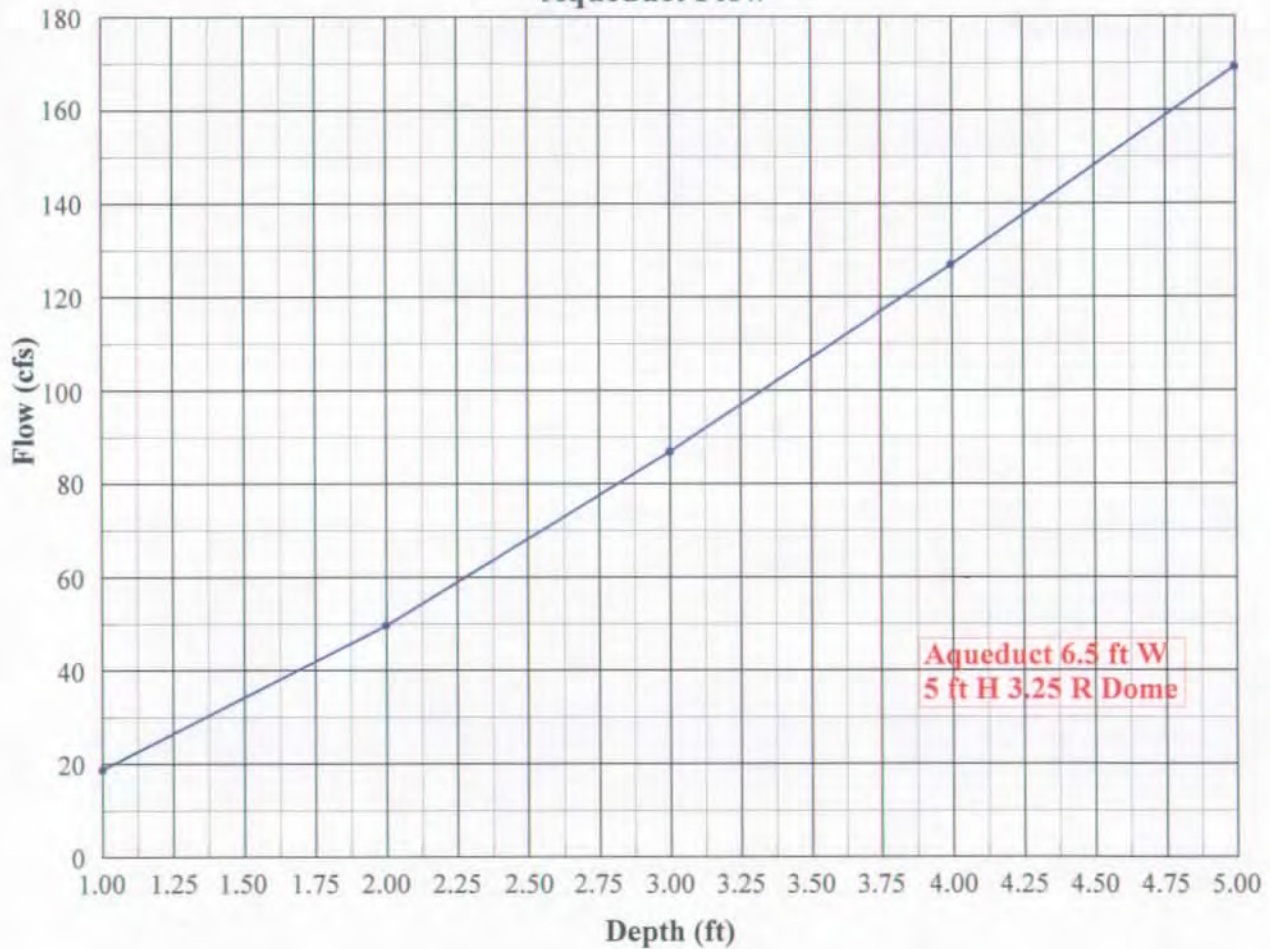
n=roughness constant=0.016

r_h = hydraulic radius

A=Area of wetted perimeter

$$S = \text{Slope} \frac{dE}{dL} = \frac{30}{23800} = 0.00126$$

Spearfish Creek Aqueduct Flow



Forebay Dam

The aqueduct terminates in a 40- x 70-foot open concrete forebay dam with built-in gates that are electronically controlled to automatically regulate the flow at 40 to 120 cfs depending on the stream flow diverted into the aqueduct at Maurice Dam. An overflow is also built into the forebay dam to return any flow greater than 120-cfs to Spearfish Creek. Water is conveyed from the forebay dam through two 1200-foot redwood stave pipes, 48-inch inside diameter, to a collection cylinder and standpipes.



Forebay Dam. Entrance Portal



Forebay Dam. Outflow Trash Grates

Collection Cylinder and Standpipes

The lines from the forebay dam connect to a 25-foot long x 74-inch diameter steel cylinder with four open standpipes, each 36 inches in diameter and 54 feet high. The cylinder and standpipes serve to dampen surges and remove accumulated air from the water. Water is then transported to the powerhouse via two pressure lines or penstocks, each 4000 feet long, to the Pelton wheels in the powerhouse. In 1989 the standpipes were upgraded and insulated.



Cylinder and Standpipes

Powerhouse

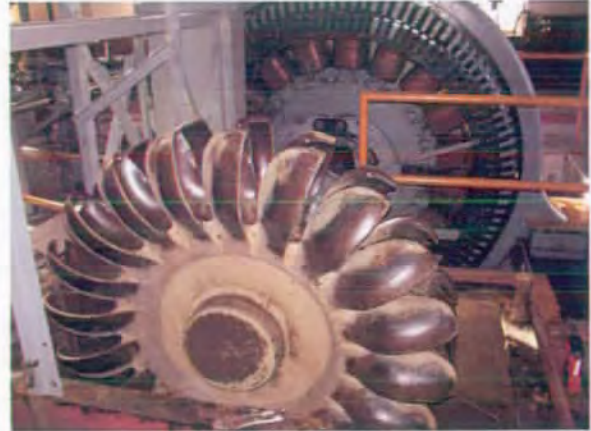
The powerhouse originally contained the main generating plant in one leg, the switchboard room in the connecting bar, and the transformer house in the other leg of the H-shaped building. The pipelines pass under the transformer and switchboard rooms to the generating room through the basement. Three 2000 kVA, or 1600

kW at 80 percent power factor, Westinghouse generators driven by double overhung Pelton wheels were installed in the powerhouse along with two water or electrically driven exciter generators.

In 1917 one of the Westinghouse generators and associated equipment was removed and installed in Hydroelectric Power Plant No. 2. In addition, in 1989 the water-cooled transformers and old switching gear were replaced by a new substation north of the powerhouse.



Pelton Wheel and Nozzle



Pelton Wheel and Generator

Water presently enters the powerhouse through two branches of 30-inch pipe, each of which divides, and the water impinges through 6-inch nozzles directly upon the two runners of the overhung Pelton Wheel impulse turbines. The wheels are placed on either side of the electric generator it drives. After upgrades to the generators and driving wheels, the two generators are presently rated at 2000 kW each. Excitation of the field coils comes from two 125 kW direct current generators which are connected to a Pelton Wheel and an electric motor. The system has an operating head of 655 feet or 288 psi. Water is returned to the Spearfish Creek channel at the powerhouse on the south end of the Spearfish City Park.



Powerhouse



Powerhouse. Water Return



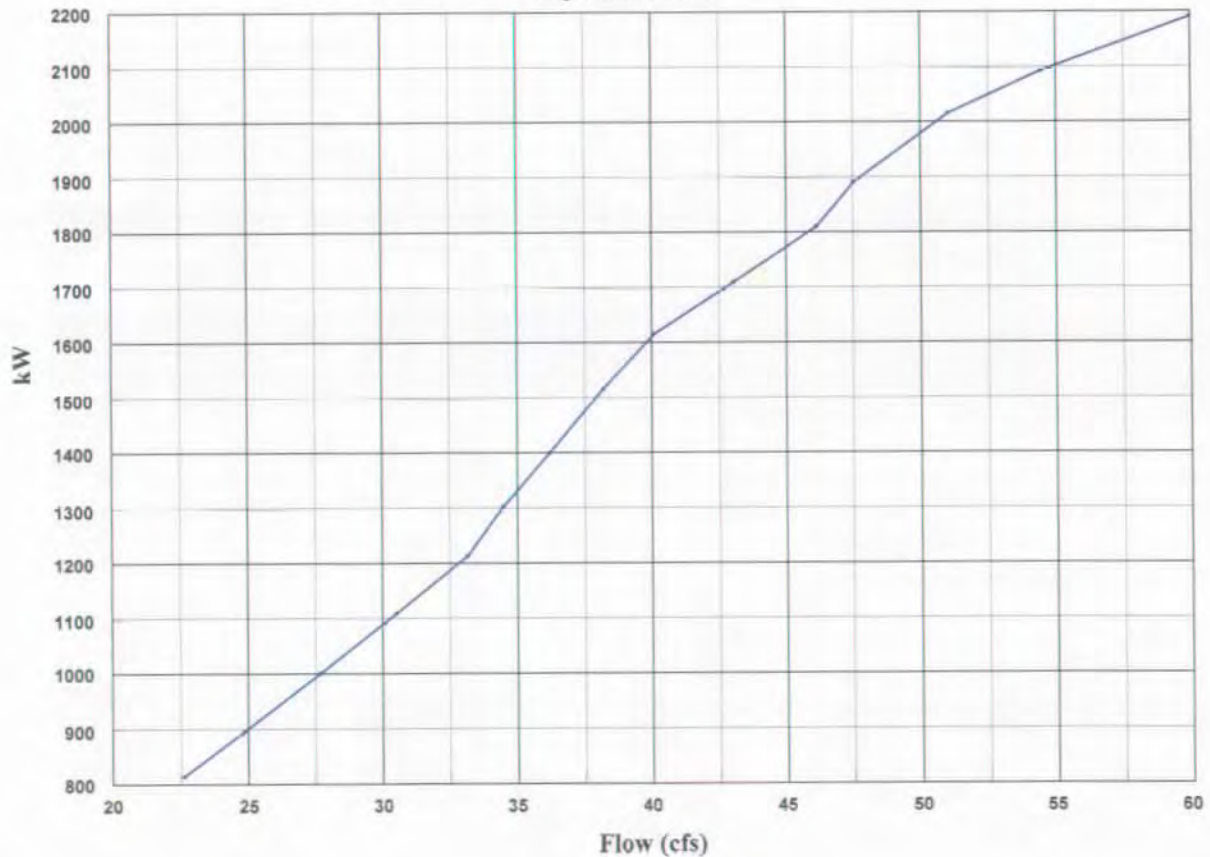
Powerhouse. Generator and Pelton Wheels



Powerhouse. System Monitor

In September 2005 based on input flow and electrical measurements supplied by the city of Spearfish Hydroelectric Plant Superintendent, the consulting firm of Mead and Hunt, Madison, WI, completed an analysis of the kW output of the powerhouse generator No. 2. Appendix E provides flow test data. The graph of the data shows generator No. 2 is capable of producing more than 2000 kW at a flow rate of 60-cfs. This analysis also indicates each generator can, when available, utilize a flow rate of 60-cfs for a combined total of 120-cfs. At the Water Right No. 43-1 authorized diversion rate of 120-cfs, the two generators are capable of producing more than 4000 kW.

**Generator No. 2 Measured Output
September 2005**



Historical Records and Stream Flow Data

The examination and analysis of historical HMC production records and USGS stream flow data were conducted to substantiate the validity of Water Right No. 43-1 in concordance with the criteria in **SDCL 46-5-37. Failure to use beneficially appropriated water – Forfeiture for nonuse – Reversion to public** that states “When any person entitled to the use of appropriated water fails to use beneficially all or any part of such water for the purpose for which it was appropriated, for a period of three years, such unused water shall revert to the public and shall be regarded as un-appropriated public water.” Appendix F is a table that provides gaging station flows based on weir measurements and historical power production records.

Records Review

Power production records from 1912 to 2002 for the hydroelectric power plants were retained by HMC at the Lead SD, facility. These records contain data for Hydroelectric Power Plant No. 1 including the weir flow at Maurice Dam, kilowatts produced, and in most cases, Spearfish Creek stream flow conditions or other issues affecting production.

In January 2006 the HMC power production records were audited by the city of Spearfish Hydroelectric Plant Superintendent and a DENR Water Rights Program staff member. The Maurice Dam weir measurements and the produced power information were extracted from the HMC records beginning in 1912 and entered into a database, along with the historical USGS stream flow measurements for the Spearfish and Maurice gaging stations, when they came online in 1947 and 1988, respectively.



Logbook



Logbook. Production Record



Logbook. Stream Flow Footnote



Logbook. Stream Flow Footnote

Information from HMC records created before 1947 was selected using the highest yearly stream flow recorded at the Maurice Dam weir. After 1947 records were selected when either the USGS Spearfish or Maurice stream flow gages recorded yearly flows at the diversion rate of 120-cfs or greater. If the yearly stream flow did not reach 120-cfs, the date with the highest recorded flow was selected. Before 1947 only one date was selected for each year. After 1947 the historical USGS stream flow data was used to select yearly episodes with flows 120-cfs or greater, except as noted above. When available, pertinent footnotes for selected dates were also entered in the database.

The HMC records and USGS data show that when 120-cfs or greater of Spearfish Creek stream flow was available, maximum power production at Hydroelectric Power Plant No. 1 was realized except for maintenance problems, flooding, or stream debris difficulties. A statistical analysis called the "goodness of fit" shows good correlation between the Maurice Dam weir data and power production. Appendix G provides the statistics used to determine the goodness of fit. Hydroelectric Power Plant No.1 system was used every year for power production until the time of sale to the city of Spearfish. Even during the Second World War when the mining of gold at Homestake Mine was shut down, the plant was used to produce electrical power. The city of Spearfish has continued power production since purchasing the power plant.

Beginning in 2000 HMC power production records were maintained on a computerized database system. In 2003 HMC load dispatchers were laid off and system input-output data was monitored and maintained in the Supervisory Control and Data Acquisition (SCADA) computer system. The database of selected HMC and city of Spearfish power production records is contained in the Appendix F to this report.

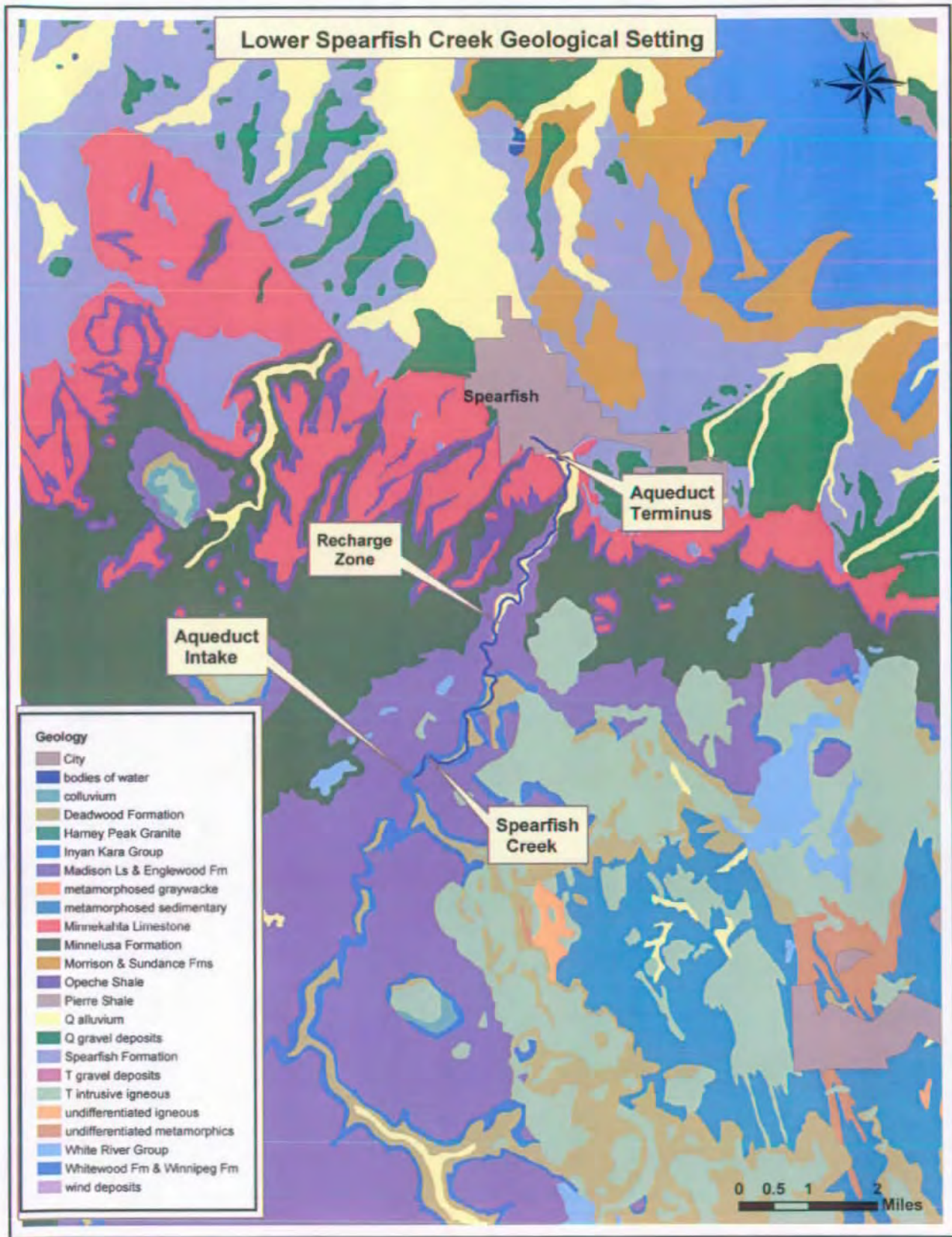
Spearfish Creek

Originating in the northern Black Hills of SD, Spearfish Creek flows north joining the Redwater River approximately six and one-half miles north of Spearfish. The Redwater River is a major tributary of the Belle Fourche River, the main water source for the U.S. Department of Agriculture, Bureau of Reclamation, Belle Fourche Irrigation Project. Little Spearfish and Iron creeks join Spearfish Creek upstream of the Maurice Dam diversion point. Downstream of the Maurice Dam diversion point there are no significant perennial streams contributing flow to Spearfish Creek.

The USGS has maintained a gaging station on Spearfish Creek at Maurice, SD, since October 1, 1988. Spearfish Creek's average daily flows upstream of the Maurice Dam are available except for the period August 18, 1998 to September 30, 2001, when it was only used for recording yearly peak flow due to limited funding. For the 1988 to 2004 period of record, the Maurice USGS gage median and mean flows are 54.00 and 63.13 cfs, respectively. Minimum and maximum values recorded during the period of record are 18 and 1,470 cfs, respectively. The median and mean flows from this gage are skewed high as the area received above normal precipitation during the 1990s.

A yearly duration hydrograph of the median Maurice gaging station stream flow data show the typical pattern for the Black Hills, with the higher stream flow occurring from April to July due to snowmelt and higher precipitation during this period (see Spearfish Creek @ Maurice Hydrograph).

The USGS also maintains a stream flow gaging station in the Spearfish City Park downstream of the powerhouse and the D.C. Booth Historical National Fish Hatchery. This gaging station has a period of record from October 1, 1946, to the present. The median and mean flows for this period of record are 47.0 and 55.7 cfs, respectively. Minimum and maximum values recorded during the period of record are 9 and 1,880 cfs, respectively. Again, a yearly duration hydrograph of the median Spearfish gaging station stream flow data show the typical pattern for the Black Hills, with the higher stream flow occurring from April to July due to snowmelt and higher precipitation during this period (see Spearfish Creek @ Spearfish Hydrograph).

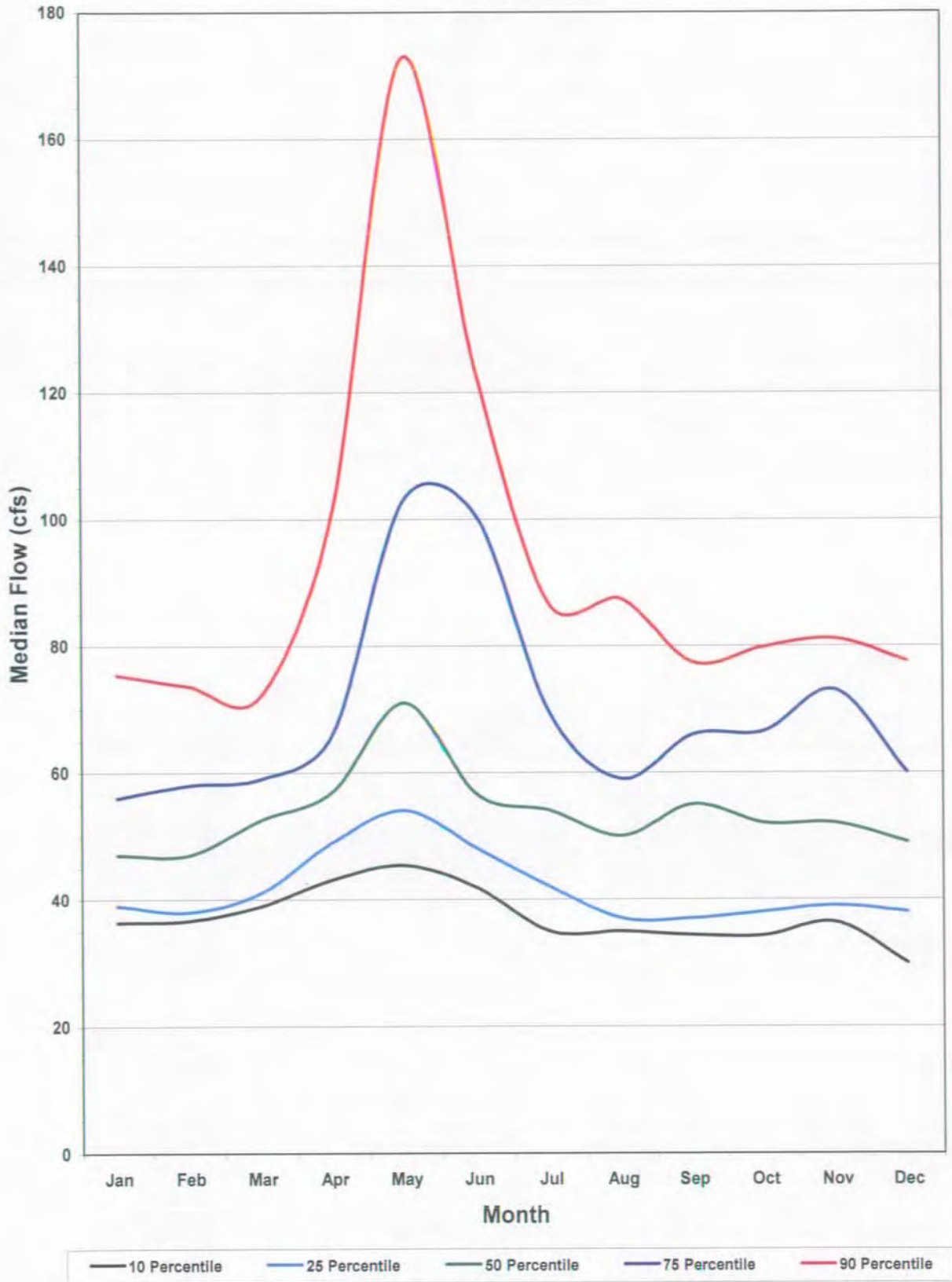


Approximately three and one-half miles below Maurice Dam, Spearfish Creek flows over the Pahasapa (Madison) and Minnelusa Limestone formations' aquifer recharge zone. This is a very porous section of stream channel where based on USGS estimates, approximately 21-cfs of Spearfish Creek flow is lost to the aquifer. When the total Spearfish Creek flow is diverted into the aqueduct, a portion of Spearfish creek approximately two miles immediately above the aquifer recharge zone and downstream of the Maurice Dam will regain 2- to 5-cfs of flow within the natural channel from small tributaries and Deadwood formation springs. In transporting the water through the aqueduct the USGS estimates approximately 2-cfs is lost from the aqueduct to the aquifer recharge zone. This provides a net gain of 19-cfs to the creek below the powerhouse that would otherwise be lost. This 19-cfs represents a significant portion of the base flow of Spearfish Creek. With a mean flow of approximately 56-cfs at the Spearfish gage, the 19-cfs represents approximately 34 percent of the mean flow.

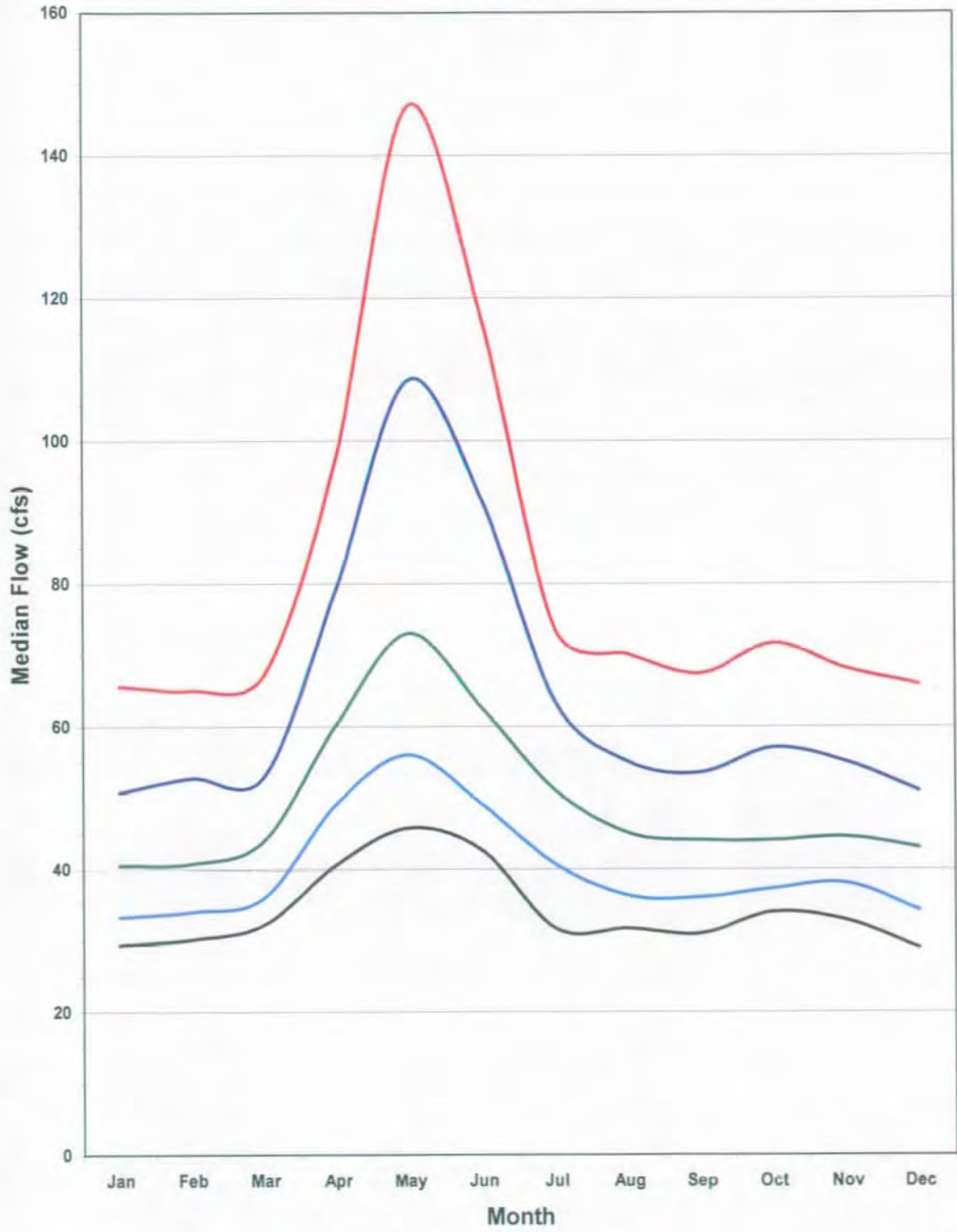
Water returned to the Spearfish Creek channel below the powerhouse provides the base flow of Spearfish Creek through the city. This water is used at D.C. Booth Historical National Fish Hatchery and during the irrigation season by lower Spearfish Valley irrigation ditches. These lower Spearfish Valley irrigation ditches have senior water rights dating back to the 1870s that total approximately 100-cfs. With a mean flow of 56-cfs, the more junior of these irrigation ditches are often short of water. The additional 19-cfs makes up a significant portion of the flow to these irrigators.

Spearfish Creek ultimately conflues with the Redwater River, which in turn conflues with the Belle Fourche River where a substantial portion is diverted to the Belle Fourche Reservoir. Appendix H is a table summary of the lower Spearfish Valley irrigation ditches.

Spearfish Creek
Maurice, SD
1988-2004



Spearfish Creek
Spearfish, SD
1946-2004



— 10 Percentile — 25 Percentile — 50 Percentile — 75 Percentile — 90 Percentile

Analysis of Transfer of Water Right No. 43-1

The plaintiffs have raised the question of whether the transfer of Water Right No. 43-1 met the requirements of South Dakota law since no formal hearing on the transfer was held before the Water Management Board and no official notice was given to the plaintiffs or other interested parties.

In the court order in *Williamson v. City* the Court found that the plaintiff did not have a right to compel notice and hearing. The South Dakota Water Management Board was a party. The Court's ruling is a final binding decision that was not appealed. Accordingly, the Chief Engineer will not initiate a hearing on the transfer.

Moreover, the Court's determination is consistent with the longstanding practice and interpretation of the Chief Engineer. Two South Dakota laws (SDCL 46-5-30.3 and SDCL 46-5-32) address the transfer of title to a water right. SDCL 46-5-30.3 provides that any sale, grant, lease, conveyance or other transfer of a permit or license to appropriate water issued under the provisions of this title shall be filed with the Chief Engineer within 90 days. This statute imposes no obligation on the Chief Engineer other than to file the documents received.

Spearfish hand delivered the notice of transfer of ownership of Water Right No. 43-1 to the Water Rights Program's office on May 5, 2004. The Water Rights Program acknowledged the transfer of Water Right No. 43-1 on May 6, 2004. Clearly the actions of the city and Chief Engineer met the requirements of SDCL 46-5-30.3.

The second statute pertaining to title transfers or transfer of a leaseholder's interest is SDCL 46-5-32. It provides, among other things, that an "assignment" of rights is restricted to the same use under the same conditions as the original use. The statute imposes no duty or discretion on the Chief Engineer or the Water Management Board unless the assignment includes a request to use the water for a different purpose or in a different manner.

Because additional statutes in South Dakota water law dictate the standard for water board consideration of changes of use or changes in diversion points, those statutes would govern such changes. Consequently, a filing under SDCL 46-5-32 necessarily involves only a transfer of title unless it is accompanied by an application to amend the water right.

If the parties to a title transfer intend to change the use, location of the use or make another amendment an application must be filed. It is clear under SDCL 46-2A-1(2) that amendments of water rights and water permits must be undertaken according to the due process procedure for water proceedings in SDCL Chapter 46-2A. Accordingly, the Chief Engineer is required to investigate the matter, issue a recommendation, and provide notice of hearing. In a contested case the Water Management Board must hear the case and consider whether the change in use, change in point of diversion or other change would unlawfully impair existing rights, whether it is a beneficial use, and whether it is in the public interest.

Under South Dakota law, a "transfer" that involves only the recording of a change in title or leaseholder interest does not require a hearing. Water Right No. 43-1 involved the transfer of title from HMC to the city of Spearfish. The filing was not a request for an amendment to change the diversion, point of diversion, change of use or other change. The water right was originally issued for the purpose of power generation and this use continues with the city. The fact that the end use of the power has changed does not change the use of the water.

Conclusions

1. Homestake Mining Company (HMC) obtained Water Right No. 43-1, with a priority date of January 4, 1909, for the purpose of power generation at Hydroelectric Plant No 1.
2. Water Right No. 43-1 was licensed for 120 cubic feet per second (cfs) on January 3, 1913.
3. HMC operated an intake at Maurice on Spearfish Creek for the diversion of water to the hydroelectric plant. The records show that this intake was capable of diverting the appropriated amount.
4. HMC operated the hydroelectric plant continuously for the generation of power from 1911 until the sale to the city of Spearfish. The available flow up to 120-cfs of water was diverted and used beneficially for the purpose of power generation.
5. On May 5, 2004, HMC sold the hydroelectric plant to the city of Spearfish.
6. The city of Spearfish filed the transfer of Water Right No. 43-1 on May 5, 2004, to the DENR Water Rights Program. The filing and subsequent transfer was a legal transfer and met the requirements of SDCL 46-5-30.3.
7. The transfer of Water Right No. 43-1 was a transfer of title and did not involve a change of use, change in diversion, or other change that would qualify as an amendment to the water right.
8. The city of Spearfish has operated the hydroelectric plant continuously for the generation of power since its purchase. Under Water Right No. 43-1, the available flow up to 120-cfs of water is being diverted and used beneficially for power generation.
9. Based upon the authority granted in SDCL 46-5-37.1, the Chief Engineer makes a determination that Water Right No. 43-1 has not been abandoned and there is no evidence of forfeiture due to nonuse. Therefore, Water Right No. 43-1 is a valid water right and there is no basis for the cancellation of this right.

Glossary

Forebay: part of a dam's reservoir that is immediately upstream from the powerhouse.

Goodness of Fit Correlation: a measure of adequacy of fit in linear regression, a number ranging from +1 to -1 with values of exactly ± 1 corresponding to a perfect fit and those of zero corresponding to no linear fit.

Headgate: gate that controls water flow into canals and ditches.

Headworks: flow control structure.

Kilowatt: electrical unit of power that equals 1000 watts or 1.341 horsepower.

kWh (kilowatt-hour): 3.6 mega joule. An energy measure that indicates a watt consumed or generated in one hour equivalent.

kVA: kilovolt ampere (one thousand volt amperes), the current flowing in a circuit multiplied by the voltage of that circuit, usually measured on a transformer. A measure of power whereby 1-kVA typically equals approximately 0.8-kWh (depending upon the phase).

Pelton Wheel: high pressure impulse water turbine in which one or more free jets of water are directed against the rotor buckets.

Penstock: conduit for conveying water to a power plant.

Standpipe: vertical pipe or tower into which water is pumped or fed to obtain a required head.

Weir: in this report, a dam in a stream or sluiceway to raise the water level and channel the flow for the purpose of speed-volume measurement.

Appendix

Appendix A

**Water Right No. 43-1
(retyped for clarity)**

STATE OF SOUTH DAKOTA

WATER LICENSE NO. 43-1

WHEREAS, On the fourth day of January A.D. 1909

THE HOMESTAKE MINING COMPANY

ofLead City.....County ofLawrence..... And State of
....South Dakota.....duly made application No.....43-1..... to me for a permit to use100.....
cubic feet per second of the waters ofSpearfish Creek.....
County ofLawrence.....State of South Dakota forpower
generating.....purposes and

WHEREAS, On thesixth..... day ofFebruary.....A.D. 19..09...
Permit No.43-1.... was issued to said applicant...for the diversion of said water, and providing for the
completion of works of diversion herein described on or before the5th.....date if
.....February.....A.D. 19....11... and for the application to beneficial use of said
water on or before thefifth.....day of.....February.....A.D. 19....12...
and whereas on the 26th day of November, 1910, the time for completing the diversion works and for the
application to beneficial use of said water, was extended for three years from dates first designated; and

WHEREAS, On thesecond.....day ofJanuary.....A.D. 19..17..the
holder.....of said permit duly made proof of the completion of adequate works for the diversion of
....120.... cubic feet per second of said water, as evidenced by my Certificate No.....43-1..... dated
....January 2, 1913..... Confirming the completion of works of sufficient capacity for diverting and
conveying to the place of intended use120.....cubic feet per second of water, and with
date of priority ofJanuary 4, 1909.....and,

WHEREAS, On thesecond.....day ofJanuary.....A.D. 19..13....
proof was duly made of the application to beneficial use of120..... cubic feet per second of said
water;

.....for the development of power for electrical transmission to the company's works at Lead
City,.....

.....
.....
.....
.....
.....
.....

NOW, THEREFORE, By virtue of the authority vested in me by the laws of the State of South Dakota. I hereby grant and confirm tothe HOMESTAKE MINING COMPANY..... of ...Lead City, South Dakota..... the holderand owner.....of said permit No.43-1..... A water right, dating from.....January 4th, 1909.....to the use of120..... cubic feet per second of the waters ofSpearfish Creek..... In the county ofLawrence..... and the Sate of South Dakota, or so much thereof as may be necessary for the purposes herein below mentioned, to be diverted at....headworks of NW ¼ of SE ¼ of Sec. 8, Twp. 5N, R 2E, B.H.M. Lawrence County and conducted topoer atation on S ½ of NE ¼ of SE ¼ of Sec. 15, Twp. 5N R. 2 E, B. E. M. Lawrence County for the purposeof.....generating power..... subject, however, to the laws of the State of South Dakota applicable to a license for the use of the waters of the Sate, and subject also, to the local or community customs, rules and regulations which have been or may be adopted from time to time by a majority of the users from a common source of supply, canal or lateral from which such water may be taken when such rules and regulations have for their object the economical use of such water.

WITNESS, My hand and the seal of my office at Pierre, South Dakota,
This.....3rd.....day ofJanuary.....and. Nineteen
Hundred andthirteen...

.....
State Engineer

Date of Priority January 4th, 1909
Recorded in Book 3, Page 111.

Permit No.....

Water Division No..... Water District

Certificate of Examination of Works

Report of Examining Engineer

To the Sate Engineer, Pierre, South Dakota:

Dear Sir: I hereby certify that in accordance with your letter of authorization dated ..December 30, 19...12.. I have this day made a thorough examination of the diversion works constructed by..... Homestake Mining Company, a corporation organized under the laws of California and transacting business in LawrenceCounty, South Dakota, holder... of permit No.43-1.....issued upon application No. ..43-1..... bearing date of priority ofJanuary 4..... 19...09.... authorizing the manufacturing, transportation and other purposes. I have to report on the condition of the same as follows:

The Diversion works comprise:.....

One massive re-inforced concrete dam, 200 feet long from the head gates across the main Valley of the creek, resting on steel sheet piling, driven to an impervious stratum. Substantial concrete head works with four cast iron inlet gates for the control and regulation of the water; an open concrete frame extending from the head gates to the tunnel entrance about 100 feet; thence through a concrete lined tunnel 6 ½ feet wide by 8 feet 3 inches high in the center of the arch, 23,800 feet long, discharging into a concrete forbay 30 feet by 70 feet, in the walls of which the regulating gates are built. The water is conducted from this forbay through these regulating gates into two lines of wood staved pipe, 4 feet internal diameter, substantially built into the walls of said forbay, extending thence 1200 feet to a large collecting cylinder upon which are erected 4 steel stand pipes for the purpose of balancing the pressure and relieving the water of accumulated air, substantially covered and braced, and connected to this collecting cylinder are three steel pressure pipe lines or penstocks, varying in diameter from 34 inches to 30 inches at the power house, each line 4000 feet long. From those penstocks water is led direct by nozzles to the pelton wheels sinuate in the power station hereinafter described.

Substantial concrete, fire proof power house, in which are installed three 2000 KVA Westinghouse generators, driven by double overhung pelton water wheels; two exciter generators, both water and electrically driven; three banks of step-up transformers having capacity of the generators; switch board control, oil switches and duplicate transmission line from the power station to the sub-station in Lead City, from which the power is distributed to motors in the various works of the Homestake Mining Company.

The location of the power plant is on the S ½ of the NE ¼ or the SE !/4 of Section 15 T 6N. R. 2 East, B.H.M., Lawrence County, S.D. and about one mile south of the Town of Spearfish. The transmission line is eleven miles long, carrying current at 33,000 volts.

The utilization for power, mining, or other beneficial uses comprises:.....
.....
.....

Witness my hand this2nd.....day of.....January....., A.D. 19...13...

.....Richard Blackstone.....

Examining Engineer

ATTORNEY AND COUNSELORS AT LAW
LEAD CITY, SOUTH DAKOTA

1/2/13.

Hon. Samuel H. Lea,

Pierre, S.D.

Dear Sir:

I beg to enclose herewith, properly executed, certificate of examination of works by Engineer, Form 23, and certificate of application of water to beneficial use, Form 24, all in connection with Permit No. 43-1, of Homestake Mining Company. I trust you will find these executed in due form. The showing only goes to the extent of obtaining 100 second feet of water, although as a matter of fact the works are susceptible of using 120 second feet at high water. At the time of making our application, however, we felt that 100 second-feet would probably cover any ordinary normal conditions and we assume now that you cannot issue permit for more than that amount. At the same time we do use and are prepared to use all of the water in the stream up to 120 second-feet. In view of the fact that we are really the owners of all of the riparian lands between our intake and power plant, and in view of the further fact that we are proving ourselves quite a public benefactor to all water users below us, in that we are delivering the water of Spearfish Creek into the creek free of ice and in larger quantities than heretofore, five miles nearer to such water users, it occurred to me that possibly the permit could be for the full quantity that our present works are susceptible of using to-wit, 120 second-feet instead of 100.

Yours respectfully.

January
Third,
1913.

Mr. Chambers Kellar,
Lead, So. Dak.

Dear Sir:-

This is to acknowledge receipt of your letter of the 2nd inst together with certificate of examination of works and certificate of application of water to beneficial use in connection with permit No. 43-1 of the Homestake Mining Company.

I note what you say about the application having been made to comprise the use of only 100 second feet of water, whereas the works are capable of using 120 second feet of water. I note that you would like to have the license cover the larger amount, since this amount can be made use of when the water is available.

I hand you herewith Water License No. 43-1; this completes the water right of the Homestake Mining Company under its permit bearing same number. In accordance with the statement of capacity and the request made by you that the larger quantity of water be designated I have made the license to cover the use of 120 second feet of water.

The fees covering the filing and issuance of the papers in connection with Water License No. 43-1 amount to \$3.00. These fees, which are turned into the State Treasury, should be sent direct to this office.

Your very truly,

State Engineer

Appendix B
Notice of Transfer of Ownership

SD Eform - 0495 V1 NOTICE OF TRANSFER OF OWNERSHIP

To: Chief Engineer
Water Rights Program, DENR
523 E. Capitol
Pierre, SD 57501-3181

Water Right/Permit No. 43-1

Date: May 3, 2004

I/We request that Water Right/Permit No. 43-1 formerly owned by:
HOMESTAKE MINING COMPANY OF CALIFORNIA be transferred to:

New Owner Name: CITY OF SPEARFISH
Address: 625 FIFTH STREET
City, State Zip: SPEARFISH SD 57783 Telephone No. (605) 642-1325

Title to the following described land(s)/property has been transferred as described above:

N/A

I understand that the validity of Water Right/Permit No. 43-1 has not been determined by this transfer action. If I have any questions on validity, I understand that only the Water Management Board has the authority to determine if a water permit/right is valid (see note below).

You are requested to file this "Notice of Transfer" in the appropriate file with the Water Rights Program, as evidence of the change of ownership.

A fee of Two Dollars and Fifty Cents (\$2.50) is required to cover the filing fees as required under SDCL 46-2-13.

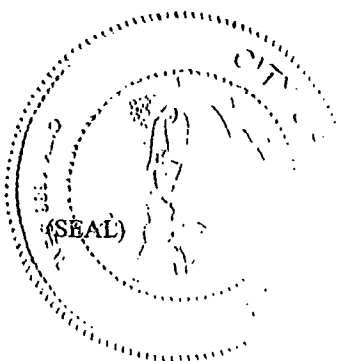
I, CITY OF SPEARFISH, the new owner, certify that the above information is true and correct.

CITY OF SPEARFISH

By: Jerry A. Krambeck
Jerry A. Krambeck
Mayor

ATTEST:

Elizabeth A. Benning
Elizabeth A. Benning
Finance Officer



NOTE: Water permits may be cancelled for nonconstruction after the five year construction period has expired. Once a water permit is developed and the water used, the permit becomes a right. A water right may be lost for three reasons:

1. Abandonment - no intent to use water and use is abandoned.
2. Forfeiture - no use of water for three year period without legal excuse.
3. For a third violation of a condition of a water permit/right.

11/2002

RECEIPT

Received for filing at 2:20 o'clock P.M., CDT, this ⁵~~X~~th day of May, 2004,
Notice of Transfer of Ownership of Water Right No. 43-1, together with check #4181
drawn on the account of Hood, Nies & Dardis, P.C., in the amount of \$2.50 for the filing
fee.

STATE OF SOUTH DAKOTA DEPARTMENT
OF ENVIRONMENTAL & NATURAL RESOURCES
OFFICE OF THE CHIEF ENGINEER
WATER RIGHTS PROGRAM

By:

Eric S. Hummel

Its:

Water Rights Program



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

May 6, 2004

Jerry A Krambeck, Mayor
City of Spearfish
625 Fifth St
Spearfish SD 57783

RE: Water Right No. 43-1
Homestake Mining Company – City of Spearfish

Dear Mayor Krambeck:

I am writing to acknowledge receipt of the ownership change for Water Right No. 43-1. The transfer has been completed. The water right formerly held by Homestake Mining Company of California is now held by the City of Spearfish.

If I can answer any questions for you, please contact me.

Sincerely,

A handwritten signature in cursive script that reads "Genny McMath".

Genny McMath
Environmental Scientist
Water Rights Program
(605) 773-3352
email: genny.mcmath@state.sd.us

c: E James Hood, w/Hood, Nies & Dardis, PC
Karl Burke, w/Homestake Mining Company

Appendix C

Judge Order

STATE OF SOUTH DAKOTA

IN CIRCUIT COURT

COUNTY OF LAWRENCE

) SS.

FOURTH JUDICIAL DISTRICT

KEITH D. WILLIAMSON and
DIANNA L. WILLIAMSON,

Plaintiffs,

Civ. Case No. 05-114

vs.

CITY OF SPEARFISH,
HOMESTAKE MINING COMPANY,
INC., and SOUTH DAKOTA
DEPARTMENT OF
ENVIRONMENT & NATURAL
RESOURCES, WATER
MANAGEMENT BOARD,

Defendants.

ORDER

The motion to dismiss by the City of Spearfish ("City") came on regularly to be heard before this Court on April 29, 2005, in the Lawrence County Courthouse in Deadwood, South Dakota. Attorneys Max Main and Wade Nyberg appeared personally for City, Attorney Michael M. Hickey appeared personally for the plaintiffs, and Assistant Attorney General John P. Guhin appeared telephonically for defendant Water Management Board. The Court having considered the pleadings and papers on file herein, and the arguments of counsel, and good cause appearing therefore, it is hereby

ORDERED, that the City's Rule 12(b)(5) motion to dismiss plaintiffs' claim for notice of and a hearing on the transfer of Water License No. 43-1 from Homestake Mining Company of California to the City be, and the same hereby is, granted. Such claim fails to state a claim upon which relief can be granted; and it is further

ORDERED, that plaintiffs must exhaust their available administrative remedies as to all other claims alleged in their complaint by filing with the Chief Engineer of the

FILED

MAY 16 2005

SOUTH DAKOTA UNIFIED JUDICIAL SYSTEM
4TH CIRCUIT CLERK OF COURT

By _____

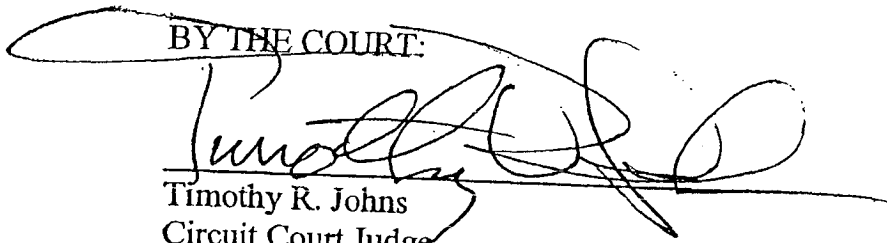
Williamson v. City of Spearfish, et al / ORDER

South Dakota Water Rights Program a petition requesting an investigation of Water License No. 43-1; and it is further

ORDERED, that the Court retains jurisdiction over this matter consistent with the terms of this Order.

DATED this 16th day of May, 2005.

BY THE COURT:


Timothy R. Johns
Circuit Court Judge

ATTEST:


Clerk of Courts

(CLERK'S SEAL)

FILED

MAY 16 2005

SOUTH DAKOTA UNIFIED JUDICIAL SYSTEM
4TH CIRCUIT CLERK OF COURT

By _____

Appendix D

Letter from Michael M. Hickey Requesting Investigation

Bangs McCullen Law Firm

Bangs, McCullen, Butler, Foye & Simmons, L.L.P.

Rapid City

Thomas H. Foye
Thomas E. Simmons
Charles L. Riter
Allen G. Nelson
James P. Hurley
Michael M. Hickey
Terry L. Hofer
Rod Schlauger
Daniel F. Duffy
Jeffrey G. Hurd
John H. Raforth
Terry G. Westergaard
Steven R. Nolan
Gregory J. Erlandson
Eric J. Pickar
Sara L. Larson

Sioux Falls

Michael A. Hauck
John P. Mullen
Brian K. Kirby
Victoria M. Duehr
Kara C. Van Bockern
Patrick J. Knecht

Attorneys also admitted in
Nebraska, North Dakota,
Iowa and Minnesota.

Trust Building
818 St. Joseph Street
P.O. Box 2670
Rapid City, SD 57709-2670
605-343-1040
Fax: 605-343-1503

Security Bank Building
100 N. Phillips Ave.
Suite 610
P.O. Box 949
Sioux Falls, SD 57101-0949
605-339-6800
Fax: 605-339-6801

www.bangsmccullen.com

Reply to Rapid City Office

Writer's e-mail address: mhickey@bangsmccullen.com

RECEIVED

OCT - 5 2005

WATER RIGHTS
PROGRAM

October 4, 2005

Garland Erbele
Chief Engineer
Water Rights Program
Department of Environment and Natural Resources
Joe Foss Building
523 E. Capitol
Pierre, SD 57501-3182

Re: Water License 43-1

Dear Mr. Erbele:

In accordance with the provisions of SDCL 46-5-37.1 and the decision of Judge Johns, this is to request that your office conduct an investigation and issue a report concerning the validity and extent of this license and the permit holder's compliance with the rules, regulations and laws relating to water rights.

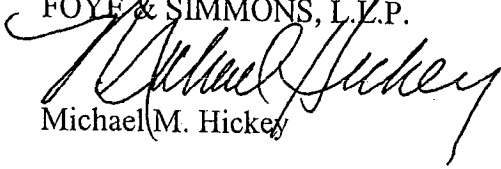
In addition, it is our belief and position that the purported transfer of the water license between Homestake Mining Company and the City of Spearfish was improper and should be set aside.

Please contact my office prior to the time your office intends to inspect the diversion system and the hydroelectric plant, as I would like our expert to accompany your staff members during any such inspection.

Thank you for your cooperation. If you have any questions or need any additional information, please advise.

Sincerely,

BANGS, McCULLEN, BUTLER,
FOYE & SIMMONS, L.L.P.


Michael M. Hickey

MMH:bjc
cc: Client

Appendix E

Spearfish Hydro 1 Flow Test Data 12/9/2005

Spearfish Hydro Flow Test Date 12-9-2005

Metered Kw	PF	cfs	psi	Kw per cfs	% of rated full load	% of Water rights
Two Generators Running #2 unit being measured						
2190	1	60	277	36.50	109.50%	50.00%
2092	1	54.47	277	38.41	104.60%	45.39%
2015	1	51.02	278	39.49	100.75%	42.52%
1890	1	47.54	278	39.76	94.50%	39.62%
1809	1	46.13	279	39.22	90.45%	38.44%
1709	1	43.05	279	39.70	85.45%	35.88%
1615	0.99	40.09	280	40.28	80.75%	33.41%
1515	0.99	38.2	280	39.66	75.75%	31.83%
1399	0.99	36.21	279	38.64	69.95%	30.18%
1302	0.99	34.5	289	37.74	65.10%	28.75%
1213	0.97	33.2	280	36.54	60.65%	27.67%
1109	0.95	30.54	280	36.31	55.45%	25.45%
1000	1	27.7	279	36.10	50.00%	23.08%
895	1	24.87	279	35.99	44.75%	20.73%
814	1	22.64	279	35.95	40.70%	18.87%
				avg. kw per cfs		
				38.02		
This table shows the flow test with one generator being measured						
Generator #2 was tested, flow was measured in app 100 kw steps, each step was charted with the flow through the flowmeter						
This table shows that the water flow through one generator requires 60 cfs (50% of water rights) to reach the 2000kw rating of generation						
Thus showing if water flows are at 120 cfs (100% total water rights) then we could generate 2000kw per generator or 4000kw plant total						
Note: 38 Kw = 1 cfs						

Appendix F

HMC Power Production Records Database

Spearfish Creek-Hydro 1 Aqueduct Flows

04/13/2006

Date	USGS		USGS		Hydro 1		Hydro 1		Remarks
	Spearfish (cfs)	Maurice (cfs)	Homestake Weir (cfs)	Power (kw)	Power (kwh)	Power (kwh)	Power (kwh)		
07/01/1912	ND	ND	49.60	32700	1363	No Notes-from indicated weir flows, assume normal operations			
05/30/1913	ND	ND	64.00	42200	1758	No Notes-from indicated weir flows, assume normal operations			
05/27/1914	ND	ND	71.63	62700	2613	No Notes-from indicated weir flows, assume normal operations			
05/16/1915	ND	ND	78.75	59700	2488	No Notes-from indicated weir flows, assume normal operations			
05/31/1916	ND	ND	89.43	70602	2942	May Average Water 18.69 inches 81.18-cfs			
06/13/1917	ND	ND	73.98	73003	3042	No Notes-from indicated weir flows, assume normal operations			
05/21/1918	ND	ND	76.35	42075	1753	No Notes-from indicated weir flows, assume normal operations			
05/03/1919	ND	ND	94.50	61555	2565	No Notes-from indicated weir flows, assume normal operations			
05/13/1920	ND	ND	95.97	69400	2892	No Notes-from indicated weir flows, assume normal operations			
06/22/1921	ND	ND	48.90	48440	2018	No Notes-from indicated weir flows, assume normal operations			
06/01/1922	ND	ND	102.59	68960	2873	No Notes-from indicated weir flows, assume normal operations			
04/21/1923	ND	ND	84.45	61000	2542	No Notes-from indicated weir flows, assume normal operations			
05/15/1924	ND	ND	125.00	72600	3025	No Notes-from indicated weir flows, assume normal operations			
06/28/1925	ND	ND	76.35	70300	2929	No Notes-from indicated weir flows, assume normal operations			
05/11/1926	ND	ND	77.95	69000	2875	No Notes-from indicated weir flows, assume normal operations			
05/21/1927	ND	ND	117.36	66000	2750	No Notes-from indicated weir flows, assume normal operations			
05/15/1928	ND	ND	102.59	64800	2700	No Notes-from indicated weir flows, assume normal operations			
06/14/1929	ND	ND	110.17	62500	2604	No Notes-from indicated weir flows, assume normal operations			
06/02/1930	ND	ND	101.35	76700	3196	No Notes-from indicated weir flows, assume normal operations			
05/05/1931	ND	ND	70.08	69800	2908	No Notes-from indicated weir flows, assume normal operations			
06/08/1932	ND	ND	89.43	75500	3146	No Notes-from indicated weir flows, assume normal operations			
05/21/1933	ND	ND	113.77	82600	3442	No Notes-from indicated weir flows, assume normal operations			
05/15/1934	ND	ND	37.73	40000	1667	No Notes-from indicated weir flows, assume normal operations			
05/20/1935	ND	ND	41.55	48200	2008	No Notes-from indicated weir flows, assume normal operations			
05/20/1936	ND	ND	40.28	44000	1833	No Notes-from indicated weir flows, assume normal operations			
06/12/1922	ND	ND	102.59	85300	3554	No Notes-from indicated weir flows, assume normal operations			
05/11/1938	ND	ND	38.98	44000	1833	No Notes-from indicated weir flows, assume normal operations			
05/21/1939	ND	ND	30.43	34000	1417	No Notes-from indicated weir flows, assume normal operations			
05/15/1940	ND	ND	37.10	43500	1813	No Notes-from indicated weir flows, assume normal operations			
04/30/1941	ND	ND	76.35	78500	3271	No Notes-from indicated weir flows, assume normal operations			
06/15/1942	ND	ND	43.50	48000	2000	WW2 Mine Shutdown 1942-1945			
06/24/1943	ND	ND	44.18	37500	1563	No Notes-from indicated weir flows, assume normal operations			
05/14/1944	ND	ND	65.50	48200	2008	No Notes-from indicated weir flows, assume normal operations			
06/13/1945	ND	ND	95.97	48300	2013	No Notes-from indicated weir flows, assume normal operations			
05/24/1946	ND	ND	102.59	82500	3438	No Notes-from indicated weir flows, assume normal operations			
USGS Spearfish Gage Data Start 10/1/1946									
06/22/1947	456.00	ND	61.00	62000	2583	No Notes			
06/23/1947	609.00	ND	87.75	81500	3396	No Notes			

Spearfish Creek-Hydro 1 Aqueduct Flows

04/13/2006

Date	USGS		USGS		Hydro 1		Remarks
	Spearfish (cfs)	Maurice (cfs)	Homestake Weir (cfs)	Power (kw)	Hydro 1 Power (kwh)		
06/24/1947	315.00	ND	78.75	79500	3313	1 inch over dam	
06/25/1947	205.00	ND	61.00	66500	2771	cut out water at intake	
06/26/1947	151.00	ND	95.97	86500	3604	16 inches low at forebay	
06/27/1947	127.00	ND	94.50	84000	3500	2 inches over dam	
05/13/1948	62.00	ND	41.55	60000	2500	Flow not at 120-cfs or greater. High flow for year selected Homestake records	
05/06/1949	144.00	ND	68.55	96000	4000	Forebay 11 inches low	
05/07/1949	147.00	ND	67.00	96000	4000	Forebay 11 inches low	
05/11/1950	58.00	ND	49.60	65000	2708	Flow not at 120-cfs or greater. High flow for year selected Homestake records	
05/22/1951	38.00	ND	46.85	57000	2375	Flow not at 120-cfs or greater. High flow for year selected Homestake records	
05/23/1952	521.00	ND	ND	97000	4042	Weir Out	
05/24/1952	290.00	ND	ND	96000	4000	Weir Out Forebay running over	
05/25/1952	188.00	ND	ND	70000	2917	Weir Out Forebay running over	
05/26/1952	145.00	ND	ND	84000	3500	Weir Out Forebay running over	
05/27/1952	123.00	ND	81.18	97000	4042		
05/08/1953	126.00	ND	77.95	94000	3917		
05/09/1953	184.00	ND	89.43	94000	3917		
05/10/1953	146.00	ND	77.95	87000	3625		
05/11/1953	132.00	ND	81.18	89000	3708		
05/20/1953	133.00	ND	74.78	95000	3958		
05/21/1953	144.00	ND	74.78	94000	3917	3.75 inches over dam	
05/22/1953	139.00	ND	125.00	95000	3958	Intake and forebay overflowing	
05/23/1953	139.00	ND	81.18	94000	3917	Forebay overflowing	
05/24/1953	136.00	ND	82.80	95000	3958	Forebay full	
05/25/1953	139.00	ND	ND	94000	3917	Over weir/Forebay overflowing	
05/26/1953	128.00	ND	81.18	93000	3875		
05/27/1953	121.00	ND	81.18	94000	3917		
05/24/1954	64.00	ND	73.20	68000	2833	Flow not at 120-cfs or greater. High flow for year selected	
06/11/1955	164.00	ND	94.50	94000	3917	Intake overflowing Forebay full	
06/12/1955	136.00	ND	91.13	94000	3917	Forebay overflowing	
05/22/1956	43.00	ND	58.00	51000	2125	Flow not at 120-cfs or greater. High flow for year selected Homestake records	
05/02/1957	92.00	ND	125.00	92000	3833	Flow not at 120-cfs or greater. High flow for year selected Homestake records	
05/19/1958	43.00	ND	44.18	47000	1958	Flow not at 120-cfs or greater. High flow for year selected Homestake records	
05/08/1959	47.00	ND	44.18	52000	2167	Flow not at 120-cfs or greater. High flow for year selected Homestake records	
05/29/1960	38.00	ND	34.00	37000	1542	Flow not at 120-cfs or greater. High flow for year selected Homestake records	
05/24/1961	26.00	ND	24.78	25000	1042	Flow not at 120-cfs or greater. High flow for year selected Homestake records	
05/22/1962	521.00	ND	161.90	89000	3708	Forebay overflowing Water 4-17 inches over intake	
05/23/1962	558.00	ND	161.90	93000	3875	13 inches over intake forebay 1 inch over	

Spearfish Creek-Hydro 1 Aqueduct Flows

04/13/2006

Date	USGS		USGS		Homestake Weir (cfs)	Hydro 1		Remarks
	Spearfish (cfs)	Maurice (cfs)	Power (kw)	Power (kwh)				
05/24/1962	237.00	ND	92000	3833	161.90	92000	3833	8 inches over intake going down
05/25/1962	266.00	ND	93000	3875	161.90	93000	3875	Intake 5 inches over
05/26/1962	212.00	ND	94000	3917	161.90	94000	3917	Intake 4 inch over
05/27/1962	166.00	ND	93000	3875	161.90	93000	3875	Intake 3 inches over
05/28/1962	130.00	ND	94000	3917	161.90	94000	3917	Intake 2 inches over
05/30/1962	130.00	ND	94000	3917	161.90	94000	3917	Intake 2 inches over
04/28/1963	127.00	ND	98000	4083	161.90	98000	4083	1 inch over intake
04/29/1963	438.00	ND	97000	4042	161.90	97000	4042	13 inches over weir
04/30/1963	406.00	ND	97000	4042	161.90	97000	4042	8 inches average over intake
05/01/1963	285.00	ND	97000	4042	161.90	97000	4042	7 inches over intake
05/02/1963	242.00	ND	98000	4083	161.90	98000	4083	5 inches over intake
05/03/1963	196.00	ND	97000	4042	161.90	97000	4042	5.5 inches over intake
05/04/1963	172.00	ND	97000	4042	161.90	97000	4042	
05/05/1963	155.00	ND	97000	4042	161.90	97000	4042	3.5 inches over intake
05/06/1963	145.00	ND	98000	4083	161.90	98000	4083	Line 1 tripped Water over dam
05/07/1963	133.00	ND	98000	4083	161.90	98000	4083	
05/08/1963	124.00	ND	97000	4042	161.90	97000	4042	
06/15/1963	132.00	ND	61000	2542	55.20	61000	2542	No Notes-from indicated USGS flows, assume normal operations
06/16/1963	312.00	ND	58000	2417	53.78	58000	2417	No Notes-from indicated USGS flows, assume normal operations
06/17/1963	237.00	ND	59000	2458	50.98	59000	2458	No Notes-from indicated USGS flows, assume normal operations
06/18/1963	178.00	ND	58000	2417	49.60	58000	2417	No Notes-from indicated USGS flows, assume normal operations
06/19/1963	145.00	ND	56000	2333	47.53	56000	2333	No Notes-from indicated USGS flows, assume normal operations
06/20/1963	129.00	ND	53000	2208	44.18	53000	2208	No Notes-from indicated USGS flows, assume normal operations
06/09/1964	1480.00	ND	76000	3167	161.90	76000	3167	24 inches over intake
06/10/1964	493.00	ND	98000	4083	161.90	98000	4083	14 inches over intake
06/11/1964	252.00	ND	96000	4000	161.90	96000	4000	13 inches over intake
06/12/1964	166.00	ND	98000	4083	161.90	98000	4083	12 inches over intake
06/13/1964	140.00	ND	97000	4042	161.90	97000	4042	Forebay 1.5 inches over 8-inches over at intake
06/14/1964	151.00	ND	97000	4042	161.90	97000	4042	Throttle down intake. Forebay 4 inches intake 6 inches over
06/15/1964	135.00	ND	98000	4083	161.90	98000	4083	Intake 5 inches over
06/22/1964	164.00	ND	94000	3917	161.90	94000	3917	3.75 inches over intake
06/23/1964	248.00	ND	97000	4042	161.90	97000	4042	3 inches over intake
06/24/1964	151.00	ND	98000	4083	161.90	98000	4083	Forebay 3.5 Intake 4.5 inches over
06/25/1964	120.00	ND	98000	4083	161.90	98000	4083	2 inches over at intake forebay 3 inches over
05/14/1965	1260.00	ND	75000	3125	161.90	75000	3125	Intake overflowing Forebay 6.5 inches over
05/15/1965	1880.00	ND	2000	83	161.90	2000	83	Flood conditions Intake plugged. Closed gate valves
05/16/1965	820.00	ND	88000	3667	161.90	88000	3667	
05/17/1965	504.00	ND	92000	3833	161.90	92000	3833	

Spearfish Creek-Hydro 1 Aqueduct Flows

04/13/2006

Date	USGS		USGS		Hydro 1		Remarks
	Spearfish (cfs)	Maurice (cfs)	Homestake Weir (cfs)	Power (kw)	Power (kwh)		
05/18/1965	357.00	ND	102.59	85000	3542	Throttling	
05/19/1965	288.00	ND	82.80	71000	2958	Forebay spilling over	
05/20/1965	229.00	ND	86.10	83000	3458	Intake still closed	
05/21/1965	194.00	ND	161.90	97000	4042	Forebay 6 inches over	
05/22/1965	175.00	ND	161.90	97000	4042	Forebay 7 inches over	
05/23/1965	153.00	ND	161.90	98000	4083	Forebay 1 inch low	
05/24/1965	202.00	ND	161.90	98000	4083	Forebay 8.5 inches over	
05/25/1965	249.00	ND	161.90	98000	4083	Forebay 4 inches over	
05/26/1965	237.00	ND	161.90	96000	4000	Forebay 8 inches over	
05/27/1965	211.00	ND	161.90	95000	3958		
05/28/1965	191.00	ND	161.90	98000	4083	Forebay 10 inches over	
05/29/1965	185.00	ND	161.90	98000	4083		
05/30/1965	166.00	ND	161.90	98000	4083	Forebay 8 inches over	
05/31/1965	158.00	ND	161.90	96000	4000	Forebay 8 inches over	
06/01/1965	158.00	ND	161.90	98000	4083	Forebay 7 inches over	
06/02/1965	150.00	ND	161.90	98000	4083	Forebay 5.5 inches over	
06/03/1965	135.00	ND	161.90	98000	4083	Forebay 2 inches over	
06/04/1965	128.00	ND	161.90	98000	4083		
06/05/1965	124.00	ND	161.90	98000	4083	Forebay 4 inches over	
05/23/1966	57.00	ND	70.08	66000	2750	Flow not at 120-cfs or greater. High flow for year selected Homestake records	
06/15/1967	124.00	ND	161.90	96000	4000	Intake 12 inches over	
06/16/1967	190.00	ND	161.90	99000	4125	Forebay 3.25 inches over 11 inches over at intake	
06/17/1967	130.00	ND	161.90	97000	4042	Intake overflowing	
05/02/1968	75.00	ND	108.45	72000	3000	Flow not at 120-cfs or greater. High flow for year selected Homestake records	
05/03/1969	338.00	ND	161.90	97000	4042	Forebay 4.5 inches over 6 inches over intake	
05/04/1969	269.00	ND	161.90	94000	3917		
05/05/1969	250.00	ND	161.90	97000	4042	4 inches over at intake Forebay 3 inches over	
05/06/1969	197.00	ND	161.90	96000	4000	Forebay 1.25 over Intake overflowing	
05/07/1969	159.00	ND	161.90	96000	4000	Intake 5.5 over Forebay 4 over	
05/08/1969	133.00	ND	161.90	97000	4042	Intake 4.5 over Forebay 3 over	
04/28/1970	126.00	ND	125.65	86000	3583		
04/29/1970	122.00	ND	116.75	82000	3417		
05/04/1970	133.00	ND	116.75	100000	4167		
05/05/1970	135.00	ND	161.90	95000	3958	Forebay 4.5 over	
05/06/1970	141.00	ND	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations	
05/07/1970	223.00	ND	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations	
05/08/1970	343.00	ND	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
05/09/1970	303.00	ND	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations	

Spearfish Creek-Hydro 1 Aqueduct Flows

04/13/2006

Date	USGS		USGS Maurice (cfs)	Homestake Weir (cfs)	Hydro 1		Remarks
	Spearfish (cfs)	Power (kw)			Power (kwh)		
05/10/1970	227.00	ND	ND	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations
05/11/1970	248.00	ND	ND	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations
05/12/1970	263.00	ND	ND	161.90	94000	3917	No Notes-from indicated USGS flows, assume normal operations
05/13/1970	263.00	ND	ND	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations
05/14/1970	245.00	ND	ND	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations
05/15/1970	207.00	ND	ND	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations
05/16/1970	201.00	ND	ND	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations
05/17/1970	230.00	ND	ND	161.90	83000	3458	No Notes-from indicated USGS flows, assume normal operations
05/18/1970	267.00	ND	ND	161.90	110000	4583	No Notes-from indicated USGS flows, assume normal operations
05/19/1970	252.00	ND	ND	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations
05/20/1970	227.00	ND	ND	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations
05/21/1970	207.00	ND	ND	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations
05/22/1970	188.00	ND	ND	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations
05/23/1970	171.00	ND	ND	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations
05/24/1970	153.00	ND	ND	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations
05/25/1970	140.00	ND	ND	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations
05/26/1970	129.00	ND	ND	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations
05/27/1970	126.00	ND	ND	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations
05/28/1970	125.00	ND	ND	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations
05/29/1970	124.00	ND	ND	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations
05/30/1970	122.00	ND	ND	161.90	96000	4000	Weir indicator out
05/31/1970	158.00	ND	ND	161.90	96000	4000	
06/01/1970	194.00	ND	ND	161.90	95000	3958	Forebay 2 inch over
06/02/1970	159.00	ND	ND	161.90	96000	4000	Forebay 2 inch over
06/03/1970	138.00	ND	ND	161.90	96000	4000	Forebay 2 inch over
06/04/1970	128.00	ND	ND	161.90	96000	4000	Forebay 2 inch over
06/05/1970	124.00	ND	ND	161.90	95000	3958	Forebay 2 inch over
06/06/1970	126.00	ND	ND	161.90	96000	4000	Forebay 2 inch over
06/07/1970	126.00	ND	ND	161.90	95000	3958	Forebay 1 inch over
06/08/1970	121.00	ND	ND	152.60	95000	3958	
06/12/1970	510.00	ND	ND	161.90	95000	3958	
06/13/1970	386.00	ND	ND	161.90	96000	4000	Forebay 2 inch over
06/14/1970	291.00	ND	ND	161.90	96000	4000	
06/15/1970	234.00	ND	ND	161.90	96000	4000	Forebay 4 inch over
06/16/1970	201.00	ND	ND	161.90	96000	4000	Forebay 3 inch over
06/17/1970	171.00	ND	ND	161.90	96000	4000	Forebay 3 inch over
06/18/1970	153.00	ND	ND	161.90	96000	4000	Forebay 2 inch over
06/19/1970	137.00	ND	ND	161.90	96000	4000	Forebay 2 inch over
06/20/1970	131.00	ND	ND	161.90	96000	4000	Forebay 2 inch over

Spearfish Creek-Hydro 1 Aqueduct Flows

04/13/2006

Date	USGS		USGS Maurice (cfs)	Homestake Weir (cfs)	Hydro 1		Remarks
	Spearfish (cfs)	Power (kw)			Power (kwh)		
06/21/1970	128.00	ND	161.90	96000	4000	Forebay 2 inch over	
06/22/1970	126.00	ND	161.90	96000	4000	Forebay 2 inch over	
06/23/1970	120.00	ND	161.90	95000	3958		
04/17/1971	125.00	ND	152.60	90000	3750		
04/18/1971	136.00	ND	161.90	90000	3750	Forebay 2 over	
04/19/1971	137.00	ND	161.90	93000	3875	Forebay 1 inch over	
04/20/1971	137.00	ND	161.90	96000	4000	Forebay 1 inch over	
04/21/1971	137.00	ND	161.90	96000	4000	Forebay 1 inch over	
04/22/1971	137.00	ND	161.90	96000	4000	Forebay 2 inch over	
04/23/1971	137.00	ND	161.90	96000	4000	Forebay 2 inch over	
04/24/1971	137.00	ND	161.90	95000	3958	Forebay 2 inch over	
04/25/1971	135.00	ND	161.90	92000	3833	Forebay 0.2 inch over	
04/26/1971	135.00	ND	161.90	96000	4000		
04/27/1971	135.00	ND	161.90	96000	4000	Forebay 2 inch over	
04/28/1971	135.00	ND	161.90	96000	4000		
04/29/1971	135.00	ND	161.90	94000	3917		
04/30/1971	137.00	ND	161.90	96000	4000		
05/01/1971	137.00	ND	161.90	96000	4000	Forebay 1 inch over	
05/02/1971	138.00	ND	161.90	96000	4000		
05/03/1971	136.00	ND	161.90	96000	4000	Forebay 4 inch over	
05/04/1971	158.00	ND	161.90	95000	3958	Forebay 4 inch over	
05/05/1971	167.00	ND	161.90	96000	4000	Forebay 2 inch over	
05/06/1971	149.00	ND	161.90	96000	4000	Forebay 2 inch over	
05/07/1971	135.00	ND	161.90	96000	4000	Forebay 2 inch over	
05/08/1971	131.00	ND	161.90	96000	4000	Forebay 2 inch over	
05/09/1971	129.00	ND	161.90	94000	3917	Forebay 2 inch over	
05/10/1971	169.00	ND	161.90	97000	4042	Forebay 4 inch over	
05/11/1971	220.00	ND	161.90	96000	4000	Forebay 3 inch over	
05/12/1971	194.00	ND	161.90	96000	4000	Forebay 3 inch over	
05/13/1971	176.00	ND	161.90	96000	4000	Forebay 3 inch over	
05/14/1971	163.00	ND	161.90	96000	4000	Forebay 4 inch over	
05/15/1971	150.00	ND	161.90	96000	4000	Forebay 4 inch over	
05/16/1971	140.00	ND	161.90	96000	4000	Forebay 4 inch over	
05/17/1971	127.00	ND	161.90	96000	4000	Forebay 4 inch over	
05/18/1971	121.00	ND	161.90	94000	3917	Forebay 3 inch over	
05/23/1971	128.00	ND	161.90	70000	2917	Intake shutdown 24 inches over weir	
05/24/1971	172.00	ND	161.90	103000	4292	Forebay 4 inch over	
05/25/1971	164.00	ND	161.90	97000	4042	Forebay 2 inch over	
05/26/1971	146.00	ND	161.90	96000	4000	Forebay 2 inch over	

Spearfish Creek-Hydro 1 Aqueduct Flows

04/13/2006

Date	USGS		USGS Maurice (cfs)	Homestake Weir (cfs)	Hydro 1		Remarks
	Spearfish (cfs)	Power (kw)			Power (kwh)		
05/27/1971	131.00	ND	ND	161.90	96000	4000	Forebay 2 inch over
05/11/1972	123.00	ND	ND	91.90	81000	3375	No Notes-from indicated USGS flows, assume normal operations
05/12/1972	146.00	ND	ND	116.75	88000	3667	No Notes-from indicated USGS flows, assume normal operations
05/13/1972	160.00	ND	ND	132.75	92000	3833	No Notes-from indicated USGS flows, assume normal operations
05/14/1972	159.00	ND	ND	116.75	93000	3875	No Notes-from indicated USGS flows, assume normal operations
05/15/1972	149.00	ND	ND	116.75	93000	3875	No Notes-from indicated USGS flows, assume normal operations
05/16/1972	139.00	ND	ND	108.45	90000	3750	No Notes-from indicated USGS flows, assume normal operations
05/17/1972	129.00	ND	ND	108.45	85000	3542	No Notes-from indicated USGS flows, assume normal operations
05/06/1973	149.00	ND	ND	161.90	99000	4125	Forebay 0.4 over Intake 6 inch over
05/07/1973	166.00	ND	ND	161.90	107000	4458	Forebay 4 over
05/08/1973	180.00	ND	ND	161.90	102000	4250	Forebay 2 over
05/09/1973	213.00	ND	ND	161.90	102000	4250	Forebay 5 over
05/10/1973	185.00	ND	ND	161.90	102000	4250	Forebay 4 over
05/11/1973	171.00	ND	ND	161.90	102000	4250	Forebay 4 over
05/12/1973	153.00	ND	ND	161.90	102000	4250	Forebay 4 over
05/13/1973	144.00	ND	ND	161.90	102000	4250	Forebay 4 over
05/14/1973	144.00	ND	ND	161.90	102000	4250	Forebay 6 over
05/15/1973	149.00	ND	ND	161.90	100000	4167	Forebay 6 over
05/16/1973	166.00	ND	ND	161.90	99000	4125	Forebay 3.5 over
05/17/1973	180.00	ND	ND	161.90	98000	4083	Forebay 3.5 over
05/18/1973	194.00	ND	ND	161.90	101000	4208	Forebay 4 over
05/19/1973	180.00	ND	ND	161.90	95000	3958	Forebay 0.4 over
05/20/1973	163.00	ND	ND	161.90	102000	4250	Forebay 0.3 over
05/21/1973	153.00	ND	ND	161.90	103000	4292	Forebay 3 over
05/22/1973	137.00	ND	ND	161.90	102000	4250	Forebay 4 over
05/23/1973	126.00	ND	ND	161.90	102000	4250	Forebay 4 over
05/24/1973	122.00	ND	ND	161.90	102000	4250	Forebay 5 over
05/25/1973	122.00	ND	ND	161.90	100000	4167	Forebay 5 over
05/26/1973	124.00	ND	ND	161.90	100000	4167	Forebay 0.5 over
05/27/1973	153.00	ND	ND	161.90	100000	4167	Forebay 5 over
05/28/1973	210.00	ND	ND	161.90	100000	4167	
05/29/1973	248.00	ND	ND	161.90	101000	4208	Forebay 5 over
05/30/1973	245.00	ND	ND	161.90	101000	4208	Forebay 5 over
05/31/1973	273.00	ND	ND	161.90	101000	4208	Forebay 5 over
06/01/1973	248.00	ND	ND	161.90	102000	4250	Forebay 5 over
06/02/1973	241.00	ND	ND	161.90	101000	4208	Forebay 5 over
06/03/1973	227.00	ND	ND	161.90	85000	3542	Forebay 4 over
06/04/1973	204.00	ND	ND	161.90	113000	4708	Forebay 5 over

Spearfish Creek-Hydro 1 Aqueduct Flows

Date	USGS		USGS Maurice Weir (cfs)	USGS Spearfish Weir (cfs)	Hydro 1 Power (kw)	Hydro 1 Power (kwh)	Remarks
	Spearfish (cfs)	Maurice (cfs)					
06/05/1973	177.00	ND	161.90	101000	4208	Forebay 5 over	
06/06/1973	158.00	ND	161.90	101000	4208	Forebay 5 over	
06/07/1973	144.00	ND	161.90	101000	4208	Forebay 5 over	
06/08/1973	133.00	ND	161.90	99000	4125	Forebay 5 over	
06/09/1973	124.00	ND	161.90	99000	4125	Forebay 4 over	
06/10/1973	122.00	ND	161.90	99000	4125	Forebay 5 over	
06/11/1973	122.00	ND	161.90	103000	4292	Forebay 5 over	
06/12/1973	124.00	ND	161.90	101000	4208	Forebay 5 over	
05/20/1974	66.00	ND	91.90	78000	3250	Flow not at 120-cfs or greater. High flow for year selected Homestake records	
05/06/1975	120.00	ND	161.90	101000	4208	Forebay 6 over	
05/07/1975	143.00	ND	161.90	101000	4208	Forebay 4 over	
05/08/1975	135.00	ND	161.90	101000	4208	Forebay 4 over	
05/09/1975	131.00	ND	161.90	101000	4208	Forebay 4 over	
05/10/1975	133.00	ND	161.90	101000	4208	Forebay 4 over	
05/11/1975	140.00	ND	161.90	101000	4208	Forebay 4 over	
05/12/1975	138.00	ND	161.90	98000	4083	Forebay 4 over	
05/13/1975	128.00	ND	161.90	101000	4208	Forebay 3 over	
05/14/1975	123.00	ND	161.90	100000	4167	Forebay 0.3 over	
05/15/1975	120.00	ND	161.90	99000	4125		
06/14/1976	561.00	ND	161.90	77000	3208		
06/15/1976	1500.00	ND	161.90	41000	1708	Forebay 6 over	
06/16/1976	309.00	ND	161.90	63000	2625	Forebay 3 over Dam overflowing grates plugged	
06/17/1976	447.00	ND	161.90	99000	4125	Forebay 4 over	
06/18/1976	365.00	ND	161.90	100000	4167	Forebay 4 over	
06/19/1976	223.00	ND	161.90	100000	4167	Forebay 5 over	
06/20/1976	153.00	ND	161.90	100000	4167	Forebay 4 over	
06/21/1976	135.00	ND	161.90	102000	4250	Forebay 3 over	
06/22/1976	144.00	ND	161.90	98000	4083	Forebay 4 over	
06/23/1976	163.00	ND	161.90	99000	4125	Forebay 5 over	
06/24/1976	139.00	ND	161.90	101000	4208	Forebay 4 over	
06/25/1976	120.00	ND	161.90	101000	4208	Forebay 4 over	
04/29/1977	134.00	ND	161.90	99000	4125	No Notes-from indicated USGS flows, assume normal operations	
04/30/1977	150.00	ND	161.90	99000	4125	No Notes-from indicated USGS flows, assume normal operations	
05/01/1977	162.00	ND	161.90	99000	4125	No Notes-from indicated USGS flows, assume normal operations	
05/02/1977	162.00	ND	161.90	101000	4208	No Notes-from indicated USGS flows, assume normal operations	
05/03/1977	158.00	ND	161.90	99000	4125	No Notes-from indicated USGS flows, assume normal operations	
05/04/1977	153.00	ND	161.90	100000	4167	No Notes-from indicated USGS flows, assume normal operations	
05/05/1977	140.00	ND	161.90	100000	4167	No Notes-from indicated USGS flows, assume normal operations	

Spearfish Creek-Hydro 1 Aqueduct Flows

04/13/2006

Date	USGS		USGS		Hydro 1		Remarks
	Spearfish (cfs)	Maurice (cfs)	Homestake Weir (cfs)	Power (kw)	Power (kwh)		
05/06/1977	125.00	ND	161.90	100000	4167	No Notes-from indicated USGS flows, assume normal operations	
04/29/1978	160.00	ND	152.60	100000	4167		
04/30/1978	187.00	ND	161.90	90000	3750		
05/01/1978	155.00	ND	161.90	104000	4333	Forebay 2 over	
05/02/1978	137.00	ND	161.90	99000	4125		
05/04/1978	123.00	ND	161.90	100000	4167		
05/05/1978	122.00	ND	161.90	99000	4125		
05/07/1978	121.00	ND	161.90	96000	4000		
05/10/1978	141.00	ND	161.90	100000	4167		
05/11/1978	219.00	ND	161.90	99000	4125	Forebay 0.5 over	
05/12/1978	215.00	ND	161.90	98000	4083	Forebay 0.1 over	
05/13/1978	189.00	ND	161.90	97000	4042		
05/14/1978	179.00	ND	161.90	99000	4125		
05/15/1978	170.00	ND	161.90	102000	4250	Forebay 1 over	
05/16/1978	170.00	ND	161.90	99000	4125		
05/17/1978	160.00	ND	161.90	98000	4083	Forebay 0.5 over	
05/18/1978	170.00	ND	161.90	98000	4083		
05/19/1978	170.00	ND	161.90	99000	4125		
05/20/1978	160.00	ND	161.90	76000	3167	Line trouble	
05/21/1978	175.00	ND	161.90	99000	4125		
05/22/1978	170.00	ND	161.90	91000	3792		
05/23/1978	165.00	ND	161.90	99000	4125	Forebay 1 over	
05/24/1978	160.00	ND	161.90	99000	4125		
05/25/1978	145.00	ND	161.90	100000	4167		
05/26/1978	125.00	ND	161.90	100000	4167		
04/20/1979	65.00	ND	161.90	81000	3375	Flow not at 120-cfs or greater. High flow for year selected Homestake records	
04/20/1980	67.00	ND	108.45	76000	3167	Flow not at 120-cfs or greater. High flow for year selected Homestake records	
06/05/1981	66.00	ND	76.35	45000	1875	Flow not at 120-cfs or greater. High flow for year selected Homestake records	
05/14/1982	189.00	ND	161.90	82000	3417	No Notes-from indicated USGS flows, assume normal operations	
05/15/1982	983.00	ND	161.90	103000	4292	No Notes-from indicated USGS flows, assume normal operations	
05/16/1982	957.00	ND	161.90	92000	3833	No Notes-from indicated USGS flows, assume normal operations	
05/17/1982	1000.00	ND	161.90	86000	3583	No Notes-from indicated USGS flows, assume normal operations	
05/18/1982	856.00	ND	161.90	83000	3458	No Notes-from indicated USGS flows, assume normal operations	
05/19/1982	826.00	ND	161.90	97000	4042	Forebay 2 over	
05/20/1982	1180.00	ND	161.90	99000	4125	Forebay 2 over	
05/21/1982	1210.00	ND	161.90	87000	3625	Forebay 4 over	
05/22/1982	1430.00	ND	161.90	87000	3625		
05/23/1982	1030.00	ND	161.90	90000	3750	Forebay 1 over	

Spearfish Creek-Hydro 1 Aqueduct Flows

04/13/2006

Date	USGS		USGS Maurice (cfs)	Homestake Weir (cfs)	Hydro 1		Remarks
	Spearfish (cfs)	Power (kw)			Power (kwh)		
05/24/1982	838.00	ND	ND	152.60	77000	3208	No Notes-from indicated USGS flows, assume normal operations
05/25/1982	790.00	ND	ND	161.90	83000	3458	No Notes-from indicated USGS flows, assume normal operations
05/26/1982	868.00	ND	ND	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations
05/27/1982	868.00	ND	ND	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations
05/28/1982	732.00	ND	ND	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations
05/29/1982	457.00	ND	ND	161.90	86000	3583	No Notes-from indicated USGS flows, assume normal operations
05/30/1982	412.00	ND	ND	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations
05/31/1982	369.00	ND	ND	161.90	84000	3500	No Notes-from indicated USGS flows, assume normal operations
06/01/1982	377.00	ND	ND	108.45	100000	4167	Strike
06/02/1982	287.00	ND	ND	108.45	77000	3208	
06/03/1982	297.00	ND	ND	95.95	72000	3000	
06/04/1982	343.00	ND	ND	100.30	42000	1750	
06/05/1982	297.00	ND	ND	88.00	77000	3208	
06/06/1982	190.00	ND	ND	84.15	37000	1542	Generator shutdown
06/07/1982	170.00	ND	ND	91.90	68000	2833	
06/08/1982	132.00	ND	ND	76.35	70000	2917	
06/09/1982	128.00	ND	ND	72.60	67000	2792	
06/10/1982	121.00	ND	ND	72.60	60000	2500	Replacing generator brushes
04/25/1983	136.00	ND	ND	161.90	94000	3917	No Notes-from indicated USGS flows, assume normal operations
04/26/1983	222.00	ND	ND	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations
04/27/1983	167.00	ND	ND	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations
04/28/1983	166.00	ND	ND	161.90	100000	4167	No Notes-from indicated USGS flows, assume normal operations
04/29/1983	156.00	ND	ND	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations
04/30/1983	153.00	ND	ND	161.90	89000	3708	No Notes-from indicated USGS flows, assume normal operations
05/01/1983	163.00	ND	ND	161.90	93000	3875	No Notes-from indicated USGS flows, assume normal operations
05/02/1983	177.00	ND	ND	161.90	114000	4750	No Notes-from indicated USGS flows, assume normal operations
05/03/1983	177.00	ND	ND	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations
05/04/1983	177.00	ND	ND	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations
05/05/1983	174.00	ND	ND	161.90	99000	4125	No Notes-from indicated USGS flows, assume normal operations
05/06/1983	182.00	ND	ND	161.90	100000	4167	No Notes-from indicated USGS flows, assume normal operations
05/07/1983	356.00	ND	ND	161.90	94000	3917	No Notes-from indicated USGS flows, assume normal operations
05/08/1983	317.00	ND	ND	161.90	99000	4125	No Notes-from indicated USGS flows, assume normal operations
05/09/1983	325.00	ND	ND	161.90	93000	3875	No Notes-from indicated USGS flows, assume normal operations
05/10/1983	310.00	ND	ND	161.90	99000	4125	No Notes-from indicated USGS flows, assume normal operations
05/11/1983	230.00	ND	ND	161.90	99000	4125	No Notes-from indicated USGS flows, assume normal operations
05/12/1983	182.00	ND	ND	161.90	99000	4125	No Notes-from indicated USGS flows, assume normal operations
05/13/1983	156.00	ND	ND	161.90	99000	4125	No Notes-from indicated USGS flows, assume normal operations
05/14/1983	140.00	ND	ND	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations
05/15/1983	137.00	ND	ND	161.90	100000	4167	No Notes-from indicated USGS flows, assume normal operations

Spearfish Creek-Hydro 1 Aqueduct Flows

04/13/2006

Date	USGS		USGS		Hydro 1		Hydro 1		Remarks
	Spearfish (cfs)	Maurice (cfs)	Homestake Weir (cfs)	Power (kw)	Power (kwh)	Power (kwh)	Power (kwh)		
05/16/1983	123.00	ND	161.90	87000	3625	No Notes-from indicated USGS flows, assume normal operations			
05/17/1983	143.00	ND	161.90	110000	4583	No Notes-from indicated USGS flows, assume normal operations			
05/18/1983	154.00	ND	161.90	100000	4167	No Notes-from indicated USGS flows, assume normal operations			
05/19/1983	160.00	ND	161.90	99000	4125	No Notes-from indicated USGS flows, assume normal operations			
05/20/1983	179.00	ND	161.90	99000	4125	No Notes-from indicated USGS flows, assume normal operations			
05/21/1983	180.00	ND	161.90	99000	4125	No Notes-from indicated USGS flows, assume normal operations			
05/22/1983	175.00	ND	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations			
05/23/1983	162.00	ND	161.90	101000	4208	No Notes-from indicated USGS flows, assume normal operations			
05/24/1983	153.00	ND	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations			
05/25/1983	148.00	ND	161.90	101000	4208	No Notes-from indicated USGS flows, assume normal operations			
05/26/1983	145.00	ND	161.90	99000	4125	No Notes-from indicated USGS flows, assume normal operations			
05/27/1983	137.00	ND	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations			
05/28/1983	129.00	ND	161.90	86000	3583	No Notes-from indicated USGS flows, assume normal operations			
05/29/1983	125.00	ND	161.90	101000	4208	No Notes-from indicated USGS flows, assume normal operations			
05/30/1983	124.00	ND	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations			
05/31/1983	126.00	ND	161.90	110000	4583	No Notes-from indicated USGS flows, assume normal operations			
06/01/1983	125.00	ND	157.15	101000	4208	No Notes-from indicated USGS flows, assume normal operations			
06/02/1983	120.00	ND	143.45	100000	4167	No Notes-from indicated USGS flows, assume normal operations			
05/10/1984	125.00	ND	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations			
05/11/1984	129.00	ND	161.90	99000	4125	No Notes-from indicated USGS flows, assume normal operations			
05/12/1984	124.00	ND	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations			
05/13/1984	111.00	ND	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations			
05/14/1984	112.00	ND	161.90	104000	4333	No Notes-from indicated USGS flows, assume normal operations			
05/15/1984	162.00	ND	161.90	112000	4667	No Notes-from indicated USGS flows, assume normal operations			
05/16/1984	180.00	ND	161.90	87000	3625	No Notes-from indicated USGS flows, assume normal operations			
05/17/1984	163.00	ND	161.90	108000	4500	No Notes-from indicated USGS flows, assume normal operations			
05/18/1984	137.00	ND	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations			
05/19/1984	122.00	ND	161.90	99000	4125	No Notes-from indicated USGS flows, assume normal operations			
06/10/1984	214.00	ND	161.90	98000	4083	6 inches over intake			
06/11/1984	233.00	ND	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations			
06/12/1984	199.00	ND	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations			
06/13/1984	176.00	ND	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations			
06/14/1984	198.00	ND	161.90	99000	4125	No Notes-from indicated USGS flows, assume normal operations			
06/15/1984	162.00	ND	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations			
06/16/1984	178.00	ND	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations			
06/17/1984	181.00	ND	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations			
06/18/1984	194.00	ND	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations			
06/19/1984	183.00	ND	161.90	99000	4125	No Notes-from indicated USGS flows, assume normal operations			
06/20/1984	183.00	ND	152.60	98000	4083	No Explanation			

Spearfsh Creek-Hydro 1 Aqueduct Flows

04/13/2006

Date	USGS		USGS Maurice (cfs)	Homestake Weir (cfs)	Hydro 1		Remarks
	Spearfsh (cfs)	Power (kw)			Power (kwh)		
06/21/1984	174.00	ND	143.45	97000	4042	No Notes-from indicated USGS flows, assume normal operations	
06/22/1984	146.00	ND	130.10	98000	4083	No Notes-from indicated USGS flows, assume normal operations	
06/23/1984	139.00	ND	130.10	87000	3625	No Notes-from indicated USGS flows, assume normal operations	
06/24/1984	134.00	ND	116.75	90000	3750	No Notes-from indicated USGS flows, assume normal operations	
06/25/1984	122.00	ND	102.80	101000	4208	No Notes-from indicated USGS flows, assume normal operations	
06/26/1984	121.00	ND	76.35	87000	3625	No Notes-from indicated USGS flows, assume normal operations	
06/27/1984	124.00	ND	68.95	98000	4083	No Notes-from indicated USGS flows, assume normal operations	
06/28/1984	120.00	ND	61.65	87000	3625	No Notes-from indicated USGS flows, assume normal operations	
05/17/1985	49.00	ND	51.15	44000	1833	Flow not at 120-cfs or greater. High flow for year selected Homestake records	
05/20/1986	67.00	ND	84.15	75000	3125	Flow not at 120-cfs or greater. High flow for year selected Homestake records	
05/21/1987	52.00	ND	65.25	76000	3167	Flow not at 120-cfs or greater. High flow for year selected Homestake records	
05/27/1988	54.00	ND	68.95	79000	3292	Maurice data starts 10/1/1988 Flow not at 120-cfs or greater. High flow for year selected Homestake records	
05/19/1989	71.00	67.00	91.90	65000	2708	Flow not at 120-cfs or greater. High flow for year selected Homestake records	
05/18/1990	73.00	79.00	108.45	84000	3500	Flow not at 120-cfs or greater. High flow for year selected Homestake records	
05/23/1991	101.00	120.00	161.90	87000	3625	No Notes-from indicated USGS flows, assume normal operations	
05/20/1992	45.00	40.00	37.10	43000	1792	Flow not at 120-cfs or greater. High flow for year selected Homestake records	
05/20/1993	57.00	60.00	50.50	67000	2792	Flow not at 120-cfs or greater. High flow for year selected Homestake records	
04/18/1994	93.00	137.00	161.90	11000	458	No Notes-from indicated USGS flows, assume normal operations	
04/19/1994	115.00	164.00	161.90	68000	2833	No Notes-from indicated USGS flows, assume normal operations	
04/20/1994	117.00	182.00	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
04/21/1994	119.00	190.00	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations	
04/22/1994	128.00	194.00	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations	
04/23/1994	163.00	197.00	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
04/24/1994	163.00	191.00	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations	
04/25/1994	171.00	207.00	161.90	103000	4292	No Notes-from indicated USGS flows, assume normal operations	
04/26/1994	169.00	188.00	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations	
04/27/1994	146.00	163.00	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations	
04/28/1994	131.00	146.00	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations	
04/29/1994	118.00	141.00	161.90	90000	3750	No Notes-from indicated USGS flows, assume normal operations	
04/30/1994	109.00	132.00	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
05/01/1994	106.00	135.00	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
05/02/1994	106.00	145.00	161.90	120000	5000	No Notes-from indicated USGS flows, assume normal operations	
05/03/1994	117.00	155.00	161.90	101000	4208	No Notes-from indicated USGS flows, assume normal operations	
05/04/1994	123.00	160.00	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations	
05/05/1994	128.00	161.00	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations	
05/06/1994	129.00	164.00	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations	

Spearfish Creek-Hydro 1 Aqueduct Flows

04/13/2006

Date	USGS		Homestake Weir (cfs)	Hydro 1		Remarks
	Spearfish (cfs)	Maurice (cfs)		Power (kw)	Power (kwh)	
05/07/1994	126.00	156.00	161.90	90000	3750	No Notes-from indicated USGS flows, assume normal operations
05/08/1994	125.00	147.00	161.90	90000	3750	No Notes-from indicated USGS flows, assume normal operations
05/09/1994	122.00	141.00	161.90	110000	4583	No Notes-from indicated USGS flows, assume normal operations
05/10/1994	115.00	136.00	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations
05/11/1994	113.00	130.00	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations
05/12/1994	106.00	124.00	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations
05/13/1994	107.00	125.00	161.90	94000	3917	No Notes-from indicated USGS flows, assume normal operations
05/14/1994	106.00	120.00	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations
05/08/1995	825.00	1470.00	85.00	85000	3542	Forebay filling must of plugged
05/09/1995	1390.00	1250.00	159.05	46000	1917	Plugging
05/10/1995	787.00	890.00	161.90	72000	3000	
05/11/1995	530.00	653.00	161.90	92000	3833	
05/12/1995	460.00	507.00	161.90	91000	3792	
05/13/1995	485.00	497.00	102.80	36000	1500	Line trouble
05/14/1995	387.00	389.00	152.60	65000	2708	
05/15/1995	318.00	308.00	161.90	10600	442	Put two boards in for more water at #1 (Must of pulled boards when plugging)
05/16/1995	277.00	263.00	161.90	82000	3417	No Notes-from indicated USGS flows, assume normal operations
05/17/1995	231.00	236.00	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations
05/18/1995	203.00	216.00	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations
05/19/1995	181.00	195.00	161.90	82000	3417	No Notes-from indicated USGS flows, assume normal operations
05/20/1995	167.00	182.00	161.90	91000	3792	No Notes-from indicated USGS flows, assume normal operations
05/21/1995	155.00	174.00	161.90	91000	3792	No Notes-from indicated USGS flows, assume normal operations
05/22/1995	142.00	161.00	161.90	93000	3875	No Notes-from indicated USGS flows, assume normal operations
05/23/1995	137.00	154.00	160.90	91000	3792	No Notes-from indicated USGS flows, assume normal operations
05/24/1995	131.00	148.00	155.40	92000	3833	No Notes-from indicated USGS flows, assume normal operations
05/25/1995	122.00	143.00	161.90	88000	3667	No Notes-from indicated USGS flows, assume normal operations
05/27/1995	124.00	135.00	159.05	84000	3500	No Notes-from indicated USGS flows, assume normal operations
05/28/1995	184.00	162.00	161.90	88000	3667	No Notes-from indicated USGS flows, assume normal operations
05/29/1995	174.00	209.00	161.90	88000	3667	No Notes-from indicated USGS flows, assume normal operations
05/30/1995	156.00	195.00	161.90	88000	3667	No Notes-from indicated USGS flows, assume normal operations
05/31/1995	141.00	179.00	161.90	119000	4958	No Notes-from indicated USGS flows, assume normal operations
06/01/1995	129.00	166.00	161.90	89000	3708	No Notes-from indicated USGS flows, assume normal operations
06/02/1995	120.00	155.00	161.90	90000	3750	No Notes-from indicated USGS flows, assume normal operations
06/02/1995	120.00	152.00	161.90	92000	3833	No Notes-from indicated USGS flows, assume normal operations
06/03/1995	119.00	146.00	161.90	89000	3708	No Notes-from indicated USGS flows, assume normal operations
06/04/1995	114.00	141.00	160.00	90000	3750	No Notes-from indicated USGS flows, assume normal operations
06/05/1995	107.00	134.00	154.50	85000	3542	No Notes-from indicated USGS flows, assume normal operations
06/06/1995	104.00	129.00	152.60	87000	3625	No Notes-from indicated USGS flows, assume normal operations
06/07/1995	98.00	124.00	149.00	87000	3625	No Notes-from indicated USGS flows, assume normal operations

Spearfish Creek-Hydro 1 Aqueduct Flows

04/13/2006

Date	USGS		USGS Maurice (cfs)	Homestake Weir (cfs)	Hydro 1		Remarks
	Spearfish (cfs)	Power (kw)			Power (kwh)		
06/08/1995	100.00	124.00	161.90	87000	3625	No Notes-from indicated USGS flows, assume normal operations	
06/09/1995	106.00	133.00	161.90	51000	2125	No Notes-from indicated USGS flows, assume normal operations	
06/10/1995	111.00	135.00	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
06/11/1995	108.00	136.00	161.90	104000	4333	No Notes-from indicated USGS flows, assume normal operations	
06/12/1995	107.00	134.00	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations	
06/13/1995	103.00	131.00	161.90	94000	3917	No Notes-from indicated USGS flows, assume normal operations	
06/14/1995	105.00	125.00	161.90	100000	4167	No Notes-from indicated USGS flows, assume normal operations	
06/22/1995	122.00	128.00	161.90	93000	3875	No Notes-from indicated USGS flows, assume normal operations	
06/23/1995	149.00	144.00	161.90	92000	3833	No Notes-from indicated USGS flows, assume normal operations	
06/24/1995	128.00	130.00	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations	
06/25/1995	119.00	120.00	161.90	100000	4167	No Notes-from indicated USGS flows, assume normal operations	
04/08/1996	96.00	124.00	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
04/09/1996	97.00	141.00	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations	
04/10/1996	97.00	166.00	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations	
04/11/1996	98.00	185.00	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations	
04/12/1996	98.00	157.00	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations	
04/13/1996	97.00	147.00	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations	
04/14/1996	98.00	130.00	161.90	84000	3500	No Notes-from indicated USGS flows, assume normal operations	
04/15/1996	98.00	122.00	161.90	115000	4792	No Notes-from indicated USGS flows, assume normal operations	
04/16/1996	98.00	127.00	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations	
04/17/1996	100.00	145.00	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations	
04/18/1996	100.00	157.00	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations	
04/19/1996	99.00	153.00	161.90	94000	3917	No Notes-from indicated USGS flows, assume normal operations	
04/20/1996	98.00	144.00	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations	
04/21/1996	99.00	137.00	161.90	94000	3917	No Notes-from indicated USGS flows, assume normal operations	
04/22/1996	98.00	127.00	161.90	101000	4208	No Notes-from indicated USGS flows, assume normal operations	
04/23/1996	97.00	123.00	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
04/24/1996	96.00	128.00	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations	
04/25/1996	97.00	138.00	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations	
04/26/1996	97.00	131.00	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations	
04/27/1996	101.00	127.00	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations	
04/28/1996	98.00	119.00	160.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations	
04/29/1996	95.00	114.00	154.50	98000	4083	No Notes-from indicated USGS flows, assume normal operations	
04/30/1996	95.00	115.00	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations	
05/01/1996	95.00	112.00	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations	
05/02/1996	100.00	121.00	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations	
05/03/1996	105.00	123.00	161.90	99000	4125	No Notes-from indicated USGS flows, assume normal operations	
05/04/1996	105.00	125.00	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations	
05/05/1996	105.00	125.00	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations	

Spearfish Creek-Hydro 1 Aqueduct Flows

04/13/2006

Date	USGS		Homestake Weir (cfs)	Hydro 1		Remarks
	Spearfish (cfs)	Maurice (cfs)		Power (kw)	Power (kwh)	
05/06/1996	105.00	126.00	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations
05/07/1996	105.00	131.00	161.90	86000	3583	No Notes-from indicated USGS flows, assume normal operations
05/08/1996	110.00	140.00	161.90	101000	4208	No Notes-from indicated USGS flows, assume normal operations
05/09/1996	110.00	150.00	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations
05/10/1996	110.00	146.00	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations
05/11/1996	110.00	140.00	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations
05/12/1996	110.00	139.00	161.90	100000	4167	No Notes-from indicated USGS flows, assume normal operations
05/13/1996	110.00	141.00	161.90	94000	3917	No Notes-from indicated USGS flows, assume normal operations
05/14/1996	115.00	148.00	161.90	91000	3792	No Notes-from indicated USGS flows, assume normal operations
05/15/1996	115.00	148.00	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations
05/16/1996	115.00	147.00	161.90	119000	4958	No Notes-from indicated USGS flows, assume normal operations
05/17/1996	115.00	146.00	161.90	74000	3083	No Notes-from indicated USGS flows, assume normal operations
05/18/1996	115.00	142.00	161.90	91000	3792	No Notes-from indicated USGS flows, assume normal operations
05/19/1996	110.00	136.00	161.90	90000	3750	No Notes-from indicated USGS flows, assume normal operations
05/20/1996	110.00	131.00	161.90	107000	4458	No Notes-from indicated USGS flows, assume normal operations
05/21/1996	110.00	126.00	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations
05/22/1996	110.00	124.00	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations
05/23/1996	110.00	133.00	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations
05/24/1996	110.00	148.00	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations
05/25/1996	110.00	152.00	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations
05/26/1996	110.00	166.00	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations
05/27/1996	127.00	197.00	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations
05/28/1996	150.00	211.00	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations
05/29/1996	164.00	216.00	161.90	100000	4167	No Notes-from indicated USGS flows, assume normal operations
05/30/1996	182.00	229.00	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations
05/31/1996	185.00	221.00	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations
06/01/1996	174.00	203.00	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations
06/02/1996	158.00	188.00	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations
06/03/1996	143.00	177.00	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations
06/04/1996	135.00	171.00	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations
06/05/1996	127.00	164.00	161.90	100000	4167	No Notes-from indicated USGS flows, assume normal operations
06/06/1996	126.00	165.00	161.90	105000	4375	No Notes-from indicated USGS flows, assume normal operations
06/07/1996	126.00	159.00	161.90	87000	3625	No Notes-from indicated USGS flows, assume normal operations
06/08/1996	121.00	150.00	161.90	87000	3625	No Notes-from indicated USGS flows, assume normal operations
06/09/1996	117.00	145.00	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations
06/10/1996	117.00	140.00	161.90	110000	4583	No Notes-from indicated USGS flows, assume normal operations
06/11/1996	119.00	136.00	161.90	87000	3625	No Notes-from indicated USGS flows, assume normal operations
06/12/1996	119.00	131.00	161.90	100000	4167	No Notes-from indicated USGS flows, assume normal operations
06/13/1996	118.00	127.00	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations

Spearfish Creek-Hydro 1 Aqueduct Flows

Date	USGS		USGS		Homestake Weir (cfs)	Hydro 1		Remarks
	Spearfish (cfs)	Maurice (cfs)	Power (kw)	Power (kwh)				
06/14/1996	118.00	122.00	161.90	3958	No Notes-from indicated USGS flows, assume normal operations			
06/15/1996	118.00	120.00	161.90	3958	No Notes-from indicated USGS flows, assume normal operations			
06/16/1996	115.00	120.00	161.90	3917	No Notes-from indicated USGS flows, assume normal operations			
04/04/1997	110.00	124.00	161.90	4000	No Notes-from indicated USGS flows, assume normal operations			
04/05/1997	120.00	119.00	161.90	3958	No Notes-from indicated USGS flows, assume normal operations			
04/18/1997	117.00	136.00	161.90	4000	No Notes-from indicated USGS flows, assume normal operations			
04/19/1997	116.00	165.00	161.90	3500	No Notes-from indicated USGS flows, assume normal operations			
04/20/1997	117.00	193.00	161.90	3542	No Notes-from indicated USGS flows, assume normal operations			
04/21/1997	219.00	245.00	161.90	5292	No Notes-from indicated USGS flows, assume normal operations			
04/22/1997	222.00	233.00	161.90	4083	No Notes-from indicated USGS flows, assume normal operations			
04/23/1997	199.00	216.00	161.90	4000	No Notes-from indicated USGS flows, assume normal operations			
04/24/1997	182.00	201.00	161.90	4042	No Notes-from indicated USGS flows, assume normal operations			
04/25/1997	172.00	189.00	161.90	4042	No Notes-from indicated USGS flows, assume normal operations			
04/26/1997	166.00	186.00	161.90	4042	No Notes-from indicated USGS flows, assume normal operations			
04/27/1997	171.00	188.00	161.90	4042	No Notes-from indicated USGS flows, assume normal operations			
04/28/1997	201.00	213.00	161.90	4167	No Notes-from indicated USGS flows, assume normal operations			
04/29/1997	222.00	222.00	161.90	3958	No Notes-from indicated USGS flows, assume normal operations			
04/30/1997	202.00	212.00	161.90	4083	No Notes-from indicated USGS flows, assume normal operations			
05/01/1997	199.00	205.00	161.90	4125	No Notes-from indicated USGS flows, assume normal operations			
05/02/1997	199.00	199.00	161.90	4167	No Notes-from indicated USGS flows, assume normal operations			
05/03/1997	173.00	185.00	161.90	4000	No Notes-from indicated USGS flows, assume normal operations			
05/04/1997	174.00	187.00	161.90	4000	No Notes-from indicated USGS flows, assume normal operations			
05/05/1997	209.00	218.00	161.90	3917	No Notes-from indicated USGS flows, assume normal operations			
05/06/1997	241.00	239.00	161.90	4083	No Notes-from indicated USGS flows, assume normal operations			
05/07/1997	280.00	265.00	161.90	4000	No Notes-from indicated USGS flows, assume normal operations			
05/08/1997	288.00	261.00	161.90	4042	No Notes-from indicated USGS flows, assume normal operations			
05/09/1997	257.00	248.00	161.90	3917	No Notes-from indicated USGS flows, assume normal operations			
05/10/1997	245.00	243.00	161.90	4167	No Notes-from indicated USGS flows, assume normal operations			
05/11/1997	257.00	247.00	161.90	4125	No Notes-from indicated USGS flows, assume normal operations			
05/12/1997	235.00	232.00	161.90	3917	No Notes-from indicated USGS flows, assume normal operations			
05/13/1997	219.00	222.00	161.90	3875	No Notes-from indicated USGS flows, assume normal operations			
05/14/1997	209.00	223.00	161.90	3958	No Notes-from indicated USGS flows, assume normal operations			
05/15/1997	198.00	218.00	161.90	3875	No Notes-from indicated USGS flows, assume normal operations			
05/16/1997	189.00	215.00	161.90	3958	No Notes-from indicated USGS flows, assume normal operations			
05/17/1997	189.00	215.00	161.90	3958	No Notes-from indicated USGS flows, assume normal operations			
05/18/1997	188.00	214.00	161.90	4000	No Notes-from indicated USGS flows, assume normal operations			
05/19/1997	174.00	199.00	161.90	4042	No Notes-from indicated USGS flows, assume normal operations			
05/20/1997	158.00	187.00	161.90	4958	No Notes-from indicated USGS flows, assume normal operations			

Spearfish Creek-Hydro 1 Aqueduct Flows

04/13/2006

Date	USGS		USGS		Hydro 1		Remarks
	Spearfish (cfs)	Maurice (cfs)	Homestake Weir (cfs)	Power (kw)	Power (kwh)		
05/21/1997	148.00	180.00	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
05/22/1997	156.00	179.00	161.90	72000	3000	No Notes-from indicated USGS flows, assume normal operations	
05/23/1997	145.00	169.00	161.90	90000	3750	No Notes-from indicated USGS flows, assume normal operations	
05/24/1997	141.00	162.00	161.90	90000	3750	No Notes-from indicated USGS flows, assume normal operations	
05/25/1997	142.00	164.00	161.90	90000	3750	No Notes-from indicated USGS flows, assume normal operations	
05/26/1997	148.00	174.00	161.90	90000	3750	No Notes-from indicated USGS flows, assume normal operations	
05/27/1997	151.00	174.00	161.90	108000	4500	No Notes-from indicated USGS flows, assume normal operations	
05/28/1997	145.00	169.00	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations	
05/29/1997	137.00	163.00	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations	
05/30/1997	134.00	157.00	161.90	88000	3667	No Notes-from indicated USGS flows, assume normal operations	
05/31/1997	129.00	151.00	161.90	94000	3917	No Notes-from indicated USGS flows, assume normal operations	
06/01/1997	121.00	148.00	161.90	94000	3917	No Notes-from indicated USGS flows, assume normal operations	
06/02/1997	119.00	151.00	161.90	105000	4375	No Notes-from indicated USGS flows, assume normal operations	
06/03/1997	121.00	151.00	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
06/04/1997	113.00	144.00	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
06/05/1997	108.00	141.00	161.90	99000	4125	No Notes-from indicated USGS flows, assume normal operations	
06/06/1997	108.00	137.00	161.90	93000	3875	No Notes-from indicated USGS flows, assume normal operations	
06/07/1997	105.00	136.00	161.90	99000	4125	No Notes-from indicated USGS flows, assume normal operations	
06/08/1997	103.00	133.00	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations	
06/09/1997	103.00	131.00	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations	
06/10/1997	106.00	128.00	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations	
06/11/1997	110.00	126.00	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
06/12/1997	103.00	126.00	161.90	97000	4042	No Notes-from indicated USGS flows, assume normal operations	
06/13/1997	105.00	125.00	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations	
06/14/1997	104.00	123.00	161.90	98000	4083	No Notes-from indicated USGS flows, assume normal operations	
06/15/1997	102.00	122.00	161.90	94000	3917	No Notes-from indicated USGS flows, assume normal operations	
06/16/1997	105.00	120.00	161.90	99000	4125	No Notes-from indicated USGS flows, assume normal operations	
06/18/1998	390.00	ND	161.90	90000	3750	No Notes-from indicated USGS flows, assume normal operations	
06/19/1998	340.00	ND	160.00	89000	3708	No Notes-from indicated USGS flows, assume normal operations	
06/20/1998	233.00	340.00	148.05	89000	3708	No Notes-from indicated USGS flows, assume normal operations	
06/21/1998	184.00	285.00	141.60	89000	3708	No Notes-from indicated USGS flows, assume normal operations	
06/22/1998	167.00	255.00	155.40	119000	4958	No Notes-from indicated USGS flows, assume normal operations	
06/23/1998	159.00	247.00	152.60	96000	4000	No Notes-from indicated USGS flows, assume normal operations	
06/24/1998	148.00	231.00	155.40	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
06/25/1998	139.00	228.00	158.10	91000	3792	No Notes-from indicated USGS flows, assume normal operations	
06/26/1998	123.00	220.00	160.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations	
06/27/1998	116.00	211.00	155.40	84000	3500	No Notes-from indicated USGS flows, assume normal operations	
06/28/1998	115.00	193.00	152.60	96000	4000	No Notes-from indicated USGS flows, assume normal operations	
06/29/1998	107.00	191.00	148.05	100000	4167	No Notes-from indicated USGS flows, assume normal operations	

Spearfish Creek-Hydro 1 Aqueduct Flows

04/13/2006

Date	USGS		USGS		Hydro 1		Remarks
	Spearfish (cfs)	Maurice (cfs)	Homestake Weir (cfs)	Power (kw)	Power (kwh)		
06/30/1998	110.00	185.00	146.25	96000	4000	No Notes-from indicated USGS flows, assume normal operations	
07/01/1998	107.00	186.00	142.50	101000	4208	No Notes-from indicated USGS flows, assume normal operations	
07/02/1998	97.00	180.00	152.60	86000	3583	No Notes-from indicated USGS flows, assume normal operations	
07/03/1998	95.00	ND	150.85	98000	4083	No Notes-from indicated USGS flows, assume normal operations	
07/04/1998	98.00	ND	152.60	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
07/05/1998	90.00	152.00	143.45	90000	3750	No Notes-from indicated USGS flows, assume normal operations	
07/06/1998	89.00	141.00	139.80	98000	4083	No Notes-from indicated USGS flows, assume normal operations	
07/07/1998	87.00	122.00	136.30	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
07/08/1998	86.00	127.00	131.85	97000	4042	No Notes-from indicated USGS flows, assume normal operations	
07/09/1998	82.00	134.00	140.75	91000	3792	No Notes-from indicated USGS flows, assume normal operations	
07/10/1998	84.00	138.00	138.05	94000	3917	No Notes-from indicated USGS flows, assume normal operations	
07/11/1998	89.00	140.00	152.60	96000	4000	No Notes-from indicated USGS flows, assume normal operations	
07/12/1998	87.00	141.00	153.55	96000	4000	No Notes-from indicated USGS flows, assume normal operations	
07/13/1998	82.00	135.00	147.15	96000	4000	No Notes-from indicated USGS flows, assume normal operations	
07/14/1998	84.00	132.00	141.60	94000	3917	No Notes-from indicated USGS flows, assume normal operations	
07/15/1998	75.00	128.00	141.60	94000	3917	No Notes-from indicated USGS flows, assume normal operations	
07/16/1998	78.00	127.00	138.04	94000	3917	No Notes-from indicated USGS flows, assume normal operations	
07/17/1998	79.00	129.00	132.75	93000	3875	No Notes-from indicated USGS flows, assume normal operations	
07/18/1998	93.00	128.00	130.10	91000	3792	No Notes-from indicated USGS flows, assume normal operations	
07/19/1998	90.00	127.00	126.50	89000	3708	No Notes-from indicated USGS flows, assume normal operations	
07/25/1998	87.00	122.00	125.65	94000	3917	No Notes-from indicated USGS flows, assume normal operations	
07/26/1998	85.00	116.00	124.75	89000	3708	No Notes-from indicated USGS flows, assume normal operations	
07/27/1998	82.00	113.00	123.80	92000	3833	No Notes-from indicated USGS flows, assume normal operations	
07/28/1998	86.00	113.00	117.75	116000	4833	No Notes-from indicated USGS flows, assume normal operations	
07/29/1998	84.00	124.00	122.90	61000	2542	No Notes-from indicated USGS flows, assume normal operations	
07/30/1998	94.00	121.00	131.00	85000	3542	No Notes-from indicated USGS flows, assume normal operations	
08/03/1998	92.00	130.00	127.35	83000	3456	No Notes-from indicated USGS flows, assume normal operations	
08/04/1998	92.00	146.00	125.65	109000	4542	No Notes-from indicated USGS flows, assume normal operations	
08/05/1998	94.00	141.00	122.90	90000	3750	No Notes-from indicated USGS flows, assume normal operations	
08/06/1998	108.00	132.00	148.05	89000	3708	No Notes-from indicated USGS flows, assume normal operations	
08/07/1998	96.00	128.00	133.60	96000	4000	No Notes-from indicated USGS flows, assume normal operations	
08/08/1998	91.00	126.00	128.25	89000	3708	No Notes-from indicated USGS flows, assume normal operations	
08/09/1998	94.00	127.00	126.50	76000	3167	No Notes-from indicated USGS flows, assume normal operations	
08/10/1998	98.00	131.00	132.75	86000	3583	No Notes-from indicated USGS flows, assume normal operations	
08/11/1998	104.00	132.00	152.60	108000	4500	No Notes-from indicated USGS flows, assume normal operations	
08/12/1998	113.00	129.00	156.35	86000	3583	No Notes-from indicated USGS flows, assume normal operations	
08/13/1998	119.00	130.00	155.40	98000	4083	No Notes-from indicated USGS flows, assume normal operations	
08/14/1998	110.00	127.00	149.90	116000	4833	No Notes-from indicated USGS flows, assume normal operations	
08/15/1998	108.00	127.00	147.15	86000	3583	No Notes-from indicated USGS flows, assume normal operations	

Spearfish Creek-Hydro 1 Aqueduct Flows

04/13/2006

Date	USGS		USGS Maurice (cfs)	Homestake Weir (cfs)	Hydro 1		Remarks
	Spearfish (cfs)	Maurice (cfs)			Power (kw)	Power (kwh)	
08/16/1998	106.00	122.00	144.35	90000	3750	No Notes-from indicated USGS flows, assume normal operations	
08/17/1998	107.00	122.00	138.90	92000	3833	No Notes-from indicated USGS flows, assume normal operations	
						No Maurice Data 8/18/1998-9/31/2001 Operated as a seasonal Peak Flow gage due to reduced funding	
10/25/1998	136.00	ND	Out	72320	3013	Communication problems with phone lines to Maurice controls, kw comes from Kirk logs	
10/26/1998	130.00	ND	Out	72320	3013	Communication problems with phone lines to Maurice controls, kw comes from Kirk logs	
10/27/1998	124.00	ND	Out	72320	3013	Communication problems with phone lines to Maurice controls, kw comes from Kirk logs	
10/28/1998	124.00	ND	Out	72320	3013	Communication problems with phone lines to Maurice controls, kw comes from Kirk logs	
10/29/1998	137.00	ND	Out	72320	3013	Communication problems with phone lines to Maurice controls, kw comes from Kirk logs	
10/30/1998	132.00	ND	Out	72320	3013	Communication problems with phone lines to Maurice controls, kw comes from Kirk logs	
10/31/1998	127.00	ND	Out	72320	3013	Communication problems with phone lines to Maurice controls, kw comes from Kirk logs	
11/01/1998	124.00	ND	Out	72320	3013	Communication problems with phone lines to Maurice controls, kw comes from Kirk logs	
11/02/1998	120.00	ND	Out	72320	3013	Communication problems with phone lines to Maurice controls, kw comes from Kirk logs	
11/19/1998	120.00	ND	Out	72300	3013	Communication problems with phone lines to Maurice controls, kw comes from Kirk logs	
06/11/1999	161.00	ND	161.90	95544	3981	No Notes-from indicated USGS flows, assume normal operations	
06/12/1999	166.00	ND	161.90	95424	3976	No Notes-from indicated USGS flows, assume normal operations	
06/13/1999	176.00	ND	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
06/14/1999	174.00	ND	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
06/15/1999	174.00	ND	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
06/16/1999	164.00	ND	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
06/17/1999	154.00	ND	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
06/18/1999	145.00	ND	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
06/19/1999	140.00	ND	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
06/20/1999	137.00	ND	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
06/21/1999	134.00	ND	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
06/22/1999	133.00	ND	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
06/23/1999	132.00	ND	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
06/24/1999	131.00	ND	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
06/25/1999	129.00	ND	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
06/26/1999	127.00	ND	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
06/27/1999	128.00	ND	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
06/28/1999	128.00	ND	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
06/29/1999	127.00	ND	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
06/30/1999	127.00	ND	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
07/01/1999	126.00	ND	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
07/02/1999	126.00	ND	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
07/03/1999	125.00	ND	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations	
07/04/1999	124.00	ND	Out	95000	3958	Communication problems with phone lines to Maurice controls, kw comes from kirk logs	

Spearfish Creek-Hydro 1 Aqueduct Flows

04/13/2006

Date	USGS		USGS Maurice (cfs)	Homestake Weir (cfs)	Hydro 1		Remarks
	Spearfish (cfs)	Power (kw)			Power (kwh)		
07/05/1999	124.00	ND	ND	Out	95000	3958	Communication problems with phone lines to Maurice controls, kw comes from Kirk logs
07/06/1999	123.00	ND	ND	Out	95000	3958	Communication problems with phone lines to Maurice controls, kw comes from Kirk logs
07/07/1999	123.00	ND	ND	Out	95000	3958	Communication problems with phone lines to Maurice controls, kw comes from Kirk logs
07/08/1999	121.00	ND	ND	Out	95000	3958	Communication problems with phone lines to Maurice controls, kw comes from Kirk logs
07/09/1999	121.00	ND	ND	Out	95000	3958	Communication problems with phone lines to Maurice controls, kw comes from Kirk logs
07/10/1999	120.00	ND	ND	161.90	9500	396	No Notes-from indicated USGS flows, assume normal operations
08/01/1999	121.00	ND	ND	Out	93000	3875	
08/02/1999	122.00	ND	ND	Out	97992	4083	
08/04/1999	121.00	ND	ND	Out		0	Plant is down with Line problems
08/05/1999	121.00	ND	ND	Out		0	Plant is down with Line problems
08/06/1999	122.00	ND	ND	Out	37500	1563	
08/07/1999	121.00	ND	ND	Out	1008	42	Plant is down with Line problems
08/08/1999	120.00	ND	ND	Out	1008	42	Plant is down with Line problems
08/11/1999	120.00	ND	ND	Out	79008	3292	
04/19/2000	120.00	ND	ND	143.45	95184	3966	No Notes-from indicated USGS flows, assume normal operations
04/22/2000	123.00	ND	ND	161.90	95160	3965	No Notes-from indicated USGS flows, assume normal operations
04/23/2000	125.00	ND	ND	161.90	95040	3960	No Notes-from indicated USGS flows, assume normal operations
04/24/2000	125.00	ND	ND	161.90	95040	3960	No Notes-from indicated USGS flows, assume normal operations
04/25/2000	133.00	ND	ND	161.90	95040	3960	No Notes-from indicated USGS flows, assume normal operations
04/26/2000	147.00	ND	ND	161.90	95000	3958	No Notes-from indicated USGS flows, assume normal operations
04/27/2000	143.00	ND	ND	161.90	95928	3997	No Notes-from indicated USGS flows, assume normal operations
04/28/2000	134.00	ND	ND	161.90	95760	3990	No Notes-from indicated USGS flows, assume normal operations
04/29/2000	135.00	ND	ND	161.90	96000	4000	No Notes-from indicated USGS flows, assume normal operations
04/30/2000	127.00	ND	ND	161.90	95852	3994	No Notes-from indicated USGS flows, assume normal operations
05/11/2000	120.00	ND	ND	Out	95760	3990	No Notes-from indicated USGS flows, assume normal operations
05/12/2000	125.00	ND	ND	161.90	96120	4005	No Notes-from indicated USGS flows, assume normal operations
04/07/2001	117.00	ND	ND	153.50	38480	1603	No Notes-from indicated USGS flows, assume normal operations
09/19/2002	123.00	82.00	82.00	80.25	88992	3708	No Notes-from indicated USGS flows, assume normal operations
06/07/2003							Load dispatchers were laid off and records were kept in the scada system. Unable to locate records.
06/30/2004	42.00	50.00	50.00			1850	No flow at 120-cfs or higher for year. Records now recorded at Hydro 1.
06/27/2005	49.00	52.00	52.00			2200	No flow at 120-cfs or higher for year. Records now recorded at Hydro 1.
							ND=No Data Available
							Data for the years 1912 through 1946 were taken from Homestake records using the date with the highest flow for the respective year. Only one day for each year was selected.

Appendix G

PSI-Plot Hydro1Weir-kWh Correlation

Hydro1weir-kwh.rpt

=====
Straight Line: $y=ax+b$

Data File Name: C:\Documents and Settings\Don\My Documents\Hydro1weir-kwh.pdw

=====
X column -> HMC Weir
Y column -> kwh
Number of used data points: 685
a= 13.26584361
b= 1858.15908599
Sum Sqrs= 130590473.591
StdDev= 437.26568474
Covariance Matrix

cvm[1,1]= 0.0000013956
cvm[1,2]= -0.00020398434
cvm[2,2]= 0.0312746699

Goodness of Fit Statistics ...

R-Sq r2: 0.49124918
Correlation: 0.70089171

Parameter Statistics

Parameter a: 13.26584361
StdErr: 0.51656641
StdDev: 0.00118135593

Parameter b: 1858.15908599
StdErr: 77.32888776
StdDev: 0.176846458

=====
----Created with PSI-Plot
----Thu Jan 12 12:58:39 2006
=====

Appendix H

Lower Spearfish Valley Irrigation Ditches

Permit No.	Irrigation Ditch	Priority Date	Diversion Rate (cfs)
1392-1	Mann	03/21/1878	1.45
1403-1	Ramsdell	10/01/1876	2.00
1400-1	Owens-Gay	03/01/1877	2.30
1386-1	Walton-Schuler	03/20/1877	8.50
1387-1	Tonn-Evans	05/01/1876	14.40
1389-1	Cook	05/01/1876	21.60
1388-1	Bowman	06/11/1877	8.00
1394-1	Kemper	07/31/1885	24.00
1399-1	Cook-Burns	06/15/1881	17.80
	Total		100.05

References

Mining and Engineering World, July 1914. The Hydro-Electric Power Plant of the Homestake Mining Co., Richard Blackstone, Chief Engineer and Assistant Superintendent Homestake Mining Co.

Water-Resources Investigations Report 98-4116, Streamflow Losses in the Black Hills of Western South Dakota. U.S. Department of the Interior, Geological Survey, 1998.

State of South Dakota, Department of Environment and Natural Resources, Water Rights Program Records

PSI-Plot, Poly Software International

U Attorney General
295458
JUL 26 2007



BANGS McCULLEN

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Reply to Rapid City Office

Writer's e-mail address: mhickey@bangsmccullen.com

July 25, 2007

Ms. Alice J. Bruce
Lawrence County Clerk of Courts
PO Box 626
Deadwood, SD 57732

Re: *File No. Civ. 05-114; Keith Williamson & Dianna Williamson
vs. City of Spearfish, Homestake Mining Co., Inc. and South
Dakota Dept. of Environment & Natural Resources, Water
Management Board*

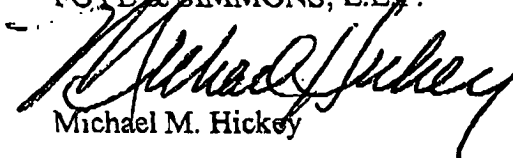
Dear Ms. Bruce:

Enclosed for filing in the above-referenced matter is an original
Notice of Hearing. By copy of this correspondence, opposing counsel has
been served by U.S. Mail.

If you have any questions, please give me a call. Thank you.

Sincerely,

BANGS, McCULLEN, BUTLER,
FOYE & SIMMONS, L.L.P.



Michael M. Hickey

mmh:bah
Enclosure
cc/enc: Client
Mr. Max S. Main
Ms. Diane Best

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STATE OF SOUTH DAKOTA)
) SS
COUNTY OF LAWRENCE)

IN CIRCUIT COURT
FOURTH JUDICIAL CIRCUIT

KEITH D. WILLIAMSON and)
DIANNA L. WILLIAMSON,)
)
Plaintiffs,)

File No. CIV05-114

vs.)

NOTICE OF HEARING

CITY OF SPEARFISH, HOMESTAKE)
MINING COMPANY, INC., and)
SOUTH DAKOTA DEPARTMENT OF)
ENVIRONMENT & NATURAL)
RESOURCES, WATER)
MANAGEMENT BOARD,)
)
Defendants.)


TO: DEFENDANTS, and their attorneys, MR. MAX MAIN and MS. DIANE BEST:

PLEASE TAKE NOTICE AND BE ADVISED, that a status hearing has been
scheduled before the Honorable Randall L. Macy, on **Friday, September 21, 2007**, at
the hour of 10:00 a.m., at the Lawrence County Courthouse, Deadwood, South Dakota,
or as soon thereafter as counsel may be heard.

Dated this 25th day of July, 2007.

BANGS, McCULLEN, BUTLER,
FOYE & SIMMONS, L.L.P.

BY:



MICHAEL M. HICKEY
Attorneys for Plaintiffs
333 West Blvd., Suite 400; P.O. Box 2670
Rapid City, SD 57709-2670
(605) 343-1040

OFFICE OF ATTORNEY GENERAL

STATE OF SOUTH DAKOTA
1302 East Highway 14, Suite 1
Pierre, South Dakota 57501-8501
Telephone: (605) 773-3215
FAX (605) 773-4106

The information contained in this facsimile message is attorney privileged and confidential information intended only for the use of the individual or entity named below. If the reader of this message is not the intended recipient, you are hereby notified that any dissemination, distribution, or copy of this communication is strictly prohibited. If you have received this communication in error, please immediately notify us by telephone and return the original message to us at the above address via the United States Postal Service. Thank you.

Date: 8-15-07

Time: 10:10

TO: Eric Cronlund

FAX #: 4068

FROM: Diane Best

TELEPHONE: (605) 773-3215

NUMBER OF PAGES 4, (INCLUDING TITLE PAGE).

RECEIVED

SEP 13 2007

WATER RIGHTS
PROGRAM

STATE OF SOUTH DAKOTA)
) SS
COUNTY OF LAWRENCE)

IN CIRCUIT COURT

FOURTH JUDICIAL CIRCUIT

KEITH D. WILLIAMSON and)
DIANNA L. WILLIAMSON,)
)
Plaintiffs,)

File No. CIV05-114

vs.)

**PLAINTIFFS' REPLY TO
DEFENDANTS' RENEWED
MOTION TO DISMISS**

CITY OF SPEARFISH, HOMESTAKE)
MINING COMPANY, INC., and)
SOUTH DAKOTA DEPARTMENT OF)
ENVIRONMENT & NATURAL)
RESOURCES, WATER)
MANAGEMENT BOARD,)
)
)
Defendants.)

INTRODUCTION

Plaintiffs Keith D. Williamson and Diana L. Williamson ("Williamsons") respectfully respond to Defendants City of Spearfish, Homestake Mining Company, Inc., and South Dakota Water Management Board's (collectively, "Defendants") renewed motion to dismiss.

THIS COURT RETAINED JURISDICTION OVER THIS CASE

Defendants argue that the Chief Engineer's decision to not recommend cancellation of City's Water Right 43-1 is final. This Court, however, *retained jurisdiction* over this matter. As Defendants cite in their own brief, this Court "ORDERED, that the Court retains jurisdiction over this matter consistent with the terms of this Order." *Defendant's Renewed Motion to Dismiss* at 2 (quoting Order). Pursuant to this Order, Williamsons are now equipped to argue the merits of this lawsuit and have

retained experts to dispute findings in the Chief Engineer's report. For the reasons set forth herein, Defendants' Renewed Motion to Dismiss should be denied.

EXHAUSTION DOES NOT BAR THE COURT FROM HEARING THIS CASE

Defendants claim that Williamsons have failed to exhaust their administrative remedies. The South Dakota Supreme Court has, on more than one occasion, clarified that the "exhaustion of remedies" principle is "divided largely" into two doctrines: 1) exhaustion, and 2) primary jurisdiction. *Gottschalk v. Hegg*, 228 N.W.2d 640, 642 (S.D. 1975) (supplying quoted text). *See also Mordhorst*, 223 N.W.2d 501 (stating the same); *Dan Nelson, Auto., Inc. v. Viken*, 2005 SD 109, ¶3, 706 N.W.2d 239, 242 (same). The Court has noted:

"Exhaustion" applies where a claim is cognizable in the first instance by an administrative agency alone; judicial interference is *withheld* until the administrative process has run its course. "Primary jurisdiction," on the other hand, applies where a claim is originally cognizable in the courts, and comes into play whenever enforcement of the claim requires the resolution of issues which, under a regulatory scheme, have been placed within the special competence of an administrative body; in such a case, the judicial process is *suspended* pending *referral* of such issues to the administrative body for its *views*.

Gottschalk v. Hegg, 228 N.W.2d 640, 642 (S.D. 1975) (quoting *United States v. Western Pac. R. Co.*, 352 U.S. 59, 63-64 (1956)) (emphasis added). For the reasons set forth below, it is clear that the doctrine of primary jurisdiction was at work in this case and the instant action is properly and timely before this Court. In the alternative, it is similarly clear that Williamsons have exhausted all administrative remedies and the instant action is properly before this Court at this time.

PRIMARY JURISDICTION

The doctrine of primary jurisdiction arises “when both the court and an administrative agency have authority to pass on a question. The proper application of this doctrine should result in orderly and sensible coordination of the work of agencies and the courts.” *Mordhorst v. Egert*, 223 N.W.2d 501, 504 (S.D. 1974). The *Mordhorst* Court held that because both “the courts and the [agency] have authority to pass on some of the questions raised by this lawsuit, and since this lawsuit is not an appeal from a decision or order of the [agency] but is an original action, a primary jurisdiction question exists.” *Id.* The same scenario exists here.

In the instant case, Williamsons have alleged several causes of action against Defendants, including abandonment or forfeiture of Water Right No. 43-1.¹ The abandonment/forfeiture claim invokes SDCL 46-5-37, which states:

When any person entitled to the use of appropriated water fails to use beneficially all or any part of such water for the purpose for which it was appropriated, for a period of three years, such unused water shall revert to the public and shall be regarded as unappropriated public water.

This statute does not state, or even suggest, that the determination of whether forfeiture is appropriate is left to the sole discretion of the Water Board or the Chief Engineer. No statute or administrative rule requires one seeking the cancellation of a right or permit due to forfeiture or abandonment to first petition the Chief Engineer for a recommendation. In fact, the only statute related to resolution of an issue raised under §46-5-37 is SDCL 46-5-37.1. Section 46-5-37.1 permits the Chief Engineer to, upon his own initiative or upon “petition by any interested person,” investigate whether a water right has been abandoned or forfeited:

¹ Williamsons have also alleged waste. See *Plaintiff's Complaint* ¶ 9.

Upon the initiative of the chief engineer or upon petition by any interested person and after reasonable notice to the holder of the right or permit, if he can be located, the chief engineer may investigate whether or not a water permit or right has been abandoned or forfeited. After the investigation, the chief engineer may recommend cancellation of the permit or right for reason of abandonment or forfeiture. The recommendation, notice, and hearing shall be conducted pursuant to the procedure contained in chapter 46-2A.

This statutory and regulatory scheme indicates that the determination of whether a water permit holder has abandoned or forfeited that right is not exclusively committed to the executive branch, the Chief Engineer, and/or the Water Board. *See Romey v. Landers*, 392 N.W.2d 415 (S.D. 1986) (holding that a statute *permitting* an action for determining conflicting water rights to be brought in circuit court did not deprive an administrative tribunal of jurisdiction over the matter; rather, it was an issue of primary jurisdiction). Certainly §46-5-37.1 gives the Chief Engineer some discretionary authority to investigate the matter and make a recommendation; but that, in and of itself, does not render his authority *exclusive*.

Here, both the Chief Engineer and the courts “have authority to pass on” the matter. This suit is not an appeal from an agency decision; it was an original action. Under the *Mordhorst* rationale, the doctrine of primary jurisdiction applies. In the case so heavily relied upon by Defendants, our Supreme Court cited with approval an Alabama line of cases standing for the proposition that under the doctrine of primary jurisdiction, “the court may retain jurisdiction or may dismiss the case without prejudice and also has the option of staying the proceedings, retaining jurisdiction and referring the matter to the agency for an administrative ruling.” *Jundt v. Fuller*, 2007 SD 62, ¶6, 736 N.W.2d 508, 511 (emphasis added). In the instant case, this Court suspended judicial proceedings pending “referral of such issues to the administrative body for its

views.” *Gottschalk*, 228 N.W.2d at 642. The Chief Engineer has completed his report without making a recommendation; for the reasons set forth below, the case is not subject to the procedural provisions of Chapter 46-2A and is properly back in this Court.

EXHAUSTION

In the alternative, under the doctrine of exhaustion, Williamsons have exhausted their administrative remedies and the case is properly before this Court.

The procedures outlined in Chapter 46-2A, the Administrative Procedure for Appropriation of Water, only apply to certain circumstances. Specifically, SDCL 46-2A-1, entitled “Applications of Provisions of Chapter,” states (emphasis added):

The provisions of this chapter apply to any application for:

- (1) A permit to appropriate water;
- (2) An amendment of an existing permit or license, including change in use of water or change in place of use or diversion point of water;
- (3) A reservation for future use;
- (4) A permit for flood control;
- (5) A well driller license;
- (5A) A well pump installer license;
- (6) Reinstatement of a permit;
- (7) A vested right claim; and
- (8) Other cases *as may be specified by statute*.

In turn, §46-5-37.1 is the only possible statute to bring an abandonment or forfeiture issue (under §46-5-37) within the scope of Chapter 46-2A. *See* SDCL 46-5-37.1 (“The recommendation, notice, and hearing shall be conducted pursuant to the procedure contained in chapter 46-2A.”). As Defendants fully concede, Williamsons are *not* required to follow Chapter 46-2A because those procedures would only apply if the Chief Engineer had made a recommendation; moreover, those procedures would actually provide *Defendants* with an avenue for appeal, because the “recommendation” contemplated by §45-5-37.1 is one of “cancellation of the permit or right for reason of

abandonment or forfeiture.” See *Defendant’s Brief* at 4 (“The administrative procedures of Chapter 46-2A come into play only when the Chief Engineer recommends cancellation of a water right.”).

In the present case, the Chief Engineer did not recommend cancellation of the water permit. As a result, the Chapter 46-2A procedures do not apply and this Court properly retains jurisdiction over the matter.

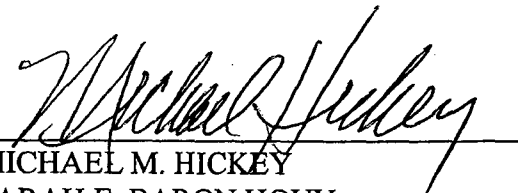
CONCLUSION

In conclusion, the issues before the Court are primary jurisdiction and exhaustion of remedies. Importantly, “the subject matter jurisdiction of the circuit court is not at issue; rather, the question is one of priority or timing of judicial review.” *Zar v. South Dakota Bd. Of Examiners of Psychologists*, 376 N.W.2d 54, 55 (S.D. 1985) (quoting *Gottschalk*, 228 N.W.2d at 642). The doctrine of primary jurisdiction dictates that this case is properly before the Court at this time, as the agency has already passed on the issue of whether Defendant has forfeited or abandoned its Water Right No. 43-1. This Court simply suspended its jurisdiction pending the Chief Engineer’s investigation. Moreover, Williamsons have exhausted all of their administrative remedies; as fully conceded and in fact argued by Defendants, the procedures set forth in Chapter 46-2A clearly do not apply when the Chief Engineer makes no recommendation of cancellation under §46-5-37.1. There is no further administrative remedy for Williamsons to seek. As a result, this case is properly returned to this Court.

Dated this 14th day of September, 2007.

BANGS, McCULLEN, BUTLER,
FOYE & SIMMONS, L.L.P.

BY:


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(605) 343-1040

CERTIFICATE OF SERVICE

The undersigned hereby certifies that he served copies of this legal document upon the persons herein next designated, all on the date below shown, by depositing copies thereof in the United States mail at Rapid City, South Dakota, postage prepaid, in envelopes addressed to said addressees, to wit:

Mr. Max S. Main
Bennett, Main & Grubbrud
618 State Street
Belle Fourche, SD 57717

Mr. Jeffrey P. Hallem
Ms. Diane Best
Attorney General's Office
1302 East Hwy. 13, #1
Pierre, SD 57501-8501

Mr. Thomas E. Brady
Attorney at Law
135 E. Colorado Blvd.
Spearfish, SD 57783

which are the last addresses of the addressees known to the subscriber.

Dated this 14th day of September, 2007.


MICHAEL M. HICKEY



BRADY & PLUIMER
LAW FIRM & A PROFESSIONAL CORPORATION

ATTORNEYS:
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WAYNE GILBERT, J.D.

Writer's Direct Email - tbrady@blackhillslawyers.com

September 20, 2007

Via Facsimile Transmission & 1st Class Mail

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Jeffrey P. Hallem
Assistant Attorney General
Office of Attorney General
1302 E. Highway 14, Suite 1
Pierre, SD 57501-8501
Fax: 605-773-4106

Re: Keith Williamson, et al. v. City of Spearfish, et al.
Lawrence County Civil No. 05-114

Dear Gentlemen:

Enclosed please find City of Spearfish's Reply to "Plaintiffs' Reply to Defendants' Renewed Motion to Dismiss". The same is intended as service upon you.

Sincerely,

Thomas E. Brady

TEB:ljr

Enc.

cc: Jerry Krambeck (w/enc.)
Elizabeth Benning (w/enc.)


BRADY & PLUIMER
LAW FIRM & A PROFESSIONAL CORPORATION

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Writer's Direct Email: tbrady@blackhillslawyers.com

September 20, 2007

Via Facsimile Only: 578-3613

Hon. Randall L. Macy
Circuit Court Judge
P.O. Box 626
Deadwood, SD 57732

RE: Keith Williamson, et al. v. City of Spearfish, et al.
Civil 05-114

Dear Judge Macy:

Enclosed is City of Spearfish's Reply to "Plaintiffs' Reply to Defendants' Renewed Motion to Dismiss". Hearing on this matter is set for tomorrow, September 21, 2007 at 10:00 A.M., at which time I will file the original with the Clerk of Courts.

Sincerely,


THOMAS E. BRADY

TEB:ljr
Enc.

cc: Michael M. Hickey (w/enc.- via 1st Class Mail & Facsimile: 343-1503)
Max S. Main (w/enc. - via 1st Class Mail & Facsimile: 892-4084)
Jeffrey P. Hallem (w/enc. - via 1st Class Mail & Facsimile: 773-4106)
Jerry Krambeck, Mayor (w/enc.)
Elizabeth A. Benning, Finance Officer (w/enc.)

STATE OF SOUTH DAKOTA)
) SS
COUNTY OF LAWRENCE)

IN CIRCUIT COURT
FOURTH JUDICIAL CIRCUIT

KEITH D. WILLIAMSON and)
DIANNA L. WILLIAMSON,)
)
Plaintiffs,)

CIV. NO. 06-501

vs.)

CITY OF SPEARFISH'S REPLY TO
"PLAINTIFFS' REPLY TO
DEFENDANTS' RENEWED
MOTION TO DISMISS"

CITY OF SPEARFISH,)
HOMESTAKE MINING)
COMPANY, INC., and SOUTH)
DAKOTA DEPARTMENT OF)
ENVIRONMENT & NATURAL)
RESOURCES, WATER)
MANAGEMENT BOARD,)
)
Defendants.)

City of Spearfish, ("Spearfish") replies to "Plaintiffs' Reply to Defendants' Renewed Motion to Dismiss", as follows, in the same captioned sequence:

"THIS COURT RETAINED JURISDICTION OVER THIS CASE"

It is true the Court entered an order as it is equally true that Spearfish previously urged the Court that it did not have jurisdiction to issue any order. To the extent the Court had any jurisdiction, the order related only to Plaintiffs Williamsons' requirement to exhaust administrative remedies. The fact the Court entered an order does not bestow jurisdiction upon this Court to enter any further orders other than dismissal. This Court does not have jurisdiction. Plaintiff Williamsons fail to cite any legal, statutory or case authority that would indicate this Court has jurisdiction. The mere fact that Williamsons may have "retained experts", does not create or confer jurisdiction and the fact that Williamsons wish to differ in opinion to that of the Chief Engineer does not create or confer jurisdiction upon this Court to engage in any judicial inquiry.

"EXHAUSTION DOES NOT BAR THE COURT FROM HEARING THIS CASE"

Plaintiff Williamsons' arguments, in due respect, are nonsense. First of all, "primary

jurisdiction" was never with this Court and this Court did not have the jurisdiction to enter the order it entered nor does the entry of the order confer "primary jurisdiction" upon this Court. Please see above and below. In response to "In the alternative", Williamsons have either exhausted all recourse upon receipt of the Chief Engineer's Report or they have not exhausted administrative remedies because they failed to administratively challenge the Chief Engineer's Report. Either way, they may not now resort to the courts for a redo or a new do. See below. Quite simply, to the extent Plaintiff Williamsons have cited any authority, such does not support the legal conclusions they urge upon this Court.

"PRIMARY JURISDICTION"

See above. Plaintiff Williamsons failed to identify anything in which this Court has the authority (jurisdiction) to pass on any question in which they assert that this Court is to consider. They merely suggest that by virtue of filing an action in this Court, that the Court somehow acquires the status of possessing "primary jurisdiction". "Exhaustion" applies because the legislature did not give this court jurisdiction to determine if a water right has been abandoned or forfeited. The legislature gave that question to the Chief Engineer by SDCL 46-5-37.1.1. It is an executive decision as discussed in *Jundt v. Fuller*, 2007 SD 62. (See Renewed Motion). Therefore, "primary jurisdiction" is not an issue here.

The South Dakota Legislature enacted SDCL 46-5-37.1 which statutorily directs the process, method and specifically the requirements which must be followed by "any interested person" in order to seek the determination as to whether or not there is a forfeiture of a water right. Contrary to the arguments urged in behalf of Plaintiff Williamsons, SDCL 46-5-37.1 was enacted, effective July 1, 1983, to provide the specific and thereby exclusive legal procedure. Plaintiff Williamsons' reliance on *Romey et al. v. Landers*, 392 NW2d 415 (SD 1986) is misplaced under the facts and applicable law of that case versus this case. In the *Romey* dispute, such was in regard to respective claims of conflicting water rights and claims of each as to their respective right to use water. The action was commenced prior to July 1, 1983, and which action was recognized as one which could have been brought in Circuit Court pursuant to SDCL 46-10-4.1 or which could be addressed through the administrative agency and thereafter enforced in Circuit Court. *Romey* is first distinguished in that this action does not deal with a claim by Williamsons that they have a conflicting water right with that of Spearfish, or a right to use the

water to which Spearfish possesses the right to use by virtue of ownership of Water Right 43-1. In the absence of such, Williamsons do not have any statutory privilege to bring an action in Circuit Court. If in fact *Romey* stands for the proposition that there exists "primary jurisdiction", this Court must conclude as the Court concluded in *Romey* that since a party, the Williamsons in this case, have submitted themselves to the jurisdiction of the South Dakota Department of Environment and Natural Resources and the Water Management Board in obtaining the Chief Engineer's Report, they then must follow the procedure of such administrative process (see below in re: Exhaustion). Even if this Court had "primary jurisdiction" (which is clearly inconsistent with the statutory provisions of SDCL 46-5-37.1), this Court, as in *Romey*, is relegated to the status of enforcing the final decision from the administrative process and can not now intervene in that process.

"EXHAUSTION"

Other than the erroneous claim by Plaintiff Williamsons that they "have exhausted their administrative remedies and the case is properly before this Court", such did not occur or such is conclusively resolved. In either case, there is nothing for this Court to address other than dismissal. As stated in the Renewed Motion of Spearfish and the arguments contained therein, there is a specific statutory procedure that a party must follow in the event the Chief Engineer's Report is adverse to their desired results. That is Williamsons must follow the statutory procedures as established by SDCL Ch. 46-2A as explicitly and statutorily mandated by SDCL 46-5-37.1.

Plaintiff Williamsons next proceed with an argument suggesting that Spearfish concedes that Williamsons need not exhaust administrative remedies and thereby may litigate the issue in the Circuit Court. That is a twist beyond fair appreciation of the Spearfish arguments presented. Quite simply, Spearfish submits arguments in the alternative. To do so is not an acknowledgment or admission that the law or facts in one alternative is the basis to defeat or deny the other alternative.

Please see Spearfish's Motion, Brief in Support of Motion and Renewed Motion to Dismiss. Quite simply and again, the Chief Engineer's Report is final and conclusive as to the issue with which this Court does not have jurisdiction to litigate or re-litigate (Plaintiff Williamsons should have presented their information to the Chief Engineer to persuade the Chief

Engineer to reach a different conclusion; or, they in fact did an he in fact didn't). OR IN THE ALTERNATIVE, the recommendation of the Chief Engineer that the Water Right has not been lost, forfeited or otherwise compromised was issued pursuant to the provisions of SDCL 46-5-37.1, subject to appeal according to the statutory procedure of SDCL 46-2A. Had the Chief Engineer's Report been adverse to Spearfish, that is the procedure it would have been required to follow if Spearfish wished to challenge the Report. It seems eminently logical that such is the only procedure Plaintiff Williamsons must follow if they wish and were entitled to preserve and continue with this frivolous dispute. They must first exhaust their administrative remedies. They were required to appeal the Chief Engineer's Report to the Water Management Board for a hearing. Only after then, if somehow Plaintiff Williamsons were not able to persuade the Water Management Board to grant the relief that they wish, they could appeal that agency decision to the Circuit Court pursuant to SDCL 1-26-30.

"CONCLUSION"

This Court does not have jurisdiction. This Court does not have "primary jurisdiction". Regardless, Plaintiff Williamsons must first go through the process of "exhaustion of remedies" prior to any Court now exercising jurisdiction (if jurisdiction is possessed under any theory, statutory provision or case authority). By submission of Plaintiff Williamsons to the jurisdiction of the administrative agency by requesting the Chief Engineer's Report, the argument of primary jurisdiction is moot and the exhaustion of remedies is mandated prior to any Court then exercising any type of jurisdiction. They did not and thus this Court cannot. There is no statutory provision allowing the conclusions of the Chief Engineer's Report to be litigated in this Court.

Plaintiffs' lawsuit holds no water, so to speak.

Dated this 20th day of September, 2007

BRADY PLUIMER, P.C.

By: 

Thomas E. Brady

Attorney for Defendant, City of Spearfish

135 E. Colorado Blvd.

Spearfish, SD 57783

Telephone: (605) 722-9000


CERTIFICATE OF SERVICE

The undersigned hereby certifies that on the 20th day of September 2007, he sent by facsimile transmission and first class mail, postage prepaid at Spearfish, South Dakota, a true and correct copy of **City of Spearfish's Reply to "Plaintiffs' Reply to Defendants' Renewed Motion to Dismiss"** to the following-named persons, to-wit:

Michael M. Hickey
Bangs, McCullen, Butler, Foye & Simmons
P.O. Box 2670
Rapid City, SD 57709-2670
Fax: 605-343-1503

Max S. Main
Bennett, Main & Gubbrud
618 State Street
Belle Fourche, SD 57717
Fax: 605-892-4084

Jeffrey P. Hallem
Assistant Attorney General
Office of Attorney General
1302 E. Highway 14, Suite 1
Pierre, SD 57501-8501
Fax: 605-773-4106



Thomas E. Brady

STATE OF SOUTH DAKOTA)
 : ss.
COUNTY OF LAWRENCE)

IN CIRCUIT COURT
FOURTH JUDICIAL CIRCUIT

KEITH D. WILLIAMSON and)
DIANNA L. WILLIAMSON,)
)
Plaintiffs,)

Civ. Case No. 05-114

v.)

ORDER GRANTING
SOUTH DAKOTA
WATER MANAGEMENT BOARD'S
RENEWED MOTION TO DISMISS

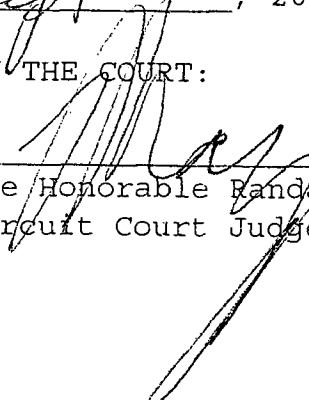
CITY OF SPEARFISH,)
HOMESTAKE MINING COMPANY,)
INC., and SOUTH DAKOTA)
DEPARTMENT OF)
ENVIRONMENT & NATURAL)
RESOURCES, WATER)
MANAGEMENT BOARD,)
)
Defendants.)

Defendant South Dakota Department of Environment and Natural Resources Water Management Board filed a Renewed Motion to Dismiss dated September 11, 2007, pursuant to SDCL 15-6-12(b)(5), in the above-entitled action regarding Plaintiffs' remaining claim for declaratory relief. The Motion was scheduled and heard on the 21st day of September, 2007, during which counsel for Plaintiffs' stated there was no objection to the granting of the Motion. There being no objection, and the Court being fully advised of all premises; it is hereby

ORDERED that Defendant South Dakota Water Management Board's
Renewed Motion to Dismiss is granted.

Dated this 26th day of Sept, 2007.

BY THE COURT:



The Honorable Randall L. Macy
Circuit Court Judge

ATTEST:

Clerk of Court

By: _____
Deputy

(SEAL)

pld JPH 09 24 07 Keith & Dianna Williamson v City of Spearfish (Order) kak

STATE OF SOUTH DAKOTA)
) SS
COUNTY OF LAWRENCE)

IN CIRCUIT COURT
FOURTH JUDICIAL CIRCUIT

KEITH D. WILLIAMSON and)
DIANA L. WILLIAMSON,)

Civ. No. 06-501

Plaintiffs,)

vs.)

MEMORANDUM
DECISION

CITY OF SPEARFISH, HOMESTAKE)
MINING COMPANY, INC., and)
SOUTH DAKOTA DEPARTMENT OF)
ENVIRONMENT & NATURAL RESOURCES)
WATER MANAGEMENT BOARD,)

Defendants.)

Facts and Procedural History

Defendant Homestake Mining Company, Inc. ("Homestake") was the owner of Water Right No. 43-1. This Water Right, granted January 4, 1909, entitled Homestake to the beneficial use of 120 cubic feet per second of water from Spearfish Creek for the purpose of generating power to the company's works in Lead. On May 3, 2004, Homestake transferred its interest in Water Right No. 43-1 to Defendant City of Spearfish ("City"). The transfer was made with no formal hearing or approval by Defendant South Dakota Department of Environment and Natural Resources, Water Management Board ("Water Management Board").

Plaintiffs own real property adjacent to the Spearfish Creek in Lawrence County, South Dakota and claim a right to the

domestic use of water from the creek. On February 4, 2005, Plaintiffs initiated an action for declaratory and injunctive relief, alleging that Homestake had abandoned its rights under Water Right No. 43-1 and that those rights were therefore forfeited.

The City filed a Motion to Dismiss on March 16, 2005. Homestake joined in this motion. The Water Management Board also filed a statement on April 28, 2005, requesting its dismissal from the lawsuit. Following a hearing on City's Motion, on May 16, 2005, this Court, Honorable Timothy R. Johns presiding (now retired), granted City's Rule 12(b)(5) Motion to Dismiss as to Plaintiffs's claims that Homestake's transfer of the water right was unlawful. In ruling on City's Motion to Dismiss based on lack of subject matter jurisdiction, the Court ordered as follows:

ORDERED, that plaintiffs must exhaust all available administrative remedies as to all other claims alleged in their complaint by filing with the Chief Engineer of South Dakota Water Rights Program a petition requesting an investigation of Water License No. 43-1; and it is further

ORDERED, that the Court retains jurisdiction over this matter consistent with the terms of this Order.

Pursuant to this Order, on October 4, 2005, Plaintiffs wrote a letter to Garland Erbele, Chief Engineer of the Water Rights Program, requesting an investigation as to whether Homestake had complied with all rules and regulations relating

to its Water Right. In May of 2006, the Water Rights Program issued its Investigative Report, determining that "Water Right No. 43-1 has not been abandoned and there is no evidence of forfeiture due to nonuse. Therefore, Water Right No. 43-1 is a valid water right and there is no basis for the cancellation of this right."

Thereafter, Plaintiffs took no further administrative action before the Water Management Board. City filed a Renewed Motion to Dismiss on September 5, 2007. Both Homestake and Water Management Board have joined in this motion.

Analysis

Plaintiffs have raised two arguments in support of their contention that the Renewed Motion to Dismiss should be denied. First, they argue that under the doctrine of primary jurisdiction, both this Court and the Water Management Board had the authority to hear the instant action; thus, they contend, this action is properly before the Court. Second, they argue that because they have already exhausted their administrative remedies, judicial review is now appropriate.

The two related doctrines of exhaustion and primary jurisdiction were recently explained in South Dakota Educ. Association/NEA v. Barnett, 1998 SD 84, ¶ 9, 582 N.W.2d 386, 390, which stated:

"Exhaustion" applies where a claim is cognizable in the first instance by an administrative agency alone; judicial interference is withheld until the administrative process has run its course. "Primary jurisdiction," on the other hand, applies where a claim is originally cognizable in the courts, and comes into play whenever enforcement of the claim requires the resolution of issues which, under a regulatory scheme, have been placed within the special competence of an administrative body; in such a case the judicial process is suspended pending referral of such issues to the administrative body for its views.

Id. (citing United States v. Western P. R. Co., 352 U.S. 59, 63-64, 77 S.Ct. 161, 165 (1956)). Thus, the important inquiry in determining if primary jurisdiction applies is whether Plaintiffs' claims were "originally cognizable in the courts" or whether enforcement of their claims was "placed within the special competence of an administrative body."

Here, Plaintiff's claims include causes of action for abandonment and forfeiture. SDCL 46-5-37.1 sets forth the procedure that any interested person must use for determining whether a water right has been abandoned or forfeited. This statute provides:

Upon the initiative of the chief engineer or upon petition by any interested person and after reasonable notice to the holder of the right or permit, if he can be located, the chief engineer may investigate whether or not a water permit or right has been abandoned or forfeited. After the investigation, the chief engineer may recommend cancellation of the permit or right for reason of abandonment or forfeiture. The recommendation, notice, and hearing shall be conducted pursuant to the procedure contained in chapter 46-2A.

A plain reading of this statute dictates that it is the responsibility of the chief engineer, and not the courts, to make the determination of whether or not a water right has been abandoned or forfeited.

Courts must refrain from intermeddling in administrative actions. As the South Dakota Supreme Court recently noted:

It must be remembered that the constitutional separation of powers between the executive branch and the judicial branch prevents courts from involvement in review of administrative decisions unless there exists specific legislative empowerment for the judiciary to act regarding executive branch functions; when such delegation of power exists, appeals to the courts must follow such statutory procedures as a condition precedent to obtaining subject matter jurisdiction, because such conferred powers over executive branch functions are statutorily circumscribed.

Jundt v. Fuller, 2007 SD 62, ¶ 10, 736 N.W.2d 508. SDCL 46-5-37.1 does not provide a specific legislative empowerment allowing a court to review the chief engineer's determination. Thus, the doctrine of primary jurisdiction does not apply, and this Court's previous pronouncement that it retained jurisdiction over the matter was erroneous. A court cannot retain jurisdiction over a matter where the court never properly had jurisdiction. Furthermore, SDCL 15-6-12(b)(1) provides that a court's lack of subject matter jurisdiction is a proper basis upon which a court may dismiss an action.

While SDCL 46-5-37.1 does not give the judiciary the power to review the chief engineer's recommendation, it does provide

that the recommendation, along with accompanying notice and hearing, shall be conducted pursuant to the procedure of chapter 46-2A. Notably, SDCL 46-2A-3 states, in pertinent part:

If the recommendation is to deny the application, the applicant within twenty days of the date the recommendation was mailed shall state in writing whether the applicant intends to oppose the recommendation at a hearing before the Water Management Board. Failure to submit a statement of intent to oppose a recommendation to deny to the chief engineer constitutes a withdrawal of the application.

This statute clearly provides that appeals to a chief engineer's determination must take place within 20 days. In this case, more than a year has passed since the chief engineer determined in his Investigative Report that there was no evidence to support Plaintiffs' claims of abandonment and forfeiture. Because Plaintiffs failed to appeal the chief engineer's decision, their claim is effectively time-barred pursuant to SDCL 46-2A-3.

Plaintiffs contend that because SDCL 46-2A-3 only explicitly applies when the chief engineer's "recommendation is to *deny* the application," it is inapplicable here, in that the chief engineer found no evidence of abandonment or forfeiture and thus recommended against cancellation. Further, they argue, that since no other statute expressly grants them the right to appeal, that they have exhausted their administrative remedies.

This Court is not persuaded by these arguments. First, they assume that Plaintiffs even have the right to appeal a chief engineer's recommendation of approval. Because the legislature provided no statutory authority for challenging a chief engineer's recommendation of approval of a water right, it is equally plausible that the legislature intended these recommendations to be unappealable. Second, to the extent that Plaintiffs were seeking a determination that the water right had been abandoned and forfeited, the chief engineer's recommendation against cancellation served as a "denial" of their claims, thus bringing the 20-day statutory period into play.

Conclusion

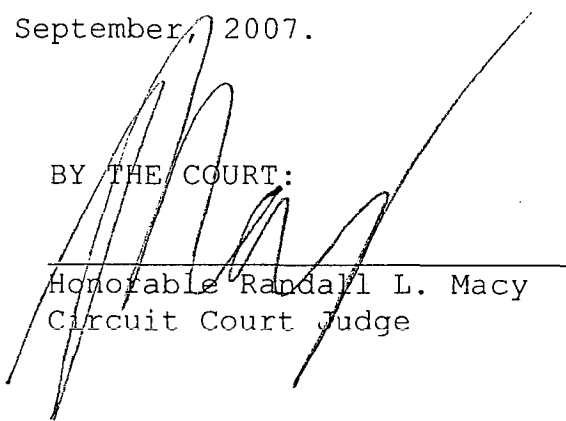
Plaintiffs have failed to show that their claim was originally cognizable in the courts; thus the doctrine of primary jurisdiction does not apply. Pursuant to SDCL 15-6-12(b)(1), this Court's lack of jurisdiction provides a proper basis for dismissing the action. Additionally, by not appealing the chief engineer's recommendation, plaintiffs have failed to show that they have exhausted their administrative remedies. Based on the arguments and authority set forth herein, this Court finds that City's Renewed Motion to Dismiss, in which

Homestake and the Water Management Board have joined, is hereby granted.

Counsel for City shall draft a Judgment consistent with this Memorandum Decision.

Dated this 26th day of September, 2007.

BY THE COURT:



Honorable Randall L. Macy
Circuit Court Judge

ATTEST:

Clerk of Courts

By: _____
Deputy

STATE OF SOUTH DAKOTA)
)SS
COUNTY OF LAWRENCE)

IN CIRCUIT COURT
FOURTH JUDICIAL CIRCUIT

KEITH D. WILLIAMSON and)
DIANA L. WILLIAMSON,)
)
Plaintiffs,)

Civ. 06-501

vs.)

CERTIFICATE OF SERVICE

CITY OF SPEARFISH, HOMESTAKE)
MINING COMPANY, INC., and)
SOUTH DAKOTA DEPARTMENT OF)
ENVIRONMENT & NATURAL)
RESOURCES WATER MANAGEMENT)
BOARD,)
)
Defendants.)

The undersigned hereby certifies that she served a true and correct copy of the ORDER GRANTING SOUTH DAKOTA WATER MANAGEMENT BOARD'S RENEWED MOTION TO DISMISS and MEMORANDUM DECISION in the above entitled matter upon the persons herein next designated all on the date below shown, by depositing a copy thereof in the United States Mail at Deadwood, South Dakota, postage prepaid, in envelopes addressed to said addressees, to-wit:

Mr. Michael M. Hickey
Attorney at Law
P. O. Box 2670
Rapid City, SD 57709

Mr. Jeffrey P. Hallem
Attorney at Law
1302 E. Highway 14, Suite 1
Pierre, SD 57501

Mr. Max S. Main
Attorney at Law
618 State Street
Belle Fourche, SD 57717

Mr. Thomas E. Brady
Attorney at Law
135 E. Colorado Blvd.
Spearfish, SD 57783

which addresses are the last addresses of the addressees known to the subscriber.

Dated this 26th day of September, 2007.

Cindy Gackle
Cindy Gackle
Scheduling Clerk

HOMESTAKE HYDRO NO. 1 SPEARFISH

The Homestake Gold Mine was one of the early enterprises associated with the Gold Rush of 1876 in the northern Black Hills of what was then Dakota Territory.

In June 1877 George Hearst, who had earlier sent an agent to offer a bond to owners of the Homestake claim, bought the four and one half-acre claim for \$70,000. No stranger to mining, Hearst had mining interests in Missouri, in California during its gold rush, Nevada, Utah, and Montana. He later represented the State of California in the United States Senate. He and his wife Phoebe had one son, William Randolph Hearst, who, rather than continue in his father's footsteps in the mining businesses, chose to manage his father's newspaper, the *San Francisco Examiner*. William became a publishing magnate and was a pioneer in the radio and television industries.

With a population of 8,392 in 1910, Lead was the second largest community in South Dakota. The employment opportunities for not only miners, but also laborers and mechanics were excellent. After George Hearst's death in 1891, his widow Phoebe made substantial contributions to the educational and cultural life of Lead. She was responsible for the establishment of the first kindergarten in the entire West. In addition, she arranged for the Homestake Mining Company Homestake Opera House and Recreation building to be constructed as gifts to the community from the company. Tickets had to be purchased for events in the Opera House, but use of the swimming pool, bowling alley, meeting rooms and library was free.

Barrick Gold Company of Toronto, Canada merged with the Homestake Mining Company in 2001. On December 14, 2001, miners completed extraction work. Three hundred and sixty two positions were removed when the mine closed.

Homestake Mining Company was famous for being leaders in technology in the mining industry. Homestake built state of the art mills, power facilities and equipment to produce the precious metals that they mined.

In July, 1908 Superintendent. T. J. Grier ordered the survey to made upon which to base a power development.

In 1911 Homestake powered up its new 6000-kw capacity power plant located in Spearfish South Dakota. It has a working head of 665 ft. The moving spirit in the enterprise was Superintendent T.J. Grier. The plant was designed and constructed under the supervision of Alex Blackstone, resident engineer and superintendent.

Spearfish Creek is the most constant flowing stream in the Black Hills. It has a fall of nearly 100-ft. per mile, has been looked upon through popular estimates as the source for tens of thousands of horsepower, but the records of stream flow through years told the engineer that its capacity was much overrated.

The intake located in Spearfish Canyon about 8 miles above the Power House, known as the Maurice dam is built of concrete, 400 ft. long. It is 25 to 30 ft. wide at the bottom, and tapers to the usual apron at the top. The diversion is located with the floor at elevation 4373, some 8 ft. below the natural bed of the water flowing in the creek.

The Burlington railroad ran from Lead to Spearfish, and was able to haul the necessary supplies for the project. The tunnel is 23,800 ft. in length. It has a width of 6 1/2 ft. vertical sidewalls of a height of 5 ft., with an arched roof of 3ft. 3ins. Radius. The tunnel was driven through the hill from suitable points along the route as described below. The sides and the floor of the tunnel are lined with concrete, and the arched roof is similarly lined for about three-fifths the distance. The survey developed the fact that a tunnel could extend from the intake to the forebay on a very direct line. The side canyons or ravines cut into the line of the tunnel at intervals that naturally divided the work into sections of convenient lengths for rapid excavation, as follows:

Tunnel	Began	Finished	Feet	Daily Average
No. 1	July 09, 1909	June 23, 1910	1,965	5.65
No. 2	July 09, 1909	Oct. 08, 1910	4,152	9.10
No. 3	July 22, 1909	Aug 13, 1910	4,052	10.60
No. 4	July 10, 1909	July 29, 1910	4,154	10.82
No. 5	Aug.22 1909	Jan. 06, 1910	1,284	9.45
No. 6	Sept.10 1909	Aug. 05, 1910	3,762	11.40
No. 7	Sept.30 1909	June 23, 1910	2,074	7.77
No. 8	Dec. 08 1909	Sept. 04 1910	2,389	9.00

Crosscuts were driven in on the grade level at each of the stations, to the intersection of the tunnel centerline. The centerlines over tunnels 1,2,3,4,and 5 were run over the surface, the closing error noted, the ranging out repeated until exact closing direction was determined. When this point was determined, and this final angle into the tunnel line set out and permanently plugged in the roof. Tunnels 6,7,and 8 coming near the surface, and over clear and fairly even ground, their center lines were determined by ranging first a ranging first, a random line, and connecting to the true line.

The Homestake Mining Company also owned a hydroelectric power plant near the north end of the tunnel on Spearfish creek. This plant was built in 1904 for the purpose of lighting Spearfish. It was equipped with one 100kw, 2300-volt alternating current Westinghouse generator. The waterpower was supplemented by a steam plant sufficient to carry the loads when freezing weather cut off the water. Another 100kw Westinghouse generator of the same voltage was installed, so both could be run in multiple.

A transmission line was built up the canyon to the intake, with branches to each mining station. Transformers were erected as near the tunnel entrance as convenient, stepping down current to 220 volts. They connected the leads to Temple-Ingersoll electric drills at the working faces of the tunnels, and to the Sirocco blowers, which furnished the ventilation to the miners. It was also used to pump water from Spearfish Creek to stations 2,3,7, and 8. All tunnel work was done in three 8 hour shifts. The rounds were five feet in length. The miner's hand mucked all the rounds off of steel sheets into regular Homestake mine cars and hand trammed to the dump on all sections of the tunnel. Sixteen faces were being mined at all times. The concrete was hauled into the tunnel by a steam powered locomotive.

It may be of interest to note that the maximum metered power used in driving this tunnel seldom exceeded 30-hp. The power used was metered, and a daily report made of the current put on the tunnel transmission line.

There were two concrete plants, one at the intake and the other at Station 5. All the concrete was mixed in ½ yard Smith mixers. All material for the concrete was from Spearfish Creek except the Atlas Portland Cement.

The tunnel terminates in an open concrete forebay, 40ft. by 70ft. From this point the water which has a flow of 40 to 120 cu. Ft. per second, depending on the water stage in the creek, passes to 1200 ft. redwood pipe laid in two lines as an invert. The lowest point working under a head of 110 ft. They are composed of redwood stave pipe 480in inside diameter, banded with mild steel bands. This pipe was built of staves milled from clear California redwood free from sap, knots, shakes, pitch or pitch-seams of the best grade lumber for the purpose.

The direct line from the forebay to the powerhouse passed over a small hill or mound, the apex of which was over 100 ft. above hydraulic grade line. This made it necessary to erect some sort of reservoir with open connections to the air at that point. A large steel cylinder 74 ins. in diameter by 25 ft. long, with four open-stand pipes, each 36 ins. in diameter and 54 ft. high, as constructed. The standpipes regulate consistent flow of water to the powerhouse.

The powerhouse is a concrete structure in the shape of the letter H. It was also built in 8-hour shifts twenty-four hours a day. The concrete was mixed on site and it was a continuous pour from start to finish of the powerhouse. The pipelines pass under the transformer and switchboard room to the generating room through the basement. This piping is all exposed, showing all joints to be absolutely water tight under 665-ft. head, or 288 lbs. Per sq. in.

Water enters the powerhouse through the three Y branches of the 30-in welded pipe. Each of which divides and the water impinges through 6-in. nozzles directly upon the two runners of an overhung Pelton impulse turbine, the wheels of which are placed on either side of the electric generator which it drives. There are three of these power units, the generator in each case being a Westinghouse machine rated 2000 kva. Or 1600 kws. At 80% power factor and capable of standing a 25% continuous overload. AC current 3-phase, 60 cycles, is generated at a terminal pressure of 2300 volts. Excitation of the field coils is effected from two 125-kw. DC generators, each of which is connected to a Pelton water wheel and also a Westinghouse motor.

When one of the exciters is started up, it is driven from the Pelton wheel, but may be as desired switched over to the motor-drive on alternating current from the main generating system. Water is admitted to the exciter wheels through independent feed lines which through a cross-connecting main gate valve. They can take their supply from any one of the penstocks feeding the main units.

The power was transmitted to Lead on a power line 11 miles long. The 11,000-volt current is transmitted and stepped down to 440 volts. It was used to operate the following plants and mills. Terville and Central City stamp mills, rock crushers at Old Brig and Golden Prospect hoists, Pocahontas stamp mill, Monroe stamp mill, Mineral Point stamp mill, crushers at the Ellison, Gates crushers at the B&M. Power was also carried down the B&M shaft to operate seven 125-hp Westinghouse motors operating pumps. It was also used for Lead stamp mills, and many other Homestake buildings, mine lighting and shops.

Since this information few changes have been made to the facility. In 1917 one of the generators were removed and placed in Hydro #2 in 1917. The standpipes were upgraded and insulated in 1989. The original old water-cooled transformers, old switchgear was replaced in 1989 with a new substation, placed North of the powerhouse.

The City of Spearfish purchased the complete facility on May 5, 2004 for \$250,000.00 with \$1,000 down and 3 years with no interest from Homestake Mining Company of California. Our intentions are to operate the facility and sell the power at a wholesale rate to Black Hills Power and Light Co. The City's main concern is having consistent waterflows for our community and the irrigators that have consumable rights to water below Spearfish.

We are now in the process of getting the power generating facility permitted or a exemption of permit from FERC.

References:

Mining World and Engineering No. 1. Volume XLI July 4, 1914 Note: (Did not change punctuation or spelling in many cases)
Homestake Mine History Trudy Severson
Mayor Jerry Krambeck, City of Spearfish October , 4, 2004

43-1

JPH

Attorney General

JUL 25 2011

337275

July 23, 2011
S.D. Water Management Board
c/o JEFF HALEM, Attorney General's Office
1302 East Highway 14, Suite 1
Pierre, SD 57501

From: Richard L. Fort, President
ACTion for the Environment
11307 Black Forest Road
Lead, SD 57754 (605) 584-3832
RE: Spearfish City water allocation
Members of the SD Water Management Board:

The attached printout from the U.S. Geological Survey Guage in Spearfish City shows a reality about water allocation which should come to your attention.

If you will notice on page two the amount of water flowing below the power plant in Spearfish is around or a little below 110 cfs.

For the time depicted in this record there has been an overflow at the Maurice Dam that does not reach Spearfish as it is absorbed in the aquifer in the last two miles of Speafish Canyon. So the cfs. figures shown here represent either the full capacity of the waterline, or, if as the City claims, its capacity is 120 cfs., then there is a loss of over 10 cfs. in the water line.

Either of these alternatives involve a violation of State water regulations. The State in granting the City 120 cfs. is violating the court ruling that water must be allocated on the basis of actual average use. If 120 cfs. is going into the line and 10 is being lost there, water is being needlessly wasted, also a violation of state regulations.

The original allocation to Homestake of the water for power production was made on the assumption that there were three generators each with capacity for 40 cfs. However, for years there have been only two generators. Thus the State is violating its own regulation that they cannot allocate more water than can be reasonably used.

We would insist that what the State should allocate is 80 cfs. and require the City to overflow the remainder at Maurice. This would be enormously beneficial to the fishery below this Dam as well as put the State more in compliance with its own regulations.

Thank you for your attention to this matter.

Sincerely, 
Richard L. Fort

Copy: Mike Hickey



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Data Category:
 Real-time

Geographic Area:
 South Dakota

[News](#) - updated July 2011

**USGS 06431500 SPEARFISH CR AT
 SPEARFISH,SD**

PROVISIONAL DATA SUBJECT TO REVISION

Available data for this site

Time-series: Real-time data

This station operated in cooperation with the SD Department of Natural Resources, Water Rights Division.

The precipitation data for this station are temporary and will only be displayed for 60 days. Time series values will NOT be available for retrieval following the 60-day display period. Rainfall instrumentation may not be calibrated, and other quality assurance measures may not be performed that would make the data acceptable for archival, retrieval, or future use in general scientific or interpretive studies.

[Boating safety tips](#)

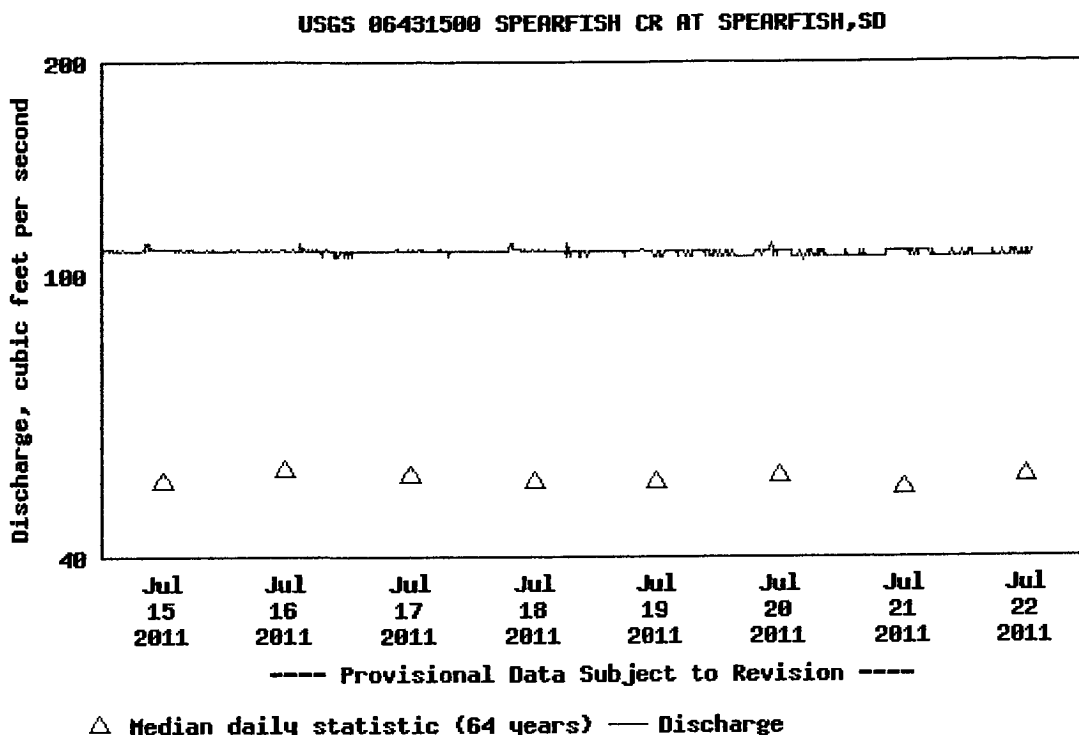
This station managed by the Rapid City Science Center.

Available Parameters	Output format	Days	
<input type="checkbox"/> All 3 Available Parameters for this site	<input checked="" type="radio"/> Graph	7	<input type="button" value="GO"/>
<input checked="" type="checkbox"/> 00060 Discharge	<input type="radio"/> Graph w/ stats	(1-120)	
<input checked="" type="checkbox"/> 00065 Gage height	<input type="radio"/> Graph w/o stats		
<input checked="" type="checkbox"/> 00045 Precipitation	<input type="radio"/> Table		
	<input type="radio"/> Tab-separated		

Summary of all available data for this site

Discharge, cubic feet per second

Most recent instantaneous value: 108 07-22-2011 13:00 MDT



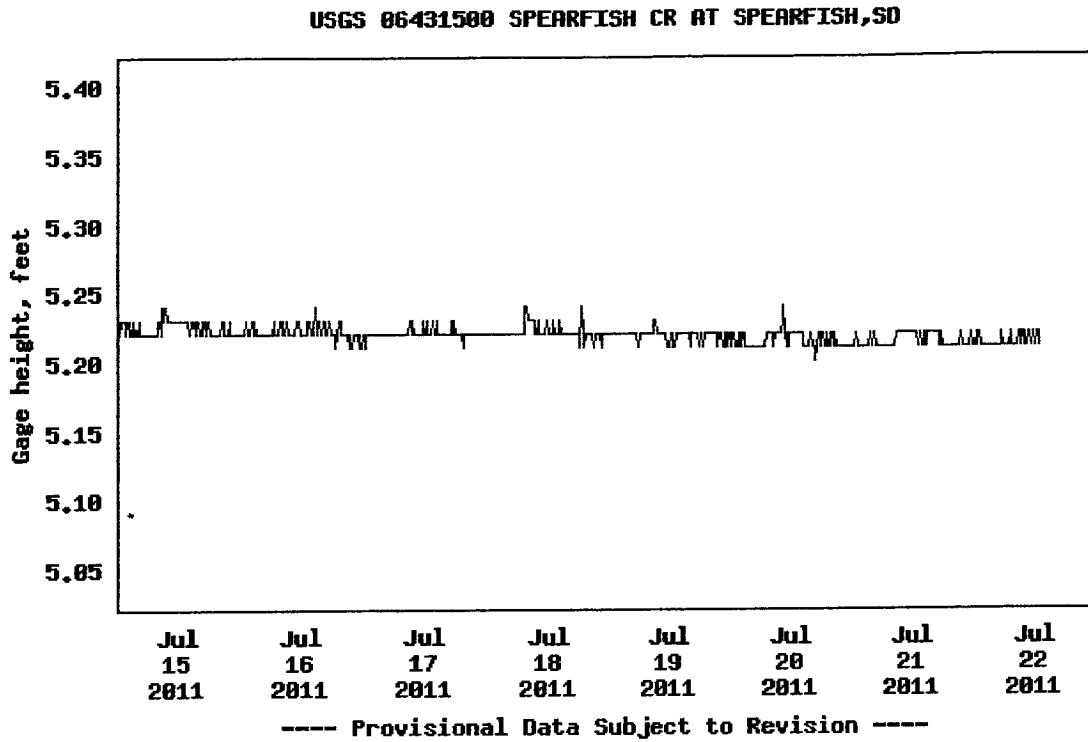
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Daily discharge statistics, in cfs, for Jul 22 based on 64 years of record [more](#)

Min (1960)	25th percentile	Median	Mean	75th percentile	Most Recent Instantaneous Value Jul 22	Max (1999)
17	40.	52	53	64	108	114

Gage height, feet

Most recent instantaneous value: 5.22 07-22-2011 13:00 MDT

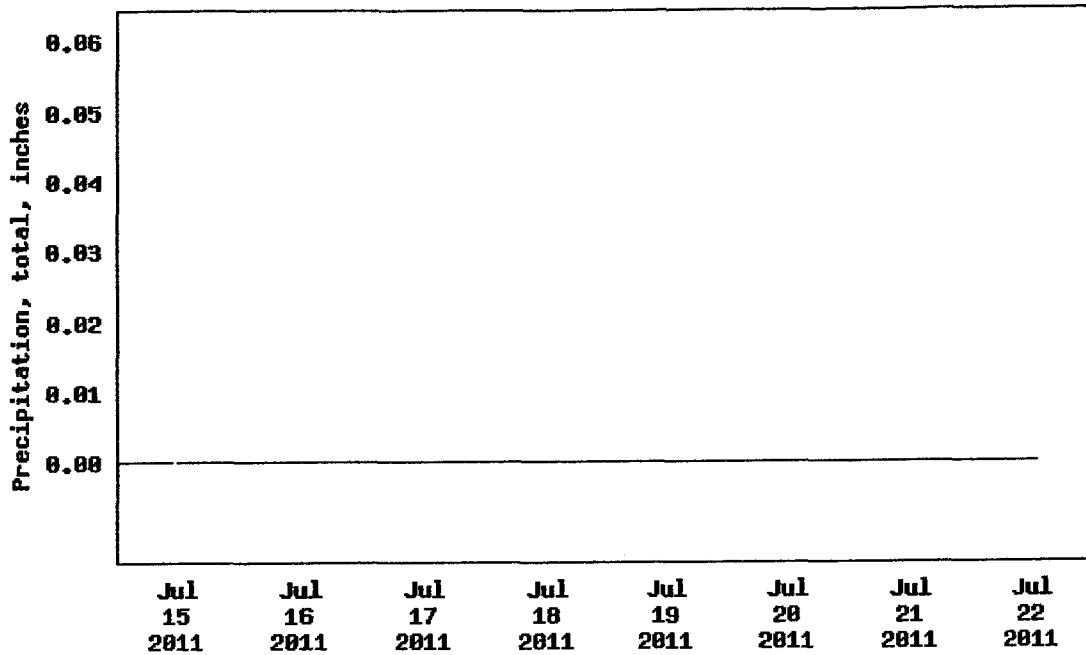


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Precipitation, total, inches

Most recent instantaneous value: 0.00 07-22-2011 13:00 MDT

USGS 06431500 SPEARFISH CR AT SPEARFISH,SD



---- Provisional Data Subject to Revision ----

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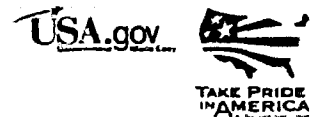
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Title: USGS Real-Time Water Data for South Dakota
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Page Contact Information: [South Dakota Water Data Support Team](#)

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0.56 0.3 caww01



OFFICE OF ATTORNEY GENERAL

317 N. Main Avenue
Sioux Falls, South Dakota 57104
Phone (605) 367-5880
FAX (605) 367-5886
www.state.sd.us/atg

MARTY J. JACKLEY
ATTORNEY GENERAL

CHARLES D. McGUIGAN
CHIEF DEPUTY

August 3, 2011

Jeff Hallem
Counsel for SD Water Mgmt. Bd.
1302 E. HWY 14
Pierre, SD 57501

Re: Dick Fort's letter regarding water license 43-1.

Dear Jeff,

You sent a copy of a recent letter from Dick Fort. It pertains to water right No. 43-1. You inquired whether this is something that should be referred to the Chief Engineer.

This is not the first situation where parties directly sought relief from the Water Board and/or the Courts regarding this water right.

Mr. Fort made a direct request to the Water Board in 1993 and the Board ultimately denied that request in 1996 because he did not request a Chief Engineer investigation. See Attachment A.

Also a civil action was filed in 2005 wherein property owners along Spearfish Creek sought a declaratory ruling against the Water Board seeking to use the court to cancel or limit this water right. See, *Williamson v. Water Management Board* (Attachment B). The Court held that the Chief Engineer was the proper person to investigate and bring an action for cancellation for nonuse (abandonment or forfeiture), if one was warranted.

Based on the court's initial decision, the Williamsons approached the Chief Engineer. He investigated this water right and issued a determination in 2006 that the water right was not subject to forfeiture or abandonment and he declined to initiate cancellation proceedings. The Chief Engineer did not, therefore, bring the issue to the Water Board under the procedures in SDCL ch. 46-5.

In later court proceedings in the *Williamson* case, the Court declined to disturb the Chief Engineer's conclusions and the decision is final.

To the extent that Mr. Fort has new information or allegations concerning this water right, then he should report those circumstances to the Chief Engineer. The Chief Engineer has the sole authority to look at this and determine whether another investigation should be conducted under SDCL 46-5-36 and/or SDCL 46-5-37.

This is not an acknowledgment that the Chief Engineer will conduct another investigation. The Chief Engineer will examine whether one is warranted in light of the information provided as well as other information currently available.

Sincerely,

A handwritten signature in black ink that reads "Diane Best". The signature is written in a cursive style with a large initial "D" and "B".

Diane Best

Assistant Attorney General

Attachment A



OK
Attorney General
128272
MAY 17 1995

**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3181

May 16, 1995

Richard Fort
HC 37, Box 2421
Lead, SD 57754

Dear Mr. Fort:

I am writing regarding Phase II of your declaratory ruling request for proposed water management changes for Spearfish Creek Watershed. Phase II is comprised of proposed changes Nos. 4, 5 and 6 of your request submitted September 13, 1993. It was agreed that Phase II would be heard at a separate Water Management Board meeting than Phase I of your declaratory ruling request. Phase I was consolidated with Homestake Mining Company's vested water right application and recently considered by the Board.

We are in receipt of your amended declaratory ruling request for Phase II which you entitled "Homestake Non-consumptive use of Spearfish Creek Water for Power Production". This amendment confirms your intent to proceed with Phase II of the declaratory ruling request. A staff investigation will now be conducted on your request. Please submit any supporting documentation to the request that should be taken into consideration during the staff investigation.

The Water Management Board currently has a number of hearings pending on issues that were delayed while Homestake's vested water right applications and Phase I of your request were considered. For this reason, I can not provide you with a timetable of when Phase II will be scheduled before the Board.

If you have any questions on processing of Phase II, please contact Eric Gronlund at (605) 773-3352.

Very truly yours,

John Hatch, Chief Engineer
Water Rights Division
(605) 773-3352

c: Diane Best, Assistant Attorney General

U
May 12, 1995



TO: JOHN HATCH, CHIEF ENGINEER
Water Rights Division - South Dakota Department of Environment
and Natural Resources, 523 East Capitol, Pierre SD 57501-3181
ATT: ERIC GRONLUND
FROM: RICHARD L. FORT, APPLICANT

RE: AMENDED REQUEST FOR A DECLARATORY RULING
PHASE II - HOMESTAKE NON-CONSUMPTIVE USE OF
SPEARFISH CREEK WATER FOR POWER PRODUCTION.

1. Subject to the conditions following Homestake shall be granted for non-consumptive use for power production for Plant #1 at Maurice up to 30 cfs of Spearfish Creek water. 2
2. Subject to the conditions following Homestake shall be granted for non-consumptive use for power production for Plant # 2 in Spearfish up to 60 cfs of Spearfish Creek water. 1

CONDITIONS:

- A. No water may be diverted from Little Spearfish Creek above Savoy.
- B. 3 1/2 cfs of bypass or overflow water shall be released from Intake No. 1 above Savoy.
- C. 3 1/2 cfs of bypass or overflow water shall be released from Intake No. 2 below Maurice.

(Citation re above conditions: U.S. Supreme Court Decision: No. 92-1911 of May 31, 1994)

Richard L. Fort

Richard L. Fort
HC 37, Box 2421
Lead, SD 57754

ACTion for the Environment

"Our environment is our economy"

**P.O. Box 291
Rapid City, SD 57709
(605) 348-5111**

**PROPOSED WATER MANAGEMENT CHANGES FOR
SPEARFISH CREEK WATERSHED**
September 1, 1993

GENERAL COMMENTS

In the Wyoming Black Hills south of Beulah is a canyon comparable in length and depth to Spearfish Canyon, and, some would claim, almost as beautiful. Yet this Grand Canyon, as it is named, remains largely unknown even to area residents and is seldom visited. No development occurs except for the last few miles, where Sand Creek is located, but not where the canyon itself is very spectacular. Due to natural conditions the rest of the canyon has no stream. Obviously, a beautiful creek is a most crucial attraction of a great canyon.

Spearfish Canyon in contrast, would have, were it not for human interference with natural conditions, a fine trout stream throughout its entire course. But now there are substantial portions of the canyon where there is no stream at all or it is too small. Except for a small section below Hydroplant No. 2, there has been little effort expended to make the stream what it is capable of as a great trout fishery.

The enclosed proposals are designed to assure that there is enough water for trout reproduction in all but the last two miles of the canyon (where the rock layers are such that the water sinks into the ground to replenish deeper aquifers). These proposals recognize that the two power plants which use Spearfish Creek water would be allowed to continue operation, if at a slightly reduced capacity. Remaining unchanged is the main aqueduct which takes water from Intake and Raddick Gulchs to supply water for Homestake Mining Company, and the cities of Lead and Deadwood.

It is impossible to put an accurate dollar value upon a resource such as Spearfish Canyon - but we know the amount would be huge if we could. ACT believes protecting and enhancing this resource, including its water, for future generations to enjoy is a top priority. ACT feels the public interest is an important, compelling factor on this issue.

PROPOSED CHANGES

1. SHUTDOWN OF THE AQUEDUCT FROM TILLSON CREEK

The spring that is tapped is in section 26 of T3N,R2E, and would normally flow in Tillson Creek to Swede Gulch and the North Fork of Rapid Creek. Allowing this large spring its normal drainage would improve both streams.

2. SHUTDOWN OF AQUEDUCTS FROM KEOUGH AND WARD DRAW

These water lines tap large springs at the head of Keough Draw (section 12 of T3N,R2E) and Ward Draw (section 10 of T3N,R2E). This would produce a larger flow of water in Hanna Creek. This larger flow would compensate the water release suggested for the Diversion Intake above Savoy on the main Spearfish Creek (see proposed change No. 4).

3. FORBID PUMPING AT HANNA OF HANNA CREEK WATER

Hanna Pumping station for the main Spearfish water aqueduct is in section 35 of T4N,R2E. It is not known whether pumping has ever been done here from Hanna Creek, but the potential exists and, if done, could damage trout habitat from stream flow fluctuations.

4. RELEASE 3-1/2 CFS FROM UPPER DIVERSION INTAKE

This intake on main Spearfish Creek is in section 6 of T4N,R2E, and its water goes to Hydroplant No. 2. This release would reestablish a small but permanent stream between this intake and Savoy in an area where there now is no stream.

5. SHUTDOWN THE AQUEDUCT FROM LITTLE SPEARFISH CREEK

The Diversion Intake on Little Spearfish Creek is in section 36 of T4N,R2E, and its water now goes to Hydroplant No. 2. This would allow all of Little Spearfish Creek to flow over Little Spearfish Falls at Savoy, thus restoring the falls that is now dry. This would also restore to better volume the trout stream in the main central Canyon of Spearfish Creek below Savoy.

6. RELEASE 3-1/2 CFS FROM LOWER DIVERSION INTAKE

This Diversion Intake on main Spearfish Creek is in section 8 of T4N,R2E, and its water goes to Hydroplant No. 1 in Spearfish. This release would augment the now too small flow of the stream in lower Spearfish Canyon. The additional water that would be absorbed in the ground below the present Spearfish City Intake would help replenish the aquifers for wells in the Spearfish area.

STATE OF SOUTH DAKOTA

BEFORE THE WATER MANAGEMENT BOARD

IN THE MATTER OF PHASE II)
OF RICHARD FORT'S DECLARATORY) ORDER DISMISSING
RULING PETITION) PETITION

WHEREAS, Mr. Richard Fort filed a six proposal petition for declaratory ruling; and,

WHEREAS, three of the proposals (Phase I) were considered and dealt with as part of the consolidated vested water right hearing relevant to the Homestake applications; and,

WHEREAS, the remaining three proposals (Phase II) were deferred to a later hearing and are the subject of this Order and,

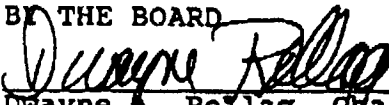
WHEREAS, the Board is without jurisdiction to grant the release requested by Mr. Fort in Phase II, i.e., to assign different uses to existing water rights without the consent of the water right holder; and,

WHEREAS, Mr. Fort has not, in any event, followed the statutory proceeding through which he could request the chief engineer to investigate whether or not Homestake Mining Company is complying with the water rights in question and the conditions set forth therein and,

WHEREAS, the Board has considered all the arguments thereon,

WHEREFORE, the Board of Water Management herewith DISMISSES Phase II of Richard Fort's Declaratory Ruling Petition.

Dated this 7th day of February, 1996.

BY THE BOARD

Dwayne A. Roilag, Chairman

Dec. 11/1



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3181

February 9, 1996

NOTICE

TO: Richard Fort
HC 37, Box 2421
Lead, SD 57754

FROM: John Hatch, Chief Engineer
Water Rights Program
(605) 773-3352

SUBJECT: Order Dismissing Phase II of Richard Fort's Declaratory Ruling Petition

This is to notify you that the Water Management Board adopted an order December 6, 1995, to dismiss your petition in the matter of Phase II of your declaratory ruling request. Enclosed is a copy of the signed order dismissing the petition.

South Dakota Statutes provide that decisions of the Board may be appealed to the Courts. Notice of appeal of the Board's decision must be filed within thirty days of this notice and be in accordance with procedures established in SDCL 1-26-31.

enclosure

c: John Guhin Deputy Attorney General
Diane Best, Assistant Attorney General
Roger Tellinghuisen
Phil Barnes, Homestake Mining Company

Attachment B

domestic use of water from the creek. On February 4, 2005, Plaintiffs initiated an action for declaratory and injunctive relief, alleging that Homestake had abandoned its rights under Water Right No. 43-1 and that those rights were therefore forfeited.

The City filed a Motion to Dismiss on March 16, 2005. Homestake joined in this motion. The Water Management Board also filed a statement on April 28, 2005, requesting its dismissal from the lawsuit. Following a hearing on City's Motion, on May 16, 2005, this Court, Honorable Timothy R. Johns presiding (now retired), granted City's Rule 12(b)(5) Motion to Dismiss as to Plaintiffs's claims that Homestake's transfer of the water right was unlawful. In ruling on City's Motion to Dismiss based on lack of subject matter jurisdiction, the Court ordered as follows:

ORDERED, that plaintiffs must exhaust all available administrative remedies as to all other claims alleged in their complaint by filing with the Chief Engineer of South Dakota Water Rights Program a petition requesting an investigation of Water License No. 43-1; and it is further

ORDERED, that the Court retains jurisdiction over this matter consistent with the terms of this Order.

Pursuant to this Order, on October 4, 2005, Plaintiffs wrote a letter to Garland Erbele, Chief Engineer of the Water Rights Program, requesting an investigation as to whether Homestake had complied with all rules and regulations relating

to its Water Right. In May of 2006, the Water Rights Program issued its Investigative Report, determining that "Water Right No. 43-1 has not been abandoned and there is no evidence of forfeiture due to nonuse. Therefore, Water Right No. 43-1 is a valid water right and there is no basis for the cancellation of this right."

Thereafter, Plaintiffs took no further administrative action before the Water Management Board. City filed a Renewed Motion to Dismiss on September 5, 2007. Both Homestake and Water Management Board have joined in this motion.

Analysis

Plaintiffs have raised two arguments in support of their contention that the Renewed Motion to Dismiss should be denied. First, they argue that under the doctrine of primary jurisdiction, both this Court and the Water Management Board had the authority to hear the instant action; thus, they contend, this action is properly before the Court. Second, they argue that because they have already exhausted their administrative remedies, judicial review is now appropriate.

The two related doctrines of exhaustion and primary jurisdiction were recently explained in South Dakota Educ. Association/NEA v. Barnett, 1998 SD 84, ¶ 9, 582 N.W.2d 386, 390, which stated:

"Exhaustion" applies where a claim is cognizable in the first instance by an administrative agency alone; judicial interference is withheld until the administrative process has run its course. "Primary jurisdiction," on the other hand, applies where a claim is originally cognizable in the courts, and comes into play whenever enforcement of the claim requires the resolution of issues which, under a regulatory scheme, have been placed within the special competence of an administrative body; in such a case the judicial process is suspended pending referral of such issues to the administrative body for its views.

Id. (citing United States v. Western P. R. Co., 352 U.S. 59, 63-64, 77 S.Ct. 161, 165 (1956)). Thus, the important inquiry in determining if primary jurisdiction applies is whether Plaintiffs' claims were "originally cognizable in the courts" or whether enforcement of their claims was "placed within the special competence of an administrative body."

Here, Plaintiff's claims include causes of action for abandonment and forfeiture. SDCL 46-5-37.1 sets forth the procedure that any interested person must use for determining whether a water right has been abandoned or forfeited. This statute provides:

Upon the initiative of the chief engineer or upon petition by any interested person and after reasonable notice to the holder of the right or permit, if he can be located, the chief engineer may investigate whether or not a water permit or right has been abandoned or forfeited. After the investigation, the chief engineer may recommend cancellation of the permit or right for reason of abandonment or forfeiture. The recommendation, notice, and hearing shall be conducted pursuant to the procedure contained in chapter 46-2A.

A plain reading of this statute dictates that it is the responsibility of the chief engineer, and not the courts, to make the determination of whether or not a water right has been abandoned or forfeited.

Courts must refrain from intermeddling in administrative actions. As the South Dakota Supreme Court recently noted:

It must be remembered that the constitutional separation of powers between the executive branch and the judicial branch prevents courts from involvement in review of administrative decisions unless there exists specific legislative empowerment for the judiciary to act regarding executive branch functions; when such delegation of power exists, appeals to the courts must follow such statutory procedures as a condition precedent to obtaining subject matter jurisdiction, because such conferred powers over executive branch functions are statutorily circumscribed.

Jundt v. Fuller, 2007 SD 62, ¶ 10, 736 N.W.2d 508. SDCL 46-5-37.1 does not provide a specific legislative empowerment allowing a court to review the chief engineer's determination. Thus, the doctrine of primary jurisdiction does not apply, and this Court's previous pronouncement that it retained jurisdiction over the matter was erroneous. A court cannot retain jurisdiction over a matter where the court never properly had jurisdiction. Furthermore, SDCL 15-6-12(b)(1) provides that a court's lack of subject matter jurisdiction is a proper basis upon which a court may dismiss an action.

While SDCL 46-5-37.1 does not give the judiciary the power to review the chief engineer's recommendation, it does provide

that the recommendation, along with accompanying notice and hearing, shall be conducted pursuant to the procedure of chapter 46-2A. Notably, SDCL 46-2A-3 states, in pertinent part:

If the recommendation is to deny the application, the applicant within twenty days of the date the recommendation was mailed shall state in writing whether the applicant intends to oppose the recommendation at a hearing before the Water Management Board. Failure to submit a statement of intent to oppose a recommendation to deny to the chief engineer constitutes a withdrawal of the application.

This statute clearly provides that appeals to a chief engineer's determination must take place within 20 days. In this case, more than a year has passed since the chief engineer determined in his Investigative Report that there was no evidence to support Plaintiffs' claims of abandonment and forfeiture. Because Plaintiffs failed to appeal the chief engineer's decision, their claim is effectively time-barred pursuant to SDCL 46-2A-3.

Plaintiffs contend that because SDCL 46-2A-3 only explicitly applies when the chief engineer's "recommendation is to deny the application," it is inapplicable here, in that the chief engineer found no evidence of abandonment or forfeiture and thus recommended against cancellation. Further, they argue, that since no other statute expressly grants them the right to appeal, that they have exhausted their administrative remedies.

This Court is not persuaded by these arguments. First, they assume that Plaintiffs even have the right to appeal a chief engineer's recommendation of approval. Because the legislature provided no statutory authority for challenging a chief engineer's recommendation of approval of a water right, it is equally plausible that the legislature intended these recommendations to be unappealable. Second, to the extent that Plaintiffs were seeking a determination that the water right had been abandoned and forfeited, the chief engineer's recommendation against cancellation served as a "denial" of their claims, thus bringing the 20-day statutory period into play.

Conclusion

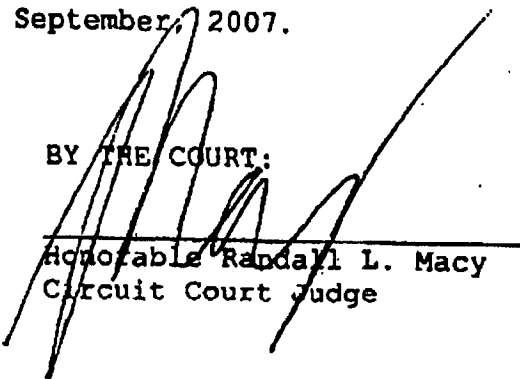
Plaintiffs have failed to show that their claim was originally cognizable in the courts; thus the doctrine of primary jurisdiction does not apply. Pursuant to SDCL 15-6-12(b)(1), this Court's lack of jurisdiction provides a proper basis for dismissing the action. Additionally, by not appealing the chief engineer's recommendation, plaintiffs have failed to show that they have exhausted their administrative remedies. Based on the arguments and authority set forth herein, this Court finds that City's Renewed Motion to Dismiss, in which

Homestake and the Water Management Board have joined, is hereby granted.

Counsel for City shall draft a Judgment consistent with this Memorandum Decision.

Dated this 26th day of September, 2007.

BY THE COURT:



Honorable Randall L. Macy
Circuit Court Judge

ATTEST:

Clerk of Courts

By: _____
Deputy

STATE OF SOUTH DAKOTA



OFFICE OF ATTORNEY GENERAL

1302 East Highway 14, Suite 1
Pierre, South Dakota 57501-8501
Phone (605) 773-3215
Fax (605) 773-4106
TTY (605) 773-6585
www.state.sd.us/atg

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AUG - 8 2011

WATER RIGHTS
PROGRAM

MARTY J. JACKLEY
ATTORNEY GENERAL

CHARLES D. McGUIGAN
CHIEF DEPUTY ATTORNEY GENERAL

August 5, 2011

Richard L. Fort
11307 Black Forest Rd.
Lead, SD 57754

Re: *Spearfish City Water Allocation*

Dear Mr. Fort:

I received your letter July 23, 2011. As you are aware, the Water Management Board does not independently investigate complaints or allegations regarding violations of water right permits for nonuse (abandonment or forfeiture). Such investigations are to be conducted by the Chief Engineer.

I have been informed that the Chief Engineer has investigated this water right permit in the past, but if you have new information or allegations, you should present them directly to the Chief Engineer. A copy of your July 23, 2011, letter has been forwarded to the Chief Engineer for his consideration.

Be advised that I have not forwarded your correspondence to the Board given the Chief Engineer's exclusive province over this activity.

Sincerely,

A handwritten signature in black ink that reads "Jeffrey P. Hallem".

Jeffrey P. Hallem
Assistant Attorney General

JPH/ms

Cc: Michael M. Hickey
Cc/enc.: Garland Erbele

August 8, 2011

Garland Erbele, Chief Engineer
Department of Environment and Natural Resources
Joe Foss Building, 523 East Capitol
Pierre, SD 57501-3182

RECEIVED
AUG 10 2011
WATER RIGHTS
PROGRAM

From: Richard L. Fort, President
ACTion for the Environment
11307 Black Forest Road
Lead, SD 57754 (605) 584-3832

RE: Spearfish City water allocation

Dear Mr. Erbele:

The USGS flow figures we sent before have been revised downwards by the agency. Of course they warn that their figures are provisional and subject to revision. With that in mind one should use them as general indicators.

These additional presumably more correct figures for a two week period from July 26 through to August 8 are of interest, however, in what they show. During this period there has been some continuous overflow at the Maurice Dam, none of which is reaching Spearfish. So the flows in Spearfish represent what has arrived at the power plant in Spearfish through the water line from Maurice. As you can see they would average in the low 90 cfs. This obviously confirms our contention that the City never uses the 120 cfs they have been allocated. Admittedly it remains speculative as to how much water is lost in the waterline since we no longer have the guage above the dam for comparison.

What is not speculative and is conclusively proven by these figures is that Spearfish at maximum never uses the 120 cfs they have been allocated and that their actual average use would be quite considerably below this figure.

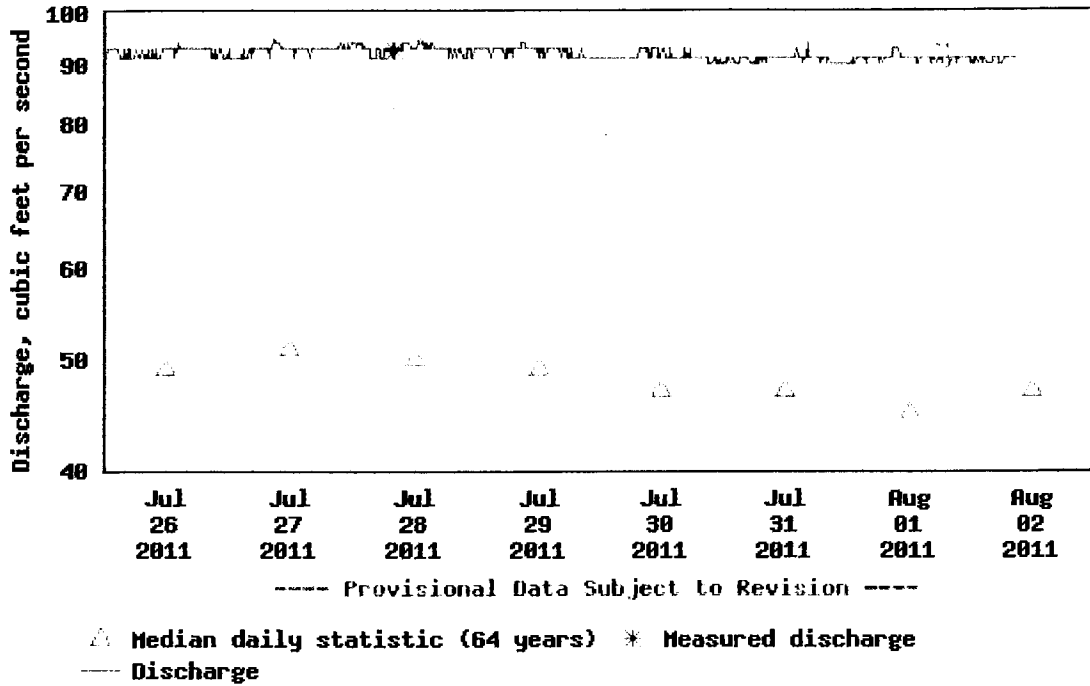
We ask the State to correct this over appropriation of the State's water.

Thank you for your attention on this issue.

Sincerely,


Richard L. Fort.

USGS 06431500 SPEARFISH CR AT SPEARFISH,SD



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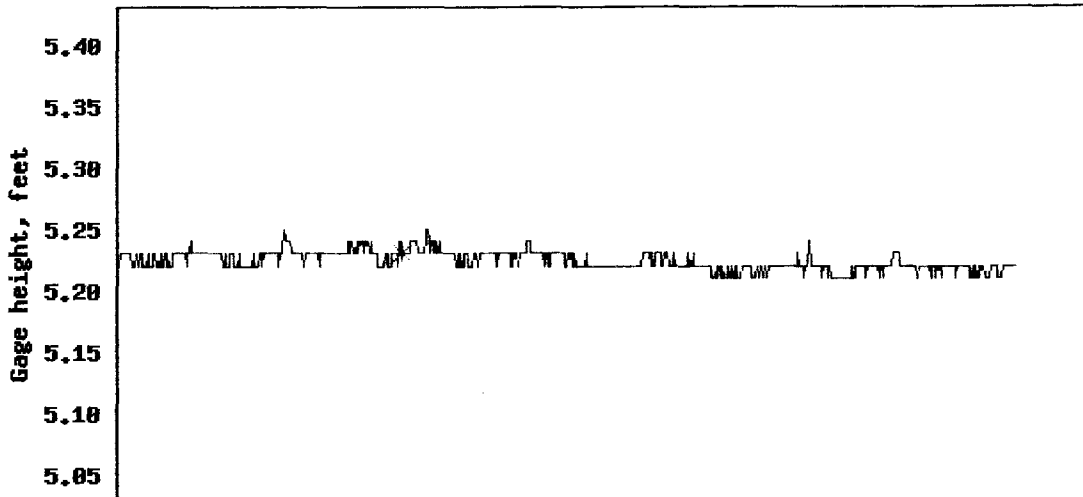
Daily discharge statistics, in cfs, for Aug 2 based on 64 years of record [more](#)

Min (1961)	25th percentile	Median	Mean	75th percentile	Most Recent Instantaneous Value Aug 2	Max (1999)
24	37	47	52	59	91	122

Gage height, feet

Most recent instantaneous value: 5.22 08-02-2011 09:00 MDT

USGS 06431500 SPEARFISH CR AT SPEARFISH,SD



Jul	Jul	Jul	Jul	Jul	Jul	Aug	Aug
26	27	28	29	30	31	01	02
2011	2011	2011	2011	2011	2011	2011	2011

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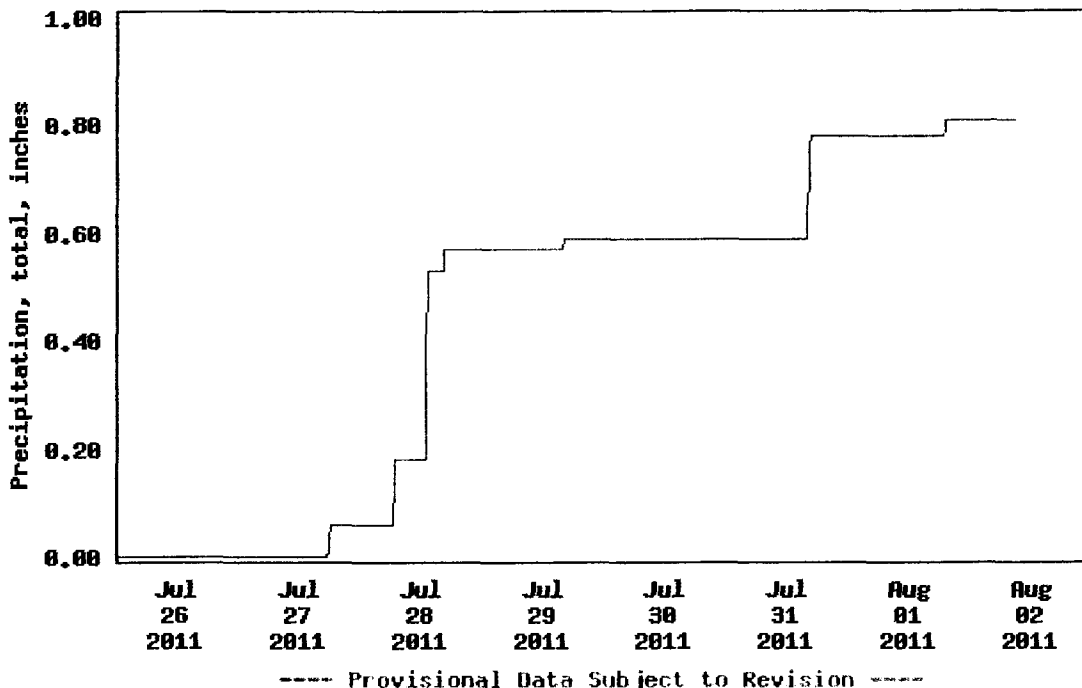
— Gage height * Measured gage height

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Precipitation, total, inches

Most recent instantaneous value: 0.00 08-02-2011 09:00 MDT

USGS 06431500 SPEARFISH CR AT SPEARFISH,SD



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Page Contact Information: [South Dakota Water Data Support Team](#)

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PROVISIONAL DATA SUBJECT TO REVISION

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This station operated in cooperation with the SD Department of Natural Resources, Water Rights Division.

The precipitation data for this station are temporary and will only be displayed for 60 days. Time series values will NOT be available for retrieval following the 60-day display period. Rainfall instrumentation may not be calibrated, and other quality assurance measures may not be performed that would make the data acceptable for archival, retrieval, or future use in general scientific or interpretive studies.

[Boating safety tips](#)

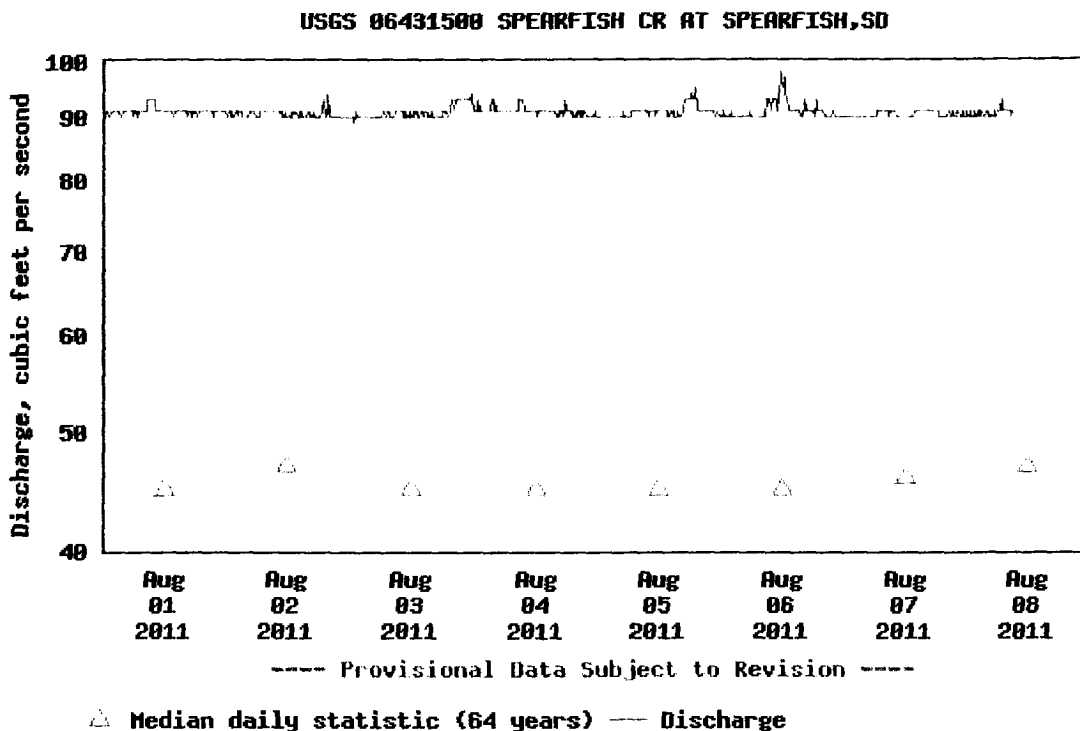
This station managed by the Rapid City Science Center.

Available Parameters	Output format	Days	
All 3 Available Parameters for this site	• Graph	7	<input type="button" value="GO"/>
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✓ 00065 Gage height	Graph w/o stats		
✓ 00045 Precipitation	Table		
	Tab-separated		

Summary of all available data for this site

Discharge, cubic feet per second

Most recent instantaneous value: 91 08-08-2011 09:00 MDT



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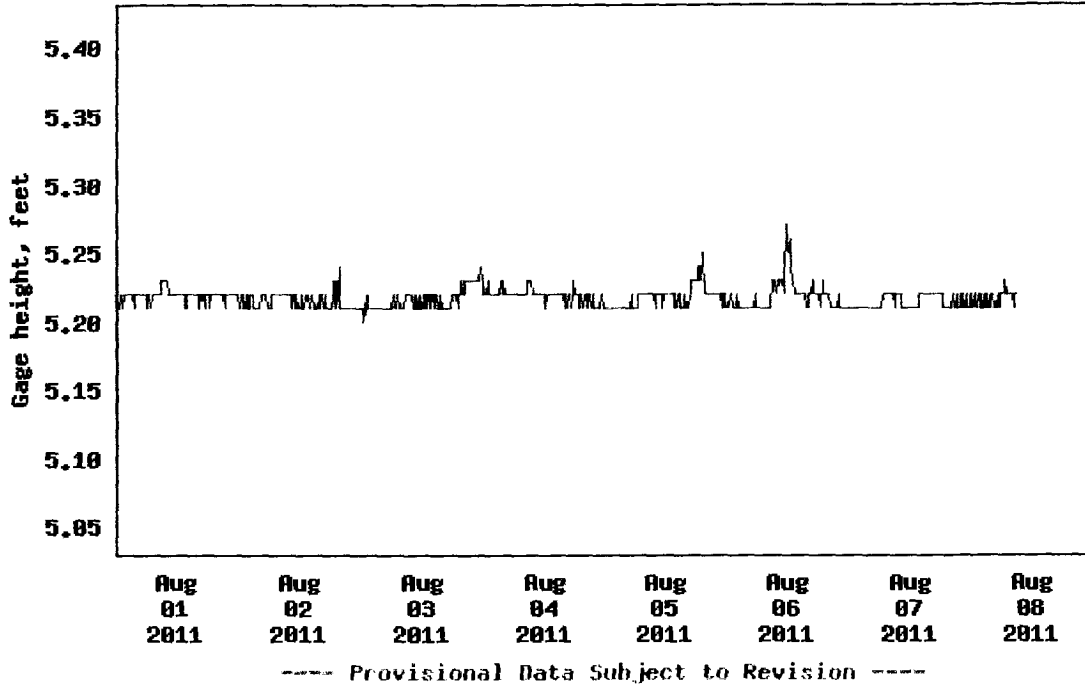
Daily discharge statistics, in cfs, for Aug 8 based on 64 years of record [more](#)

Min (1961)	25th percentile	Median	Mean	75th percentile	Most Recent Instantaneous Value Aug 8	Max (1999)
23	38	47	50.	56	91	120

Gage height, feet

Most recent instantaneous value: 5.22 08-08-2011 09:00 MDT

USGS 06431500 SPEARFISH CR AT SPEARFISH,SD

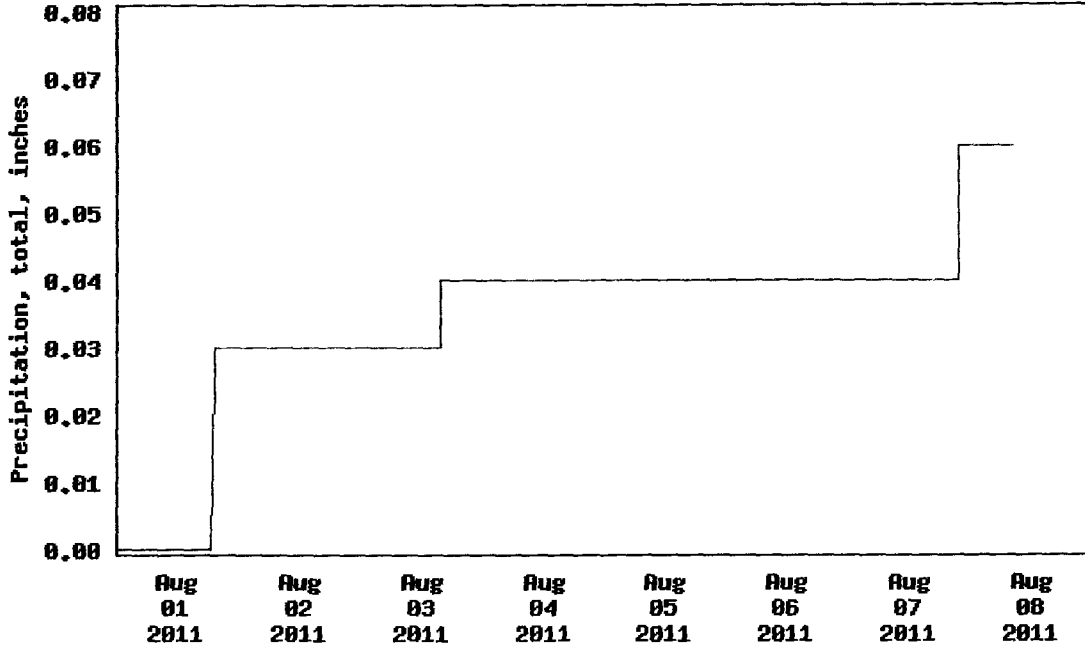


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Precipitation, total, inches

Most recent instantaneous value: 0.00 08-08-2011 09:00 MDT

USGS 06431500 SPEARFISH CR AT SPEARFISH,SD



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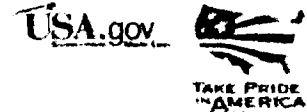
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Title: USGS Real-Time Water Data for South Dakota

URL: <http://waterdata.usgs.gov/sd/nwis/uv?>



Page Contact Information: [South Dakota Water Data Support Team](#)

Page Last Modified: 2011-08-08 11:20:44 EDT

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**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

September 6, 2011

Mr. Richard L. Fort
ACTion for the Environment
11307 Black Forest Road
Lead SD 57754

Dear Mr. Fort:

The South Dakota Department of Environment and Natural Resources (DENR) received your July 23, 2011 letter to Jeff Hallem, counsel for the Water Management Board and the August 8, 2011 letter to my attention. The letters request reevaluation of the 120 cubic feet water per second appropriation authorized by Water Right No. 43-1 for the city of Spearfish hydropower facility.

The city of Spearfish holds Water Right No. 43-1 appropriating up to 120 cubic feet of water per second from Spearfish Creek for hydropower generation. You are well acquainted with the system so I will not go into further discussion regarding how the system operates.

The letters state your personal observation of water overflowing Maurice dam during a two week period when provisional USGS gaging station at Spearfish records show less than 120 cubic feet of water per second flow in the Spearfish Creek. You believe this confirms that the city never uses the 120 cfs appropriation and warrants reallocation of the water right to a lesser amount. The letter to Mr. Hallem also states that since one of the original three generators was removed years ago that the true allocation should be two-thirds of the licensed appropriation. The letter also inquires whether a waste of water is occurring as a result of loss in the aqueduct.

As you are aware, DENR conducted an investigation on the water right for the Spearfish Canyon Hydroelectric Power Plant No. 1 in 2006. At that time, a consultant's analysis based on actual flow test data found 2000 kilowatt output at a flow rate of 60 cfs for generator No. 2. This provides compelling evidence that the combined production for the 4 megawatt facility using the two existing generators is 120 cfs. A review of historical records found that available flow up to 120 cfs was diverted and used beneficially for the purpose of power generation. The investigation concluded that Water Right No. 43-1 has not been abandoned and there is no evidence of forfeiture due to nonuse.

There are a number of reasons for overflow at Maurice dam when the Spearfish USGS gage reads less than 120 cfs. First, the USGS gage records you cite are provisional and subject to change upon USGS review because the stage-discharge relationship may have been affected by debris, aquatic growth, sediment movement or malfunction. Until the data is published, USGS cautions users to consider the provisional nature of the records before using the data for decision making. DENR contacted the city of Spearfish since they maintain a meter within the hydropower facility that is routinely calibrated for accuracy. According to the city, this meter inside the plant had recently been reading approximately 10


cfs greater flow than the USGS gage. Another reason is that with the high flows experienced this spring, the Maurice intake by the grizzly bars may have sediment temporarily limiting flow until routine maintenance is conducted. Also, it is our understanding that the city has allowed overflow at Maurice to benefit downstream uses on the creek. The city has the ability to control flow into the intake and is certainly within their right to exercise its water right in the manner they desire as long as it is not done for a period that constitutes forfeiture. From an engineering perspective, I caution anyone regarding using two week provisional flow records and personal observation to reach a conclusion on a system's capacity. Long term data is available that shows the system is capable and has historically used available flow up to 120 cfs. The hydropower facility's capacity and use is exactly what was investigated by DENR in 2006.

Your letter also raises the issue that the loss of water within the aqueduct constitutes a waste of water in violation of state regulations. The state law regarding beneficial use of water resources (SDCL 46-1-4) states "...and shall not extend to the waste or unreasonable use or unreasonable method of diversion of water". The loss of some quantity of water whether in a municipal water line, irrigation ditch or in this case the aqueduct is inevitable. The standard used in assessing if a waste of water is occurring is whether the quantity of loss is unreasonable. This cannot simply be assessed by concluding that since 1) the system is capable of 120 cfs, 2) Maurice is overflowing and 3) the USGS gage at Spearfish records 110 cfs; therefore, a 10 cfs loss within the aqueduct is occurring. Also, differences in a perceived flow of 120 cfs flow at Maurice since the dam is overflowing and then a 110 cfs at the Spearfish gage may not be totally attributable to loss within the aqueduct. The only published report that DENR is aware of estimates the loss threshold within the diversion aqueduct to be about 2 cfs (Hortness-Driscoll, USGS Water Resources Investigations Report 98-4116).

In response to your letter, DENR analyzed the gaging station daily average flow records for the gage above Spearfish and at Spearfish for the period when both gages were operational (1988 – 2010). Again, the flow differences or gains cannot be entirely attributable to the aqueduct. With that being said after analyzing approximately 20 years of records the flow difference between the two gages averages 5.0 cfs. In this analysis DENR did not use those daily records where the data shows a flow gain between Maurice to Spearfish or when the flow difference was greater than 15 cfs. This amount of loss is reasonable and within acceptable limits. In reaching this conclusion, DENR relies upon past Water Management Board cases with Spearfish Creek and Rapid Creek irrigation ditches relating to carriage losses. It may surprise you to know that approximately 23 % of the time there has been no loss or an actual flow increase between the two gages based on daily average records.

Barring submittal of new evidence showing abandonment or forfeiture occurred since 2006, I decline to further investigate pursuant SDCL 46-5-37.1 whether any portion of Water Right No. 43-1 has been abandoned or forfeited.

Sincerely,


Garland Erbele, Chief Engineer
Water Rights Program, DENR
605 773-3352

C: Michael Hickey
Diane Best
Jeff Hallem

September 7, 2011

Garland Erbele, Chief Engineer
Department of Environment and Natural Resources
Joe Foss Building, 523 East Capitol
Pierre, SD 57501-3182

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SEP - 8 2011

WATER RIGHTS
PROGRAM

From: Richard L. Fort, President
ACTion for the Environment
11307 Black Forest Road
Lead, SD 57754 (605) 584-3832

RE: Spearfish City water allocation

Dear Mr. Erbele:

Here is some additional data on Spearfish Creek flows in Spearfish. For the four weeks this summer which these flow figures represent there has been overflow at the Maurice Dam which reaches Split Rock four miles down the Canyon but is absorbed in the lower Canyon. Thus no overflow reaches Spearfish and therefore the figures here represent what arrives in Spearfish through the water line.

As is obvious here there is no time when 120 cfs. is being used by the Spearfish power plant. And yet this summer has been a time when such amounts have been available.

These figures do not prove that water is being wasted in the water line as we believe, but they conclusively show that more water has been allocated to Spearfish than is reasonably used.

Again we would ask you to ask the Water Management Board to correct this over allocation of the State's water.

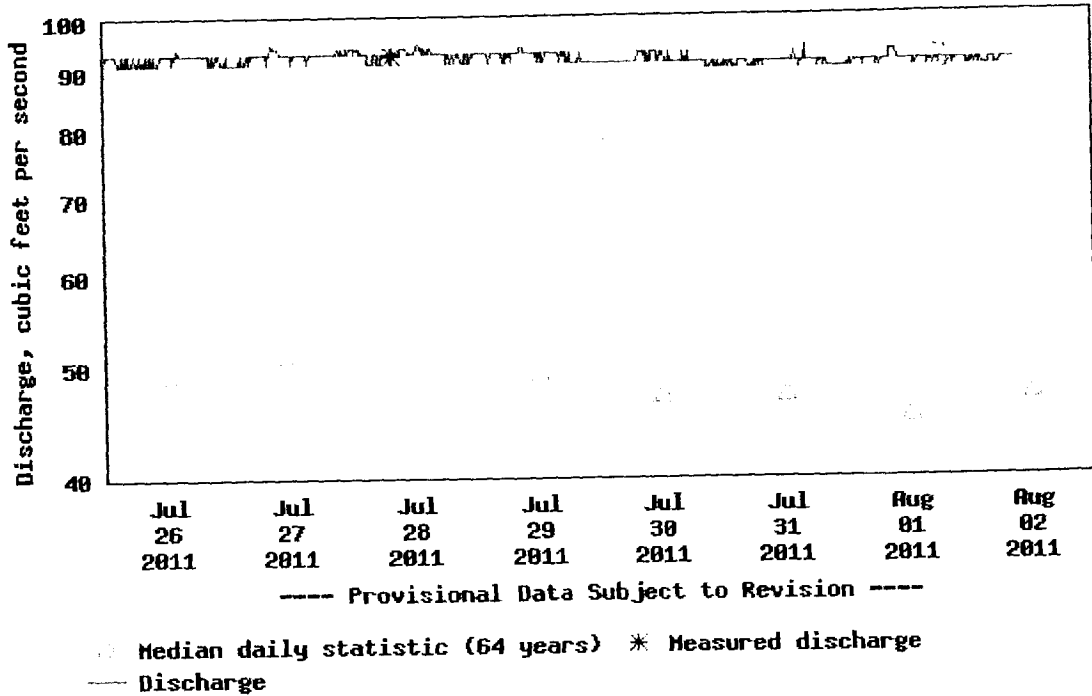
Sincerely,



Richard L. Fort.

CC: Mike Hickey

USGS 06431500 SPEARFISH CR AT SPEARFISH,SD



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Daily discharge statistics, in cfs, for Aug 2 based on 64 years of record [more](#)

Min (1961)	25th percentile	Median	Mean	75th percentile	Most Recent Instantaneous Value Aug 2	Max (1999)
24	37	47	52	59	91	122

Gage height, feet

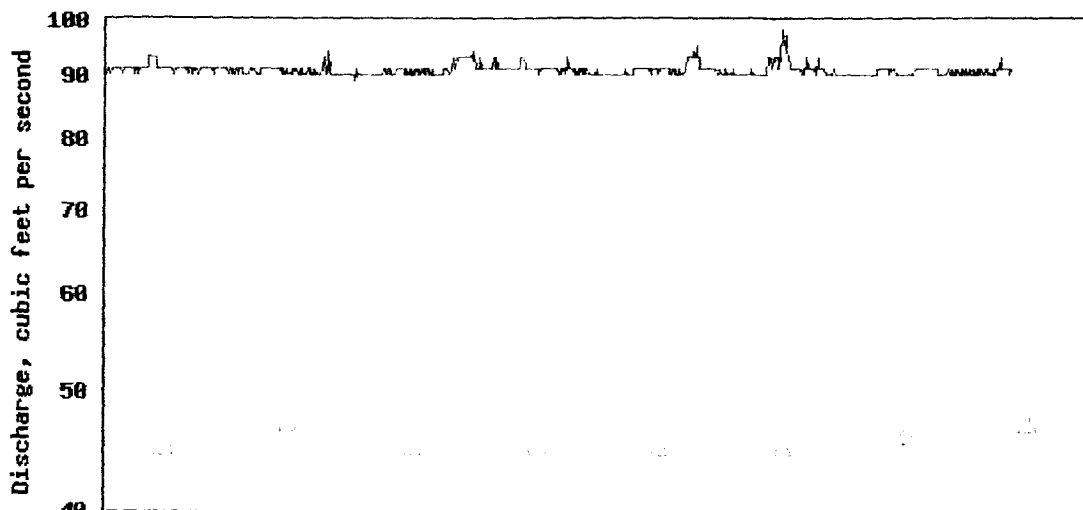
Most recent instantaneous value: 5.22 08-02-2011 09:00 MDT

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Aug 01 2011 Aug 02 2011 Aug 03 2011 Aug 04 2011 Aug 05 2011 Aug 06 2011 Aug 07 2011 Aug 08 2011

----- Provisional Data Subject to Revision -----

— Median daily statistic (64 years) — Discharge

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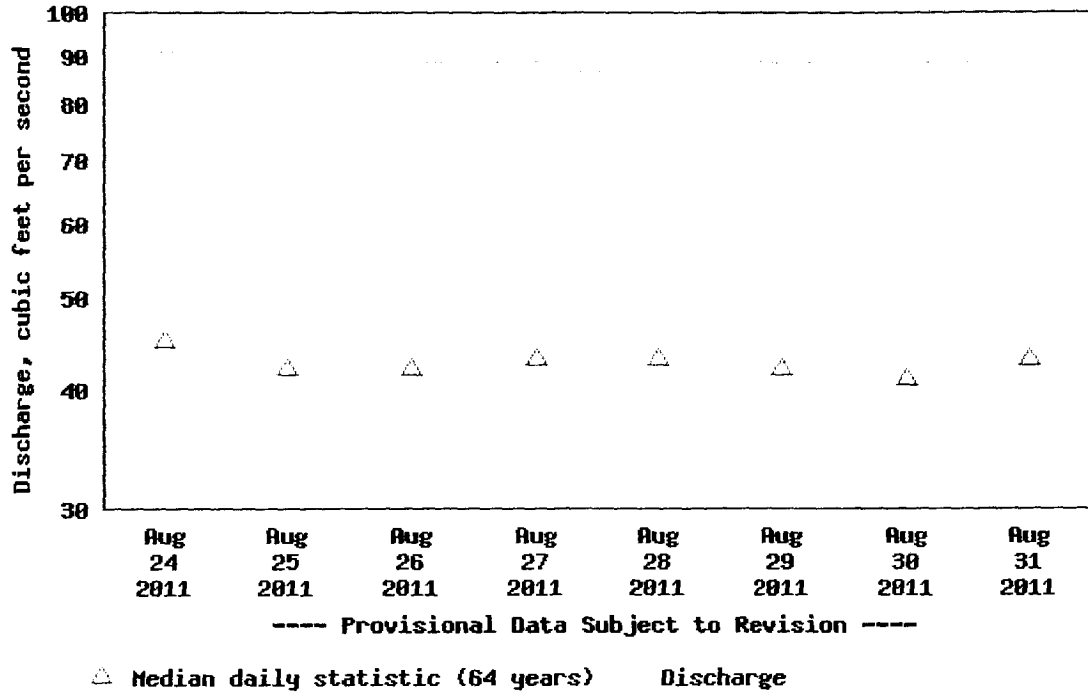
Daily discharge statistics, in cfs, for Aug 8 based on 64 years of record [more](#)

Min (1961)	25th percentile	Median	Mean	75th percentile	Most Recent Instantaneous Value Aug 8	Max (1999)
23	38	47	50.	56	91	120

Gage height, feet

Most recent instantaneous value: 5.22 08-08-2011 09:00 MDT

USGS 06431500 SPEARFISH CR AT SPEARFISH, SD



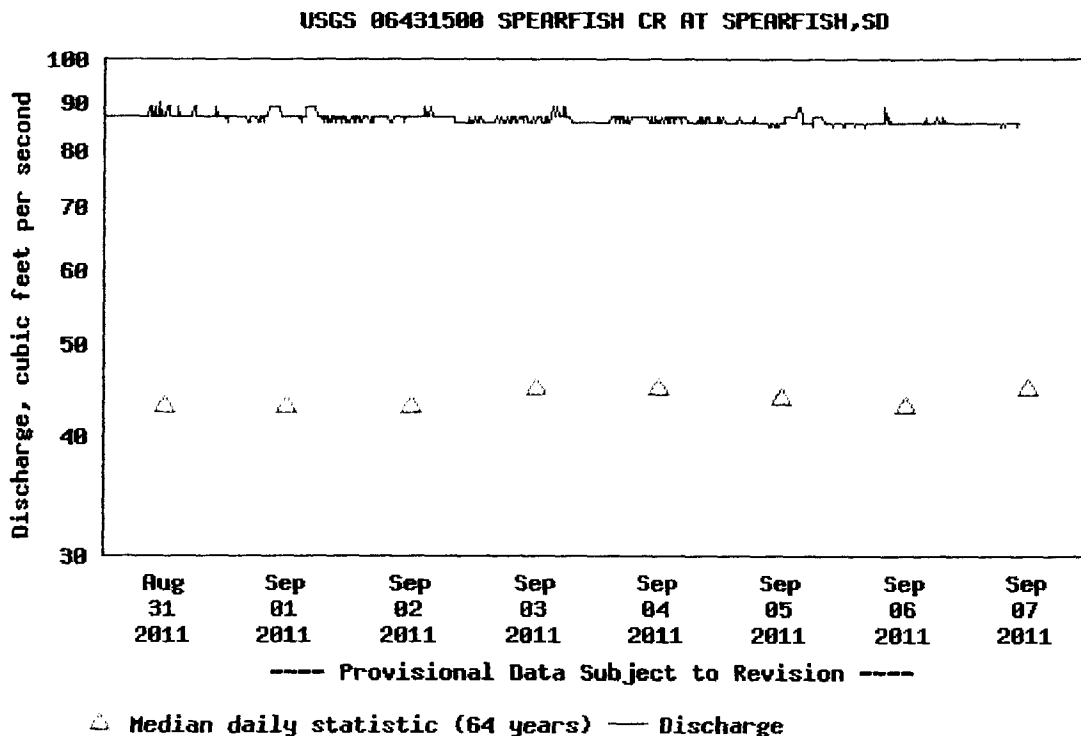
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Daily discharge statistics, in cfs, for Aug 31 based on 64 years of record [more](#)

Min (1961)	25th percentile	Median	Mean	75th percentile	Most Recent Instantaneous Value Aug 31	Max (1999)
23	35	43	47	56	89	95

Gage height, feet

Most recent instantaneous value: 5.20 08-31-2011 09:00 MDT



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Daily discharge statistics, in cfs, for Sep 7 based on 64 years of record [more](#)

Min (1962)	25th percentile	Median	Mean	75th percentile	Most Recent Instantaneous Value Sep 7	Max (1999)
23	36	45	47	55	86	111

Gage height, feet

Most recent instantaneous value: 5.18 09-07-2011 10:00 MDT

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SEP - 9 2011

WATER RIGHTS
PROGRAM

September 9, 2011

Garland Erbele, Chief Engineer
Department of Environment and Natural Resources
Joe Foss Building, 523 East Capitol
Pierre, SD 57501-3182

From: Richard L. Fort, President
ACTion for the Environment
11307 Black Forest Road
Lead, SD 57754 (605) 584-3832

RE: Spearfish City water allocation

Dear Mr. Erbele:


Unfortunately our last communications crossed in the mail. You had not seen our September 7 letter and we your September 6 letter.

We certainly disagree with the conclusion of this communication.

If you will look again at the four weeks of USGS figures we sent and assume that the City of Spearfish guage was accurate and USGS off by 10 cfs. we would still end up with an average of about 100 cfs. maximum use by the City of Spearfish.

Judge Zintner's ruling on a similar case involving water allocation to Homestake was that water had to be allocated on the basis of actual average use, not on the basis of capacity to use. The State is continuing to ignore that ruling in giving 120 cfs. to the City of Spearfish.

We also disagree with the presumptions derived from the Hortness-Driscoll Report 98-4116. We believe that this referred to losses of water under the Maurice Dam which is porous, not to what happens in the waterline. The historical averaging of differences between the USGS guage above Maurice with the one in Spearfish is skewed by inclusion of periods of high precipitation when naturally there would be greater flows in Spearfish. It is still our belief that this ancient waterline leaks as did the abandoned line from Savoy to Maurice.

Sincerely,

Richard L. Fort

CC: Mike Hickey



CITY OF SPEARFISH

625 Fifth Street, Spearfish, South Dakota 57783

August 26, 2014

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SEP 02 2014
WATER RIGHTS
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Eric Gronlund
 DENR
 Water Rights
 523 East Capitol Ave.
 Pierre, SD 57501-3181

RE: Spearfish Hydro Electric Project, FERC No 12775

Dear Eric,

I would like to take this opportunity to update you on two upcoming projects pertaining to the Spearfish Hydro Plant and provide a general operations overview. Additional notification will follow to certain agencies as required through the FERC License.

The City will be removing bedload from Maurice Dam this fall as a result of high water events in 2013 and 2014. Approximately 3,800 cubic yards of bedload will be removed from the streambed above Maurice dam to improve flow path and maintain habitat diversity for fish and anglers. Some of the material will be placed behind the dam to protect the downstream toe of the dam. Removing the material will not interrupt or affect facility operations or stream flows and does not require diversions or coffer dams. Final permitting with the Corps of Engineer is being processed and the project is expected to be completed by October 1, 2014.

City Council has approved a contract with W.W. Wheeler and Associates located in Englewood, Colorado to address the aging redwood stave penstocks.

The project will consist of evaluating existing conditions, performing hydraulic analysis, recommending design alternatives, and completing final design and specifications. Final design is anticipated to be completed in December 2014 with bid letting to occur early in 2015, depending on review comments by agencies involved through the FERC License.

Storm Atlas had little effect on plant operations. The plant was offline approximately twenty-four hours; however, property cleanup and fence repairs are still ongoing. Stream flows after Atlas increased and have remained higher than average.

Public Works 642-1333; Building Permits, Planning and Zoning 642-1335;
 Recreation Center 722-1430; Library 642-1330; Police 642-1305; Finance Office 642-1325;
 Wastewater Treatment Plant 642-1321

FAX: 642-1337



Eric Gronlund
August 26, 2014
Page Two

These higher flows resulted in fewer “freeze ups” this winter and has allowed the facility to operate at the full 4kw (120 cfs) capacity. A new power purchase contract was negotiated this year with Black Hills Power and Light that allows a higher power purchase rate. The increase in revenue will help fund ongoing and future projects for the facility.

Staff has tackled several maintenance and improvement projects in 2012 - 2013. These included taking Generator #1 offline during low flow conditions to replace a broken belt, thoroughly inspect, and repaint the unit. They also upgraded wiring and addressed concrete conditions in the flow flume underneath the generator. Work continues on the #2 unit as conditions allow. Forebay was dredged out and new fence is being installed to better secure the area. New cameras were installed in the plant and security lock upgrades were completed as well additional security gates.

Please feel free to contact me with any questions or additional information requests. I will be happy to assist with any site visits you may wish to schedule.

Regards,



Cheryl Johnson
Public Works Administrator
CITY OF SPEARFISH

CJ/bsk

Maurice Diversion Report

Maurice Diversion is verified in three different manners.

1. Visual check to verify pond height is not less than 12" below the face of the dam, using a point on the dam which has been verified by measurement.
2. Check for low level alarm from the Maurice PLC
3. Random physical measurement, of pond height.
4. Verify diversion pipes are flowing.

Stop gate is constructed with four diversion pipes:

Three with 6.9" dia. & one with 5.6" dia

Three division 6.9" dia. pipes are used for the 6cfs diversion, with a pond height of >32", during the months of Oct. 1st to May 1st.

Two diversion 6.9 dia. pipes are used for 4 cfs diversion, with a pond height of >32", during the months of April 31st to Sept. 31st.

Diversion's operation start date was 2-2-2013; A&B Co. completed the construction with the three 6.9 dia. diversion pipes in operation. 6 cfs was verified with the correct height of the pond & cfs flow meter located at Spearfish Hydro Electric Plant, diversion flow measured >6cfs.

Diversion pipes have flowed condtinully except for four times due to weather condition, see attached spreadsheet, these events were all corrected in short order.

Shreadsheet is attached to file:



Maurice Dam Flow Orifice Requirement Summary Table

Season	Average Power House Flow	Minimum Flow Release	Orifice 6.9 inch			Orifice 5.6 inch		Minimum Head Over Centerline of Orifice		Approximate Distance Down from Top of Dam
			Required	Required	Required	Required	Required	Feet	Inches	
Oct 1 - April 30	N/A	6 cfs	Yes	Yes	Yes	No	No	1.8	22	12
May 1 - Sept 30	> 40 cfs	4 cfs	Yes	Yes	No	No	No	1.8	22	12
	>35 cfs but < 40 cfs	3 cfs	Yes	No	No	Yes	Yes	1.8	22	12
	>30 cfs but < 35 cfs	2 cfs	Yes	No	No	No	No	1.8	22	12
	> 30 cfs	1 cfs	No	No	No	No	yes	1.3	16	18

Date	cfs Diverted	Maurice Height	Weather Temp at Hydro plant	Notes	cfs Gen #1	cfs Gen #2
01/01/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
01/02/2014	>6 cfs	35	17		38.9	40.5
01/03/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
01/04/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
01/05/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
01/06/2014	???	28		4 Diverison pipes frozen	18.2	18.9
01/07/2014	>6 cfs	1" over		29 Diverison pipes frozen / Maurice is overflowing 1" / chopped ice	49.2	44.1
01/08/2014	>6 cfs	38		27 Diverison pipes opened & flowing >6cfs	47.9	43.2
01/09/2014	>6 cfs	8 3/4" over		33 Maurice is overflowing 8 3/4" plugged at grizzly bars	39.1	36.7
01/10/2014	>6 cfs	35		26 Water flow stopped a Hwy 14A brigde	40.6	40.6
01/11/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
01/12/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
01/13/2014	>6 cfs	34.75	34		38.8	40.4
01/14/2014	>6 cfs	34.5	26		40.8	33.3
01/15/2014	>6 cfs	35.75	40		36.8	40.6
01/16/2014	>6 cfs	35.25	27		37.6	40.2
01/17/2014	>6 cfs	34	36		34.2	42.3
01/18/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
01/19/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
01/20/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
01/21/2014	>6 cfs	33.25	43		38.7	37.4
01/22/2014	>6 cfs	34	26		38.7	37
01/23/2014	>6 cfs	38.25	-3		27.7	29.7
01/24/2014	>6 cfs	36	41		36.8	39
01/25/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
01/26/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
01/27/2014	>6 cfs	31	5			
01/28/2014	>6 cfs	over		2 Plugged grizzly over flowing at stop gate	25.4	26.7
01/29/2014	>6 cfs	over		15 Plugged grizzly over flowing at stop gate	29.4	30
01/30/2014	>6 cfs	over		15 Plugged grizzly over flowing over dam chopped ice	45.6	42.2
01/31/2014	>6 cfs	over		3 Plugged grizzly over flowing over dam chopped ice	36.1	36.3
02/01/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
02/02/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
02/03/2014	>6 cfs	over	11	Plugged grizzly over flowing over dam / chopped ice	11.7	2406
02/04/2014	>6 cfs	over		-1 Plugged grizzly over flowing over dam / chopped ice	33.1	41.7
02/05/2014	>6 cfs	over		-11 Plugged grizzly over flowing over dam High Level alarm 5:00 am	14.1	33.1
02/06/2014	>6 cfs	over		-23 Plugged grizzly over flowing over dam chopped ice	11.6	11.8
02/07/2014	>6 cfs	over		-4 Plugged grizzly over flowing over dam chopped ice	28.5	20.7
02/08/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
02/09/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
02/10/2014	>6 cfs	32		1 low stream flow due to freezing temps past week low level near alarm level	48.4	32.7
02/11/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
02/12/2014	>6 cfs	32		-4 Leak at standpipe / Maurice low level is near alarm level	37.6	40.1
02/13/2014	>6 cfs	32	29	Leak at standpipe temp patch installed / Maurice pond level is near Low level	42.2	33.4
02/14/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
02/15/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
02/16/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
02/17/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
02/18/2014	>6 cfs	33.5	40		41.4	33.9
02/19/2014	>6 cfs	33.5	41		38.2	38.1
02/20/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
02/21/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
02/22/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
02/23/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
02/24/2014	>6 cfs	33	5		34	41
02/25/2014	>6 cfs	32.5	7		23.4	34.8
02/26/2014	>6 cfs	visual	20	No low level alarm / visual inspect of pond height / divert pipes flowing	15.3	25
02/27/2014	>6 cfs	visual	7	No low level alarm / visual inspect of pond height / divert pipes flowing	27.9	39.3
02/28/2014	>6 cfs	32.5	14		37.8	41.6
03/01/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
03/02/2014	>6 cfs	32	14		37.8	41.1
03/03/2014	>6 cfs	32	-4		34.2	32.2
03/04/2014	>6 cfs	32	10		39.7	39.3
03/05/2014	>6 cfs	33	35		36.4	37.8
03/06/2014	>6 cfs	32.5	45		37.2	38.1
03/07/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
03/08/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
03/09/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		

03/10/2014	>6 cfs	33.5	38		37.6	40.2
03/11/2014	>6 cfs	34.5	31		41.4	41.5
03/12/2014	>6 cfs	33.5	34		38.1	40.3
03/13/2014	>6 cfs	33.5	32		38.8	38.6
03/14/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
03/15/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
03/16/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
03/17/2014	>6 cfs	34	45		39.5	41.8
03/18/2014	>6 cfs	33	31		42.5	43.9
03/19/2014	>6 cfs	33	32		37.8	42.5
03/20/2014	>6 cfs	33.5	30		40.7	39.4
03/21/2014	>6 cfs	visual	29	No low level alarm / visual inspect of pond height / divert pipes flowing	40.8	39.6
03/22/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
03/23/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
03/24/2014	>6 cfs	visual	22	No low level alarm / visual inspect of pond height / divert pipes flowing	44.8	33.3
03/25/2014	>6 cfs	33.5	9		36.9	39.8
03/26/2014	>6 cfs	33	35		37.2	41
03/27/2014	>6 cfs	34	24		40.2	38.8
03/28/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
03/29/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
03/30/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
03/31/2014	>6 cfs	34	17		44.7	42.8
04/01/2014	>6 cfs	34	10		42.9	41.4
04/02/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
04/03/2014	>6 cfs	35	30		40.8	41.4
04/04/2014	>6 cfs	35	26		41.8	41.7
04/05/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
04/06/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
04/07/2014	>6 cfs	35.25	39		43.9	43.5
04/08/2014	>6 cfs	36	40		44.6	44.3
04/09/2014	>6 cfs	40	51		49.5	47.8
04/10/2014	>6 cfs	over	37	overflowing above stop gate 1.5"	57.3	54.9
04/11/2014	>6 cfs	over	39		61.2	58.9
04/12/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
04/13/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
04/14/2014	>6 cfs	over	27		61.2	60.5
04/15/2014	>6 cfs	over	34		61	60.6
04/16/2014	>6 cfs	over	38		60.3	60
04/17/2014	>6 cfs	over	26		58.8	59.1
04/18/2014	>6 cfs	over				
04/19/2014	>6 cfs	over				
04/20/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
04/21/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
04/22/2014	>6 cfs	visual	44	No low level alarm / visual inspect of pond height / divert pipes flowing	60.8	60.6
04/23/2014	>6 cfs	over	60		55.6	57.4
04/24/2014	>6 cfs	over	37		56.2	58.1
04/25/2014	>6 cfs	over	44		55.2	57.3
04/26/2014	>6 cfs	over	37		57.6	58.3
04/27/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
04/28/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
04/29/2014	>6 cfs	over	30		55.6	57.9
04/30/2014	>6 cfs	over	31		53.4	57.3
05/01/2014	>4 cfs	over	39	Have not plugged #3 orifice due to dam overflowing (safety issue)	52.1	56.8
05/02/2014	>4 cfs	over	52		52.5	56.9
05/03/2014	>4 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
05/04/2014	>4 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
05/05/2014	>4 cfs	over	40		58.2	59.6
05/06/2014	>4 cfs	over	47	overflowing across face +/- 12"	59.2	60.5
05/07/2014	>4 cfs	over	41	overflowing across face 12" - 16"	60.5	60.7
05/08/2014	>4 cfs	over	33	overflowing across face 10"	58.6	59.8
05/09/2014	>4 cfs	over	39		57.3	58.5
05/10/2014	>4 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
05/11/2014	>4 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
05/12/2014	>4 cfs	over	37		54.4	57.9
05/13/2014	>4 cfs	over	44		53.8	57.8
05/14/2014	>4 cfs	over	48	overflowing across face 6"	52.6	57.5
05/15/2014	>4 cfs	over	40		52	57.4
05/16/2014	>4 cfs	over	51	overflowing across face 6"	52.3	57.6
05/17/2014	>4 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
05/18/2014	>4 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
05/19/2014	>4 cfs	over	54		52.5	57.3

05/20/2014	>4 cfs	over	51		56.2	58.6
05/21/2014	>4 cfs	over	46		56.1	59
05/22/2014	>4 cfs	over	48		55.8	58.7
05/23/2014	>4 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
05/24/2014	>4 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
05/25/2014	>4 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
05/26/2014	>4 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
05/27/2014	>4 cfs	over	59	overflowing across face 5"	55.6	58.9
05/28/2014	>4 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
05/29/2014	>4 cfs	over	87	overflowing across face 4. 5"	57	59.1
05/30/2014	>4 cfs	over	59		56.3	59
05/31/2014	>4 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
06/01/2014	>4 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
06/02/2014	>4 cfs	over	58	overflowing across face 4. 5"	55	58.7
06/03/2014	>4 cfs	over	54	overflowing across face 4.25"	54.5	58.9
06/04/2014	>4 cfs	over	54	overflowing across face 4.25"	54.8	58.8
06/05/2014	>4 cfs	over	56	overflowing across face 3. 5"	57.3	55.4
06/06/2014	>4 cfs	over	55	overflowing across face 3. 5"	57.5	54.9
06/07/2014	>4 cfs	over		overflowing across face 2. 5"		
06/08/2014	>4 cfs	over		overflowing across face 3"		
06/09/2014	>4 cfs	over	49		56.4	55.9
06/10/2014	>4 cfs	over	56		54.6	54.9
06/11/2014	>4 cfs	over	58		57.1	55.4
06/12/2014	>4 cfs	over	50		55.6	55.2
06/13/2014	>4 cfs	over	60		56.4	54.9
06/14/2014	>4 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
06/15/2014	>4 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
06/16/2014	>4 cfs	over	55		55.5	52.2
06/17/2014	>4 cfs	over	75		55.8	54.9
06/18/2014	>4 cfs	over	60		56.8	55.2
06/19/2014	>4 cfs	over	54		55.5	54.5
06/20/2014	>4 cfs	over	76		55.3	54.7
06/21/2014	>4 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
06/22/2014	>4 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
06/23/2014	>4 cfs	over	74	overflowing across face 2.25"	54.7	55.8
06/24/2014	>4 cfs	over	60	overflowing across face 2"	55.1	54.9
06/25/2014	>4 cfs	over	57	overflowing across face 2"	54.6	55.8
06/26/2014	>4 cfs	over	58	overflowing across face 2"	55	56.3
06/27/2014	>4 cfs	over	70	overflowing across face 2"	55.2	57
06/28/2014	>4 cfs	over		overflowing across face 2"		
06/29/2014	>4 cfs	over		overflowing across face 2"		
06/30/2014	>4 cfs	over	82	overflowing across face 2"	55	54.3
07/01/2014	>4 cfs	over	61		57.4	55.9
07/02/2014	>4 cfs	over	54		65.4	56.1
07/03/2014	>4 cfs	over	57		57	55.9
07/04/2014	>4 cfs	over	71		58.3	56.9
07/05/2014	>4 cfs	over	57		57	56.8
07/06/2014	>4 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
07/07/2014	>4 cfs	over		overflowing across face 1.5"		
07/08/2014	>4 cfs	over		overflowing across face 1.5"		
07/09/2014	>4 cfs	over	60	overflowing across face 1.25"	56.9	55.8
07/10/2014	>4 cfs	over	84	overflowing across face 1"	59.7	57.3
07/11/2014	>4 cfs	over	67	overflowing across face 1.25"	51.8	56.8
07/12/2014	>4 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
07/13/2014	>4 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
07/14/2014	>4 cfs	over	57	overflowing across face .75"	56.3	56.7
07/15/2014	>4 cfs	over	53	overflowing across face .75"	55.2	57.9
07/16/2014	>4 cfs	over	56	overflowing across face .5"	56.5	55.1
07/17/2014	>4 cfs	over	68		57.4	56.1
07/18/2014	>4 cfs	over	76	overflowing across face .5"	58.2	56.8
07/19/2014	>4 cfs	over	76	overflowing across face .5"	58	56.7
07/20/2014	>4 cfs	over		overflowing across face .5"		
07/21/2014	>4 cfs	over		overflowing across face .5"		
07/22/2014	>4 cfs	over	64	overflowing across face .5"	58.5	57
07/23/2014	>4 cfs	over	71	overflowing across face 1.25"	60.5	58.3
07/24/2014	>4 cfs	over		overflowing across face .25"		
07/25/2014	>4 cfs	over		overflowing across face .5"		
07/26/2014	>4 cfs	over		No low level alarm / visual inspect of pond height / divert pipes flowing		
07/27/2014	>4 cfs	over		No low level alarm / visual inspect of pond height / divert pipes flowing		
07/28/2014	>4 cfs	FULL	57	overflowing at stop gate only	54.7	56.8
07/29/2014	>4 cfs	visual	59	No low level alarm / visual inspect of pond height / divert pipes flowing	55.3	56.9

07/30/2014	>4 cfs	visual	64	No low level alarm / visual inspect of pond height / divert pipes flowing	54.7	57.4
07/31/2014	>4 cfs	visual	60	stopped overflowing / Installed #3 orifice	53.9	55.6
08/01/2014	>4 cfs	visual		overflowing at stop gate only 1"		
08/02/2014	>4 cfs	visual		overflowing at stop gate only 1.25"		
08/03/2014	>4 cfs	visual		overflowing at stop gate only .5"		
08/04/2014	>4 cfs	43.75	62		55.3	55.3
08/05/2014	>4 cfs	43.5				
08/06/2014	>4 cfs	over	61	overflowing at stop gate only 1.75"	58.8	58.5
08/07/2014	>4 cfs	over	61	overflowing at stop gate only 1.5"	58.2	58.4
08/08/2014	>4 cfs	over	64		57.8	57.9
08/09/2014	>4 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
08/10/2014	>4 cfs	FULL	58	overflowing at stop gate only	56.9	58
08/11/2014	>4 cfs	FULL	61	overflowing at stop gate only	56.3	57.6
08/12/2014	>4 cfs	over	66		56.1	57.1
08/13/2014	>4 cfs	over		overflowing		
08/14/2014	>4 cfs	over	69		55.8	57.3
08/15/2014	>4 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
08/16/2014	>4 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
08/17/2014	>4 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
08/18/2014	>4 cfs	FULL	60		54	56.4
08/19/2014	>4 cfs	FULL	61		54.4	56.4
08/20/2014	>4 cfs	FULL				
08/21/2014	>4 cfs	FULL	59		54	55.7
08/22/2014	>4 cfs	FULL	68		55.7	57
08/23/2014	>4 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
08/24/2014	>4 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
08/25/2014	>4 cfs	visual	52	No low level alarm / visual inspect of pond height / divert pipes flowing	51.9	56.2
08/26/2014	>4 cfs	43	49		51.4	55.9
08/27/2014	>4 cfs	43	54		52	55.2
08/28/2014	>4 cfs	42.75	56		53.8	56.7
08/29/2014	>4 cfs	42.75				
08/30/2014	>4 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
08/31/2014	>4 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
09/01/2014	>4 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
09/02/2014	>4 cfs	42.75	65	Started cleaning out the pond	49.8	55.7
09/03/2014	>4 cfs	42.5	47	cleaning out the pond	49.2	55.7
09/04/2014	>4 cfs	43	40	cleaning out the pond	48.6	55.3
09/05/2014	>4 cfs	42.5		Finished cleaning out the pond		
09/06/2014	>4 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
09/07/2014	>4 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
09/08/2014	>4 cfs	visual	65	No low level alarm / visual inspect of pond height / divert pipes flowing	48	55.8
09/09/2014	>4 cfs	visual	52	No low level alarm / visual inspect of pond height / divert pipes flowing	47.7	56.1
09/10/2014	>4 cfs	visual	39	No low level alarm / visual inspect of pond height / divert pipes flowing	47.7	56.3
09/11/2014	>4 cfs	visual	31	No low level alarm / visual inspect of pond height / divert pipes flowing	48.9	56.9
09/12/2014	>4 cfs	visual	28	No low level alarm / visual inspect of pond height / divert pipes flowing	47.6	57
09/13/2014	>4 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
09/14/2014	>4 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
09/15/2014	>4 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
09/16/2014	>4 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
09/17/2014	>4 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
09/18/2014	>4 cfs	visual	51	No low level alarm / visual inspect of pond height / divert pipes flowing	47.7	56.7
09/19/2014	>4 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
09/20/2014	>4 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
09/21/2014	>4 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
09/22/2014	>4 cfs	visual	53	No low level alarm / visual inspect of pond height / divert pipes flowing	46.5	56.4
09/23/2014	>4 cfs	visual	57	No low level alarm / visual inspect of pond height / divert pipes flowing	47.3	57
09/24/2014	>4 cfs	visual	51	No low level alarm / visual inspect of pond height / divert pipes flowing	45.3	56.9
09/25/2014	>4 cfs	visual	73	No low level alarm / visual inspect of pond height / divert pipes flowing	46.4	56.5
09/26/2014	>4 cfs	visual	60	No low level alarm / visual inspect of pond height / divert pipes flowing	46.5	56.4
09/27/2014	>4 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
09/28/2014	>4 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
09/29/2014	>4 cfs	visual	49	Diversion stop gate is overflowing (rain)	50	58.9
09/30/2014	>4 cfs	visual	51	Maurice dam is over flowing (rain 1.9")	54.3	59.9
10/01/2014	>6 cfs	visual	52	Maurice dam is over flowing	51	59.4
10/02/2014	>6 cfs	visual	42	Maurice dam is over flowing	53.9	54.7
10/03/2014	>6 cfs	visual	35	Maurice dam is over flowing	53.7	54.1
10/04/2014	>6 cfs	visual		Maurice dam is over flowing		
10/05/2014	>6 cfs	visual		Maurice dam is over flowing		
10/06/2014	>6 cfs	visual	54	Maurice dam is over flowing	52.7	53.6
10/07/2014	>6 cfs	visual	57	Opened third orifice stop gate still overflowing 1-2"	55	54.7

10/08/2014	>6 cfs	43.5	46		50.5	52.2
10/09/2014	>6 cfs	41.75	31		50.2	51.7
10/10/2014	>6 cfs	41.75	34		49.7	51.7
10/11/2014	>6 cfs	over	40	Maurice dam is overflowing 1/2"(rain)	50.2	52.3
10/12/2014	>6 cfs	over		Maurice dam is overflowing 1/2"(rain)		
10/13/2014	>6 cfs	over		Maurice dam is full stop gates overflowing		
10/14/2014	>6 cfs	over	46	Maurice dam is full stop gates overflowing	56.1	55.9
10/15/2014	>6 cfs	over	41	Maurice dam is full stop gates overflowing	55.2	54.9
10/16/2014	>6 cfs	over	53	Maurice dam is full stop gates overflowing	54.1	53.2
10/17/2014	>6 cfs	over		No low level alarm / visual inspect of pond height / divert pipes flowing		
10/18/2014	>6 cfs	over		No low level alarm / visual inspect of pond height / divert pipes flowing		
10/19/2014	>6 cfs	over		No low level alarm / visual inspect of pond height / divert pipes flowing		
10/20/2014	>6 cfs	42		Pond if FULL		
10/21/2014	>6 cfs	42	46	Pond if FULL	52.5	49.9
10/22/2014	>6 cfs	41	50		52.4	49.6
10/23/2014	>6 cfs	41	43		52.2	49.7
10/24/2014	>6 cfs	41				
10/25/2014	>6 cfs	41	39		49	51.9
10/26/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
10/27/2014	>6 cfs	41.25	46		52.2	48.8
10/28/2014	>6 cfs	40.5	36		48.9	
10/29/2014	>6 cfs	40.5	42		48.6	52
10/30/2014	>6 cfs	40.25	39		48.7	52
10/31/2014	>6 cfs	40.25	29		48.3	52.2
11/01/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
11/02/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
11/03/2014	>6 cfs	39.5	40		47	51.9
11/04/2014	>6 cfs	37	39.25		47.7	52.2
11/05/2014	>6 cfs	visual	46	No low level alarm / visual inspect of pond height / divert pipes flowing	47	51.4
11/06/2014	>6 cfs	40	33		46.8	51.4
11/07/2014	>6 cfs	39.5	55		47	51.6
11/08/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
11/09/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
11/10/2014	>6 cfs	39.25	17		49.1	52.8
11/11/2014	>6 cfs	visual	1	No low level alarm / visual inspect of pond height / divert pipes flowing	39	50.1
11/12/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
11/13/2014	>6 cfs	over	10	iced pugged grizzly bars / High level alarm 4:55 am / chopped ice	38.7	41.4
11/14/2014	>6 cfs	visual	-4	No low level alarm / visual inspect of pond height / divert pipes flowing	43.9	46
11/15/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
11/16/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
11/17/2014	>6 cfs	visual	10	No low level alarm / visual inspect of pond height / divert pipes flowing	51.3	50.4
11/18/2014	>6 cfs	visual	30	No low level alarm / visual inspect of pond height / divert pipes flowing	51.4	50.7
11/19/2014	>6 cfs	visual	27	No low level alarm / visual inspect of pond height / divert pipes flowing	50.8	50.1
11/20/2014	>6 cfs	visual	11	No low level alarm / visual inspect of pond height / divert pipes flowing	49.6	49.5
11/21/2014	>6 cfs	visual	30	No low level alarm / visual inspect of pond height / divert pipes flowing	49.5	49.3
11/22/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
11/23/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
11/24/2014	>6 cfs	visual	30	No low level alarm / visual inspect of pond height / divert pipes flowing	49.2	49.6
11/25/2014	>6 cfs	visual	31	No low level alarm / visual inspect of pond height / divert pipes flowing	49.2	49.2
11/26/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
11/27/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
11/28/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
11/29/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
11/30/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
12/01/2014	>6 cfs	over	-1	Ice plugged grizzly bars / chopped ice High water alarm 5:05 am	10.2	46.9
12/02/2014	>6 cfs	visual	31	No low level alarm / visual inspect of pond height / divert pipes flowing	47.5	52.8
12/03/2014	>6 cfs	visual	18	No low level alarm / visual inspect of pond height / divert pipes flowing	46.5	52.5
12/04/2014	>6 cfs	visual	29	No low level alarm / visual inspect of pond height / divert pipes flowing	44.8	52
12/05/2014	>6 cfs	visual	35	No low level alarm / visual inspect of pond height / divert pipes flowing	45.4	52.1
12/06/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
12/07/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
12/08/2014	>6 cfs	37.5	35	No low level alarm / visual inspect of pond height / divert pipes flowing	44.2	52.2
12/09/2014	>6 cfs	37.5	23	No low level alarm / visual inspect of pond height / divert pipes flowing	43.5	52.4
12/10/2014	>6 cfs	37.5	39	No low level alarm / visual inspect of pond height / divert pipes flowing	43.8	52.2
12/11/2014	>6 cfs	37	54	No low level alarm / visual inspect of pond height / divert pipes flowing	43.7	51.9
12/12/2014	>6 cfs	37	59	No low level alarm / visual inspect of pond height / divert pipes flowing	43.4	52.3
12/13/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
12/14/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
12/15/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		
12/16/2014	>6 cfs	37.5	15	No low level alarm / visual inspect of pond height / divert pipes flowing	44	53
12/17/2014	>6 cfs	visual		No low level alarm / visual inspect of pond height / divert pipes flowing		

12/18/2014	>6 cfs	37	21 No low level alarm / visual inspect of pond height / divert pipes flowing	43.3	52.9
12/19/2014	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing		
12/20/2014	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing		
12/21/2014	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	47.8	48.5
12/22/2014	>6 cfs	37.5	35 No low level alarm / visual inspect of pond height / divert pipes flowing	49.1	48.5
12/23/2014	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing		
12/24/2014	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing		
12/25/2014	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing		
12/26/2014	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing		
12/27/2014	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing		
12/28/2014	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing		
12/29/2014	>6 cfs	37	3 No low level alarm / visual inspect of pond height / divert pipes flowing	56.6	44.7
12/30/2014	>6 cfs	over	-13 Ice plugged grizzly bars / High level alarm 6:34 am	18.6	31.1
12/31/2014	>6 cfs	visual	16 No low level alarm / visual inspect of pond height / divert pipes flowing	48.4	53.2
01/01/2015					

Maurice Diversion Report

43-1

Maurice Diversion is verified in four different manners.

1. Visual check to verify pond height is not less than 12" below the face of the dam, using a point on the dam which has been verified by measurement.
2. Check for low level alarm from the Maurice PLC
3. Random physical measurement, of pond height.
4. Verify diversion pipe are flowing.

Stop gate is constructed with four diversion pipes:

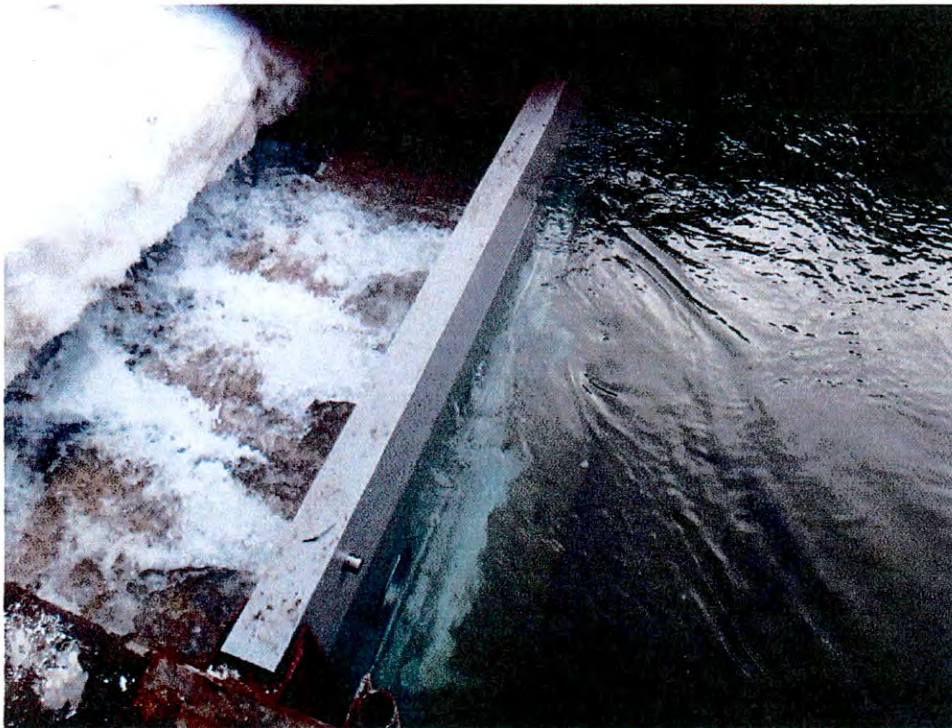
Three with 6.9" dia. & one with 5.6" dia

Three division 6.9" dia. pipes are used for the 6cfs diversion, with a pond height of >32", during the months of Oct. 1st to May 1st.

Two diversion 6.9 dia. pipes are used for 4 cfs diversion, with a pond height of >32", during the months of April 31st to Sept. 31st.

Diversion's operation start date was 2-2-2013; A&B Co. completed the construction with the three 6.9 dia. diversion pipes in operation. 6 cfs was verified with the correct height of the pond & cfs flow meter located at Spearfish Hydro Electric Plant, diversion flow measured >6cfs.

Shreadsheet is attached to file:



Maurice Dam Flow Orifice Requirement Summary Table

Season	Average Power House Flow	Minimum Flow Release	Orifice 6.9 inch Required	Orifice 6.9 inch Required	Orifice 6.9 inch Required	Orifice 5.6 inch Required	Minimum Head Over Centerline of Orifice		Approximate Distance Down from Top of Dam
							Feet	Inches	Inches
							Oct 1 - April 30	N/A	6 cfs
May 1 - Sept 30	> 40 cfs	4 cfs	Yes	Yes	No	No	1.8	22	12
	>35 cfs but < 40 cfs	3 cfs	Yes	No	No	Yes	1.8	22	12
	>30 cfs but < 35 cfs	2 cfs	Yes	No	No	No	1.8	22	12
	> 30 cfs	1 cfs	No	No	No	yes	1.3	16	18

3/1/2015	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	44.7	50.8
3/2/2015	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	47.4	48.7
3/3/2015	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	48.4	50.2
3/4/2015	>6 cfs	visual	Stop gates overflowing app. 1"	29.5	44.4
3/5/2015	>6 cfs	visual	Chopped ice during PM	25.6	47.4
3/6/2015	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	41.1	55
3/7/2015	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	54.7	38.2
3/8/2015	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	54.2	41.3
3/9/2015	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	54.7	39
3/10/2015	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	54.7	38.1
3/11/2015	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	54.3	41.8
3/12/2015	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	39.6	55.8
3/13/2015	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	41.7	57.1
3/14/2015	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	61.2	55.8
3/15/2015	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	60	57.1
3/16/2015	>6 cfs	visual	First Stop gates overflowing	60.1	56.7
3/17/2015	>6 cfs	visual	Stop gates overflowing	61.3	57.3
3/18/2015	>6 cfs	visual	Stop gates overflowing	60.3	57.3
3/19/2015	>6 cfs	visual	Stop gates overflowing	60.3	57.1
3/20/2015	>6 cfs	visual	First Stop gates overflowing	59.1	59.4
3/21/2015	>6 cfs	visual	Overflow across intake face	60.2	59
3/22/2015	>6 cfs	visual	Overflow across intake face	59.3	59
3/23/2015	>6 cfs	visual	Overflow across intake face	59.1	59.6
3/24/2015	>6 cfs	visual	Overflow across intake face	58.7	59.4
3/25/2015	>6 cfs	visual	Overflow across intake face	58.7	59.7
3/26/2015	>6 cfs	visual	Overflow across intake face	57.4	58.5
3/27/2015	>6 cfs	visual	Overflow across intake face	57.5	58.1
3/28/2015	>6 cfs	visual	Overflow across intake face	58.3	57
3/29/2015	>6 cfs	visual	Overflow across intake face	59.1	57.6
3/30/2015	>6 cfs	visual	Overflow across intake face	57.9	58.6
3/31/2015	>6 cfs	visual	Overflow across intake face	58.1	57.4
4/1/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	58.1	58
4/2/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	57.9	58.5
4/3/2015	>6cfs		Stop gate overflowing	56.9	53.9
4/4/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	57.6	51.9
4/5/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	57.8	51.9
4/6/2015	>6cfs		1 1/4" below stop gate	57.1	53.2
4/7/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	56.8	50.3
4/8/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing		
4/9/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing		
4/10/2015	>6cfs		3" below stop gate		
4/11/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing		
4/12/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing		
4/13/2015	>6cfs		4" below stop gate	46.2	57.4
4/14/2015	>6cfs		4" below stop gate	44.9	57.4
4/15/2015	>6cfs		4" below stop gate	44.4	57.3
4/16/2015	>6cfs		3 1/2" below stop gate	46	58
4/17/2015	>6cfs		4" below stop gate	44.8	57.6
4/18/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing		
4/19/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing		
4/20/2015	>6cfs		2" below stop gate	48.9	59.5
4/21/2015	>6cfs		3" below stop gate	49.1	57
4/22/2015	>6cfs		3" below stop gate	47.9	57.4
4/23/2015	>6cfs		3" below stop gate	46.8	56.9
4/24/2015	>6cfs		3" below stop gate	47.1	57.1
4/25/2015	>6cfs		3" below stop gate	48.3	55.4
4/26/2015	>6cfs		3" below stop gate	47.9	57
4/27/2015	>6cfs		3" below stop gate	47.9	58.3
4/28/2015	>6cfs		3" below stop gate	45.1	58.2
4/29/2015	>6cfs		3" below stop gate	44.2	56.4
4/30/2015	>6cfs		3" below stop gate	43.9	56.4

5/1/2015			Installed third diversion pipe cover plate >6cfs to >4cfs		
5/1/2015	>4cfs		4 1/4 below stop gate Installed blank over divert pipe 6cfs to 4 cfs	44	55.9
5/2/2015	>4cfs		Top of the intake	56.2	47.4
5/3/2015	>4cfs		2 1/4" below	49.8	48
5/4/2015	>4cfs		3 1/2" below	51.6	49
5/5/2015	>4cfs		Overflowing	58.6	57.9
5/6/2015	>4cfs		Overflowing	51.6	49.6
5/7/2015	>4cfs		Overflowing	58.8	57
5/8/2015	>4cfs		Overflowing	58.5	58.5
5/9/2015	>4cfs		Overflowing	57.4	59.2
5/10/2015	>4cfs		Overflowing	58.1	59
5/11/2015	>4cfs		Overflowing	60.1	58.7
5/12/2015	>4cfs		Overflowing water REACHED THE CITY	60.2	59.1
5/13/2015	>4cfs		4" overflowing	61.2	59.2
5/14/2015	>4cfs		overflowing	60.1	56.8
5/15/2015	>4cfs		5" overflowing	58.8	55.7
5/16/2015	>4cfs		5" overflowing	58	58.3
5/17/2015	>4cfs		5" overflowing	59	57.8
5/18/2015	>4cfs		4 1/2" overflowing	59.1	58
5/19/2015	>4cfs		4" overflowing	58	57.6
5/20/2015	>4cfs		5" overflowing	57.6	57.7
5/21/2015	>4cfs		4 1/2" overflowing	59.5	59.2
5/22/2015	>4cfs		5 1/2" overflowing	59.9	58.6
5/23/2015	>4cfs		5 1/2" overflowing	60.1	59
5/24/2015	>4cfs		4 1/2" overflowing	60	59.1
5/25/2015	>4cfs		5 1/4" overflowing	60.2	60
5/26/2015	>4cfs		5 1/4" overflowing	60.4	60
5/27/2015	>4cfs		75 1/4" overflowing	61.3	60
5/28/2015	>4cfs		5 1/4" overflowing	61.2	59.7
5/29/2015	>4cfs		5" overflowing	61.3	60
5/30/2015	>4cfs		5" overflowing	61	60.4
5/31/2015	>4cfs		5" overflowing	60.3	59.9
6/1/2015	>4cfs		4" overflowing	61.8	60
6/2/2015	>4cfs		4" overflowing	62.4	59.4
6/3/2015	>4cfs		4" overflowing	62.2	59.4
6/4/2015	>4cfs		4" overflowing	61.3	57.1
6/5/2015	>4cfs		4" overflowing	58.6	58.2
6/6/2015	>4cfs		4" overflowing	57.9	58
6/7/2015	>4cfs		4" overflowing	57.1	56.9
6/8/2015	>4cfs		4" overflowing	57.9	57.3
6/9/2015	>4cfs		4" overflowing	58.7	57.4
6/10/2015	>4cfs		4" overflowing	58.6	57.1
6/11/2015	>4cfs		4" overflowing	59.7	58.4
6/12/2015	>4cfs		3 3/4" overflowing	58.3	56.9
6/13/2015	>4cfs		3 3/4" overflowing	56.7	56.8
6/14/2015	>4cfs		3" overflowing	57.8	56.1
6/15/2015	>4cfs		3" overflowing	57.7	56.5
6/16/2015	>4cfs		3" overflowing	60.5	58.9
6/17/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	60.5	59
6/18/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	62.1	58.3
6/19/2015	>4cfs		2 1/4" overflowing	62.4	57.8
6/20/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	61.3	59.8
6/21/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	60.7	58.2
6/22/2015	>4cfs		3" overflowing	60.9	57.9
6/23/2015	>4cfs		3" overflowing	61.4	58.5
6/24/2015	>4cfs		3" overflowing	62	58.5
6/25/2015	>4cfs		3" overflowing	60.3	59
6/26/2015	>4cfs		2 1/2" overflowing	61.5	57.5
6/27/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	62.1	57.9
6/28/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	60.2	57.1
6/29/2015	>4cfs		2 1/2" overflowing	62.2	57
6/30/2015	>4cfs		2" overflowing	61.8	57

7/1/2015	>4cfs		2" overflowing	61	57
7/2/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	61.8	57.3
7/3/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	59.9	59
7/4/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	60.5	58.7
7/5/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	60.1	58.2
7/6/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	59.9	59
7/7/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	60.3	58.7
7/8/2015	>4cfs		3" overflowing	60.6	57.9
7/9/2015	>4cfs		2 1/2" overflowing	59.6	56.8
7/10/2015	>4cfs		2 1/4" overflowing	60.1	56.5
7/11/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	59.8	57.2
7/12/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	59	57.1
7/13/2015	>4cfs		2" overflowing	59.1	55.3
7/14/2015	>4cfs		2" overflowing	59.7	55
7/15/2015	>4cfs		2" overflowing	61.9	57.2
7/16/2015	>4cfs		2" overflowing	60.4	56.7
7/17/2015	>4cfs		1 3/4" overflowing	59.6	56.5
7/18/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	57.9	58.1
7/19/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	58.3	57.1
7/20/2015	>4cfs		1 1/2" overflowing	59	56.3
7/21/2015	>4cfs		1 3/4 overflowing	59.2	56.1
7/22/2015	>4cfs		1 1/4" overflowing	58.6	56.5
7/23/2015	>4cfs		1" overflowing	59.3	55.8
7/24/2015	>4cfs		1 1/2" overflowing	58.9	56
7/25/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	58.2	57.1
7/26/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	58.3	57.4
7/27/2015	>4cfs		3/4" overflowing	58.6	55.4
7/28/2015	>4cfs		3/4" overflowing	58.2	55.7
7/29/2015	>4cfs		overflowing at stop gate only	57	55.6
7/30/2015	>4cfs		overflowing at stop gate only	56.4	55
7/31/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	56.5	55
8/1/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	56	57.1
8/2/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	55.5	54.7
8/3/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	55.8	54.9
8/4/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	58.6	57.6
8/5/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	55.2	54.9
8/6/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	55.3	55.1
8/7/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	54.9	54.7
8/8/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	54	55.1
8/9/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	54.7	54.3
8/10/2015	>4cfs		At the top of the intake	54.4	54.7
8/11/2015	>4cfs		At the top of the intake	54.3	54.6
8/12/2015	>4cfs		At the top of the intake	54.9	54.6
8/13/2015	>4cfs		Below 1 1/2"	54.3	53.8
8/14/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	55.8	52.8
8/15/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	57.1	55.7
8/16/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	58.1	55.4
8/17/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	58	55.6
8/18/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	55.9	58.2
8/19/2015	>4cfs		overflowing	56	56.1
8/20/2015	>4cfs		overflowing at stop gate	55.2	55.9
8/21/2015	>4cfs		At the top of the intake	51.1	54
8/22/2015	>4cfs		At the top of the intake	51.7	54.2
8/23/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	51.6	55.1
8/24/2015	>4cfs		1 1/2" below	51.8	54.9
8/25/2015	>4cfs		1 1/2" below	51	55.2
8/26/2015	>4cfs		2" below	50.7	54.3
8/27/2015	>4cfs		2" below	53.6	57.1
8/28/2015	>4cfs		2" below	51.3	55.6
8/29/2015	>4cfs		2" below	51.4	54.9
8/30/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	54.7	50.9
8/31/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	54.5	50.7

9/1/2015	>4cfs		2 1/4" below	54	50.5
9/2/2015	>4cfs		2 1/2" below	54	50.4
9/3/2015	>4cfs		3 1/4" below	53.5	50
9/4/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	54	49.8
9/5/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	50.3	53.8
9/6/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	50.7	53.1
9/7/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	52.5	49.7
9/8/2015	>4cfs		3 1/4" below	52.4	49.5
9/9/2015	>4cfs		3 1/2" below	51.8	49.6
9/10/2015	>4cfs		3 1/2" below	52.2	48.9
9/11/2015	>4cfs		3 1/2" below	51.5	49.2
9/12/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	51.6	50.1
9/13/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	51.4	49.8
9/14/2015	>4cfs		3 1/2" below	51.2	48.5
9/15/2015	>4cfs		3 1/2" below	52.3	48.1
9/16/2015	>4cfs		3 1/2" below	51.7	47.8
9/17/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	52.1	46.9
9/18/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	52.2	47.1
9/19/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	52.6	46.9
9/20/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	51.9	47.2
9/21/2015	>4cfs	visual	2 1/2" below	52.6	47
9/22/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	52.4	46.8
9/23/2015	>4cfs		3 1/2" below	52.5	46.9
9/24/2015	>4cfs		3 1/2" below	53.7	46.8
9/25/2015	>4cfs		3 1/2" below	52.7	46.5
9/26/2015	>4cfs		3 1/2" below	52.1	47.1
9/27/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	52.3	46.8
9/28/2015	>4cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	56.6	48.2
9/29/2015	>4cfs		2" below	54.9	47.7
9/30/2015	>4cfs		2 1/4" below	54	47
10/1/2015	>6cfs		2 1/2" below removed plug from diverting pipe >6 cfs flow	53.7	46.5
10/2/2015	>6cfs		3 1/2" below	52.8	45.8
10/3/2015	>6cfs		2 3/4" below	52.7	45.7
10/4/2015	>6cfs		2 3/4" below	52.7	45.6
10/5/2015	>6cfs		3 1/4" below	52.4	45.7
10/6/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	52.3	45.4
10/7/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	52.3	45.5
10/8/2015	>6cfs		3 1/4" below	52.2	46.6
10/9/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	52.2	45.1
10/10/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	51.9	45.5
10/11/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	51.8	45.6
10/12/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	52	44.5
10/13/2015	>6cfs		2 3/4" below	51.8	44.4
10/14/2015	>6cfs		4 1/4" below	52	44.4
10/15/2015	>6cfs		4 1/4" below	52.4	44.1
10/16/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	52.3	44.2
10/17/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	51.8	44.4
10/18/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	51.5	44.1
10/19/2015	>6cfs		4 1/4" below	51.4	43.6
10/20/2015	>6cfs		4 1/4" below	53.1	42
10/21/2015	>6cfs		4 1/4" below	52.9	43.2
10/22/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	56.1	48.6
10/23/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	57.7	50.2
10/24/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	52.4	49.2
10/25/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	51.4	48.3
10/26/2015	>6cfs		4 1/4" below	51	47.7
10/27/2015	>6cfs		4 1/4" below	54	45.5
10/28/2015	>6cfs		4 1/4" below	53.7	46
10/29/2015	>6cfs		4 1/4" below	55.1	45.2
10/30/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	53	43.4
10/31/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	53.4	44.4
11/1/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	52.6	43.5

11/2/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	52.5	43.3
11/3/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	52.3	43.4
11/4/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	52.2	43.2
11/5/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	52.9	43.4
11/6/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	53.4	52.9
11/7/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	53.6	51.8
11/8/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	53.4	42.1
11/9/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	53.3	41.9
11/10/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	52.7	42
11/11/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	51.9	42.2
11/12/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	51.8	41.8
11/13/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	51.7	42.1
11/14/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	52.1	41.1
11/15/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	52.5	41.6
11/16/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	53.9	41.4
11/17/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	53.8	41.5
11/18/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	53.6	41.8
11/19/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	53.5	41.3
11/20/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	53.9	41.4
11/21/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	53.2	41.7
11/22/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	53.5	41.1
11/23/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	53.4	40.9
11/24/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	53.7	40.4
11/25/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	54.3	40.1
11/26/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	53.9	40.3
11/27/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	54.2	40.2
11/28/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	53.9	41
11/29/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	54.1	40.2
11/30/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	54.2	39.1
12/1/2015	>6cfs		2 1/2" below	51.4	44.6
12/2/2015	>6cfs		3 1/2" below	50.1	43.3
12/3/2015	>6cfs		2 3/4" below	50.7	43.2
12/4/2015	>6cfs		2 3/4' below	49.7	42.6
12/5/2015	>6cfs		3 1/4" below	50.1	41.5
12/6/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	50.3	39.7
12/7/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	49.6	42.8
12/8/2015	>6cfs		3 1/4" below	49.5	42.4
12/9/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	50.4	42.9
12/10/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	51.2	42.6
12/11/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	51.7	43.2
12/12/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	51.6	43.4
12/13/2015	>6cfs		2 3/4" below	50.1	43.8
12/14/2015	>6cfs		4 1/4" below	49.9	44.1
12/15/2015	>6cfs		4 1/4" below	50.4	42.6
12/16/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	56.2	35.2
12/17/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	52.4	41.1
12/18/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	48.2	37.4
12/19/2015	>6cfs		4 1/4" below	50.1	42.5
12/20/2015	>6cfs		4 1/4" below	51.3	41.7
12/21/2015	>6cfs		4 1/4" below	51.3	41.8
12/22/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	49.7	42.1
12/23/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	49.6	42.4
12/24/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	49.9	42.3
12/25/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	50.1	42.1
12/26/2015	>6cfs		4 1/4" below	40.2	35.7
12/27/2015	>6cfs		4 1/4" below	27.6	25.1
12/28/2015	>6cfs		4 1/4" below above stream is freezing	30.4	60.9
12/29/2015	>6cfs		overflowing chopped ice	18.8	30.8
12/30/2015	>6cfs	visual	overflowing chopped ice	25.3	22.8
12/31/2015	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	44.1	49.1

Maurice Diversion Report

Maurice Diversion is verified in four different manners.

1. Visual check to verify pond height is not less than 12" below the face of the dam, using a point on the dam which has been verified by measurement.
2. Check for low level alarm from the Maurice PLC
3. Random physical measurement, of pond height.
4. Verify diversion pipe are flowing.

Stop gate is constructed with four diversion pipes:

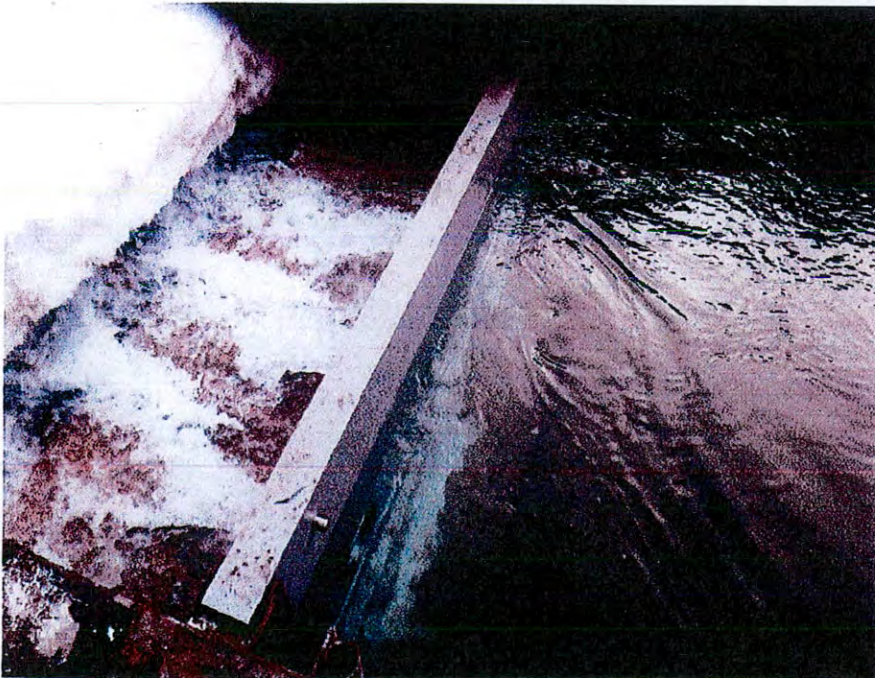
Three with 6.9" dia. & one with 5.6" dia

Three division 6.9" dia. pipes are used for the 6cfs diversion, with a pond height of >32", during the months of Oct. 1st to May 1st.

Two diversion 6.9 dia. pipes are used for 4 cfs diversion, with a pond height of >32", during the months of April 31st to Sept. 31st.

Diversion's operation start date was 2-2-2013; A&B Co. completed the construction with the three 6.9 dia. diversion pipes in operation. 6 cfs was verified with the correct height of the pond & cfs flow meter located at Spearfish Hydro Electric Plant, diversion flow measured >6cfs.

Shreadsheet is attached to file:



Maurice Dam Flow Orifice Requirement Summary Table									
Season	Average Power House Flow	Minimum Flow Release	Orifice 6.9 inch Required	Orifice 6.9 inch Required	Orifice 6.9 inch Required	Orifice 5.6 inch Required	Minimum Head Over Centerline of Orifice		Approximate Distance Down from Top of Dam
							Feet	Inches		Inches
Oct 1 - April 30	N/A	6 cfs	Yes	Yes	Yes	No	1.8	22	12
May 1 - Sept 30	> 40 cfs	4 cfs	Yes	Yes	No	No	1.8	22	12
	>35 cfs but < 40 cfs	3 cfs	Yes	No	No	Yes	1.8	22	12
	>30 cfs but < 35 cfs	2 cfs	Yes	No	No	No	1.8	22	12
	> 30 cfs	1 cfs	No	No	No	yes	1.3	16	18

2/29/2016	<6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	40.6	50.9
3/1/2016	<6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	44.1	46.4
3/2/2016	<6 cfs	7 1/2" below	No low level alarm / visual inspect of pond height / divert pipes flowing	43.8	45.6
3/3/2016	<6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	44.1	45.7
3/4/2016	<6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	45.3	44
3/5/2016	<6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	45.5	43.5
3/6/2016	<6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	46.8	41
3/7/2016	<6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	47.5	46.4
3/8/2016	<6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	46.6	42.4
3/9/2016	<6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	45.6	47.8
3/10/2016	<6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	46.8	44.7
3/11/2016	<6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	45.6	47.3
3/12/2016	<6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	35.9	52
3/13/2016	<6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	37.9	48.2
3/14/2016	<6 cfs	5 1/2" below	No low level alarm / visual inspect of pond height / divert pipes flowing	48.2	43.8
3/15/2016	<6 cfs	5" below	No low level alarm / visual inspect of pond height / divert pipes flowing	49.3	50.7
3/16/2016	<6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	39.5	52.3
3/17/2016	<6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	45	46.3
3/18/2016	<6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	44.1	49.5
3/19/2016	<6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	39.2	53.1
3/20/2016	<6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	44.3	45.8
3/21/2016	<6 cfs	7" below	No low level alarm / visual inspect of pond height / divert pipes flowing	39.9	51.4
3/22/2016	<6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	40.5	51.6
3/23/2016	<6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	44.6	52.8
3/24/2016	<6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	51.7	38.5
3/25/2016	<6 cfs	6 1/2" below	No low level alarm / visual inspect of pond height / divert pipes flowing	39.7	52.8
3/26/2016	<6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	46	46.2
3/27/2016	<6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	45.7	45
3/28/2016	<6 cfs	7" below	No low level alarm / visual inspect of pond height / divert pipes flowing	39.2	52.9
3/29/2016	<6 cfs	7" below	No low level alarm / visual inspect of pond height / divert pipes flowing	48.3	45.4
3/30/2016	<6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	53.2	49
3/31/2016	<6 cfs	5" below	No low level alarm / visual inspect of pond height / divert pipes flowing	52	48.3
4/1/2016	<6 cfs	6" below	No low level alarm / visual inspect of pond height / divert pipes flowing	50.2	46.4
4/2/2016	<6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	55.1	48.2
4/3/2016	<6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	55.5	49.2
4/4/2016	<6 cfs	3 1/2" below	No low level alarm / visual inspect of pond height / divert pipes flowing	54.9	50.4
4/5/2016	<6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	56.1	52.1
4/6/2016	<6 cfs	3/4" below	No low level alarm / visual inspect of pond height / divert pipes flowing	55.8	54
4/7/2016	<6 cfs	1" below	No low level alarm / visual inspect of pond height / divert pipes flowing	54.5	55.2
4/8/2016	<6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	53.8	56
4/9/2016	<6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	54	56.4
4/10/2016	<6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	55.3	54.6
4/11/2016	<6 cfs	Top	No low level alarm / visual inspect of pond height / divert pipes flowing	57.9	54.6
4/12/2016	<6 cfs	1 1/2" below	No low level alarm / visual inspect of pond height / divert pipes flowing	56.2	53.4
4/13/2016	<6 cfs	3/4" below	No low level alarm / visual inspect of pond height / divert pipes flowing	55.5	53.2
4/14/2016	<6 cfs	visual	overflowing stop gate	57	54
4/15/2016	<6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	58.5	54.4
4/16/2016	<6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	53.9	55
4/17/2016	<6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	52.9	57
4/18/2016	<6 cfs	1 1/2" below	No low level alarm / visual inspect of pond height / divert pipes flowing	55.6	51.6
4/19/2016	<6 cfs	2 1/2" below	No low level alarm / visual inspect of pond height / divert pipes flowing	54.2	50
4/20/2016	<6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	55.3	51.2
4/21/2016	<6 cfs	visual	overflowing (High water flows)	56.2	53.1
4/22/2016	<6 cfs	visual	overflowing (High water flows)	59	49.8
4/23/2016	<6 cfs	visual	overflowing (High water flows)	59.8	49.8
4/24/2016	<6 cfs	visual	overflowing (High water flows)	59	59
4/25/2016	<6 cfs	visual	overflowing (High water flows)	58.2	55
4/26/2016	<6 cfs	visual	overflowing (High water flows)	57.5	53.8
4/27/2016	<6 cfs	visual	overflowing (High water flows)	57	54.2
4/28/2016	<6 cfs	visual	overflowing (High water flows)	57.4	54.2
4/29/2016	<6 cfs	1" below	No low level alarm / visual inspect of pond height / divert pipes flowing	57.2	54.3
4/30/2016	<6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	51.4	55.3

5/1/2016	>4 cfs	1" below	Installed diversion cap changing from 6 cfs to summer 4 cfs diversion	51.9	49.9
5/2/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	51	55
5/3/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	55.7	49.7
5/4/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	54	56.2
5/5/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	53.7	55.6
5/6/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	44.8	59.1
5/7/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	50.2	53.9
5/8/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	49.8	53
5/9/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	56.4	45.7
5/10/2016	>4 cfs	4 1/2" below	No low level alarm / visual inspect of pond height / divert pipes flowing	44.2	58
5/11/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	55.7	52.5
5/12/2016	>4 cfs	3 1/2" below	No low level alarm / visual inspect of pond height / divert pipes flowing	56.4	44.4
5/13/2016	>4 cfs	3 1/2" below	No low level alarm / visual inspect of pond height / divert pipes flowing	54.7	42.2
5/14/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	39.9	52.8
5/15/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	43.8	49.7
5/16/2016	>4 cfs	4 1/2" below	No low level alarm / visual inspect of pond height / divert pipes flowing	53.7	40.8
5/17/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	43.7	53.2
5/18/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	53.3	39.3
5/19/2016	>4 cfs	4 1/2" below	No low level alarm / visual inspect of pond height / divert pipes flowing	39.5	53.5
5/20/2016	>4 cfs	4 1/2" below	No low level alarm / visual inspect of pond height / divert pipes flowing	53.2	39.1
5/21/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	51.3	41.7
5/22/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	42.5	47.9
5/23/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	42.9	53
5/24/2016	>4 cfs	4 1/2 below	No low level alarm / visual inspect of pond height / divert pipes flowing	52.6	39.4
5/25/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	53.1	41.2
5/26/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	52.7	40.2
5/27/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	52	39.6
5/28/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	45.5	47.8
5/29/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	45.5	48.3
5/30/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	47	45.6
5/31/2016	>4 cfs	3 3/4" below	No low level alarm / visual inspect of pond height / divert pipes flowing	51.6	39.2
6/1/2016	>4 cfs	4" below	No low level alarm / visual inspect of pond height / divert pipes flowing	51	38.3
6/2/2016	>4 cfs	5" below	No low level alarm / visual inspect of pond height / divert pipes flowing	47.6	43
6/3/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	52.5	37.2
6/4/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	45.5	45
6/5/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	45.5	44.3
6/6/2016	>4 cfs	6 1/2" below	No low level alarm / visual inspect of pond height / divert pipes flowing	44.9	45
6/7/2016	>4 cfs	6 1/2" below	No low level alarm / visual inspect of pond height / divert pipes flowing	51.5	35.8
6/8/2016	>4 cfs	6 1/2" below	No low level alarm / visual inspect of pond height / divert pipes flowing	52.6	35.2
6/9/2016	>4 cfs	6 1/2" below	No low level alarm / visual inspect of pond height / divert pipes flowing	36.4	52.4
6/10/2016	>4 cfs	6 1/2" below	No low level alarm / visual inspect of pond height / divert pipes flowing	53.7	35.3
6/11/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	50.1	41
6/12/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	50.6	40
6/13/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	53.4	34.4
6/14/2016	>4 cfs	6" below	No low level alarm / visual inspect of pond height / divert pipes flowing	53.9	35
6/15/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	41	50.9
6/16/2016	>4 cfs	7" below	No low level alarm / visual inspect of pond height / divert pipes flowing	39.9	52
6/17/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	43.5	50
6/18/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	45	48
6/19/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	44.9	50
6/20/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	44.3	49.8
6/21/2016	>4 cfs	7" below	No low level alarm / visual inspect of pond height / divert pipes flowing	40.8	44.5
6/22/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	45.5	41.1
6/23/2016	>4 cfs	7" below	No low level alarm / visual inspect of pond height / divert pipes flowing	40.2	43.6
6/24/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	40.3	43.8
6/25/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	42.1	41
6/26/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	42.9	40.3
6/27/2016	>4 cfs	8" below	No low level alarm / visual inspect of pond height / divert pipes flowing	42.6	40
6/28/2016	>4 cfs	7 1/2" below	No low level alarm / visual inspect of pond height / divert pipes flowing	40.5	43.5
6/29/2016	>4 cfs	7 3/4" below	No low level alarm / visual inspect of pond height / divert pipes flowing	39.6	43.3
6/30/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	39.3	43.2

9/1/2016	>6 cfs	visual	Removed cap form three diversion pipe diverting winter >6 cfs	40.3	37.6
9/2/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	45.5	34
9/3/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	45	35.5
9/4/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	45	34.9
9/5/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	45.3	
9/6/2016	>6 cfs	8 1/4" below	No low level alarm / visual inspect of pond height / divert pipes flowing	42.3	36.7
9/7/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	42.6	37
9/8/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	42.8	36.2
9/9/2016	>6 cfs	7 3/4" below	No low level alarm / visual inspect of pond height / divert pipes flowing	42.7	37.2
9/10/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	43	37
9/11/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	45.5	34.9
9/12/2016	>6 cfs	8 1/4" below	No low level alarm / visual inspect of pond height / divert pipes flowing	46.2	31.8
9/13/2016	>6 cfs	7 1/2" below	No low level alarm / visual inspect of pond height / divert pipes flowing	48.3	38.4
9/14/2016	>6 cfs	8" below	No low level alarm / visual inspect of pond height / divert pipes flowing	46.6	30.7
9/15/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	48.3	32.7
9/16/2016	>6 cfs	7 1/2" below	No low level alarm / visual inspect of pond height / divert pipes flowing	48.1	38.9
9/17/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	45.5	36.2
9/18/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	43	38
9/19/2016	>6 cfs	8 1/4" below	No low level alarm / visual inspect of pond height / divert pipes flowing	47.2	32.2
9/20/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	47	31.8
9/21/2016	>6 cfs	8 1/2" below	No low level alarm / visual inspect of pond height / divert pipes flowing	48	28.8
9/22/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	45.5	33
9/23/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	45	34
9/24/2016	>6 cfs	7 3/4" below	No low level alarm / visual inspect of pond height / divert pipes flowing	45	35
9/25/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	46.2	32.4
9/26/2016	>6 cfs	8 1/4" below	No low level alarm / visual inspect of pond height / divert pipes flowing	45.1	33.1
9/27/2016	>6 cfs	8" below	No low level alarm / visual inspect of pond height / divert pipes flowing	35.5	43.1
9/28/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	37.3	37.2
9/29/2016	>6 cfs	8 1/4" below	No low level alarm / visual inspect of pond height / divert pipes flowing	40.8	35.4
9/30/2016	>6 cfs	8" below	No low level alarm / visual inspect of pond height / divert pipes flowing	43.5	33
10/1/2016	>6 cfs	8 1/2" below	No low level alarm / visual inspect of pond height / divert pipes flowing	40.9	35.8
10/2/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	42	38.1
10/3/2016	>6 cfs	8 1/2" below	Opened the #3 gate	38.6	42
10/4/2016	>6 cfs	8" below	No low level alarm / visual inspect of pond height / divert pipes flowing	37.2	45.2
10/5/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	37.2	41.8
10/6/2016	>6 cfs	8 1/4" below	No low level alarm / visual inspect of pond height / divert pipes flowing	42.2	34.4
10/7/2016	>6 cfs	8 1/4" below	No low level alarm / visual inspect of pond height / divert pipes flowing	37.1	41.1
10/8/2016	>6 cfs	8" below	No low level alarm / visual inspect of pond height / divert pipes flowing	41.7	34.7
10/9/2016	>6 cfs	9" below	No low level alarm / visual inspect of pond height / divert pipes flowing	39.6	36.7
10/10/2016	>6 cfs	9" below	No low level alarm / visual inspect of pond height / divert pipes flowing	33.8	43.5
10/11/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	41.6	33.2
10/12/2016	>6 cfs	8 3/4" below	No low level alarm / visual inspect of pond height / divert pipes flowing	39.2	36.8
10/13/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	37.5	39.4
10/14/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	34.8	41.3
10/15/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	35.4	38.9
10/16/2016	>6 cfs	8 3/4 below	No low level alarm / visual inspect of pond height / divert pipes flowing	37.2	36.9
10/17/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	41.5	32.6
10/18/2016	>6 cfs	8" below	No low level alarm / visual inspect of pond height / divert pipes flowing	35.7	41.6
10/19/2016	>6 cfs	9" below	No low level alarm / visual inspect of pond height / divert pipes flowing	34.9	40.2
10/20/2016	>6 cfs	9" below	No low level alarm / visual inspect of pond height / divert pipes flowing	33.3	40.3
10/21/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	36.1	38
10/22/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	35.5	39.1
10/23/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	37.2	36.3
10/24/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	32.9	40.9
10/25/2016	>6 cfs	9" below	No low level alarm / visual inspect of pond height / divert pipes flowing	33.1	39.8
10/26/2016	>6 cfs	9" below	No low level alarm / visual inspect of pond height / divert pipes flowing	31.9	36.1
10/27/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	33.8	39.1
10/28/2016	>6 cfs	9" below	No low level alarm / visual inspect of pond height / divert pipes flowing	32.1	40.1
10/29/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	30.2	41.8
10/30/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	33.7	39.9
10/31/2016	>6 cfs	9" below	No low level alarm / visual inspect of pond height / divert pipes flowing	35	38.2
11/1/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	33.4	41

11/2/2016	>6 cfs	9" below	No low level alarm / visual inspect of pond height / divert pipes flowing	33.1	41
11/3/2016	>6 cfs	9" below	No low level alarm / visual inspect of pond height / divert pipes flowing	33.6	40.3
11/4/2016	>6 cfs	9" below	No low level alarm / visual inspect of pond height / divert pipes flowing	40.2	34
11/5/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	39	34.1
11/6/2016	>6 cfs	visual	Generator #1 down due to broken drive belt divert water to #2 generator	11.8	58.4
11/7/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	10.5	58.4
11/8/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	11.5	59.5
11/9/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	14	59.7
11/10/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	11.5	56.9
11/11/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	11.8	56.8
11/12/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	14	59.7
11/13/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	12	59.6
11/14/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	11.3	59.4
11/15/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	14	59.6
11/16/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	14	59.7
11/17/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	14	57.3
11/18/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	11.5	58.8
11/19/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	12.3	58.7
11/20/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	11.9	58.9
11/21/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	10.7	59.3
11/22/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	11	58.9
11/23/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	11.5	58.7
11/24/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	12	59.6
11/25/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	13.1	59.4
11/26/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	11.5	59.9
11/27/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	12.6	59.8
11/28/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	14.1	59.7
11/29/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	14.2	58.7
11/30/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	13.3	61.2
12/1/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	11.5	57.3
12/2/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	12	58
12/3/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	14	56.7
12/4/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	12	57.9
12/5/2016	>6 cfs	visual	Generator #1 back online after belt broke	9	58.5
12/6/2016	>6 cfs	visual	Grizzly bars iced over Maurice overflowing chopped ice	38.4	32.8
12/7/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	28.5	23.6
12/8/2016	>6 cfs	visual	Grizzly bars iced over Maurice overflowing chopped ice	21	10.4
12/9/2016	>6 cfs	overflowing	Chopped ice	28.5	23.6
12/10/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	35.5	34.7
12/11/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	35.8	35.2
12/12/2016	>6 cfs	visual	Chopped ice	24	52.9
12/13/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	19.8	52.2
12/14/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	35.5	34
12/15/2016	>6 cfs	visual	Chopped ice	15	53.3
12/16/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	35.9	31.2
12/17/2016	>6 cfs	visual	Grizzly bars iced over Maurice overflowing chopped ice	11.6	17.1
12/18/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	47.2	39
12/19/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	37.2	45.5
12/20/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	41.8	48.9
12/21/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	38.2	41.3
12/22/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	35.5	37.3
12/23/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	32.8	40.3
12/24/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	43.9	28.5
12/25/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	44.9	28.4
12/26/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	45.1	32.4
12/27/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	43.1	27.3
12/28/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	44.1	32.8
12/29/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	43.8	30
12/30/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	43.4	31.3
12/31/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	43.1	31

Gronlund, Eric

From: Karla Weber <Karla.Weber@cityofspearfish.com>
Sent: Thursday, March 30, 2017 3:11 PM
To: Gronlund, Eric; Karen Hartman (kheartman@fs.fed.us); Mark VanEvery (mvanevery@fs.fed.us); Steve Hirtzel (shirtzel@fs.fed.us)
Cc: Gary D. Lillehaug; Cheryl Johnson; Kyle Mathis
Subject: RE: City of Spearfish Maurice Diversion Report - Revised March 20 2017
Attachments: Maurice Diversion Bypass Report Revised March 30 2017.pdf

Attached you will find the REVIZED 2017 Maurice Diversion Bypass Report from the City of Spearfish). This report sent to you by request of Gary Lillehaug, Hydro Superintendent – City of Spearfish.

For any questions, please contact Gary at 605.645.9761 or email gary.lillehaug@cityofspearfish.com.

Thank you.

Karla Weber

City of Spearfish

Ph: 605.642.1325

Fax: 605.642.1329

Karla.Weber@cityofspearfish.com

Maurice Diversion Report

Maurice Diversion is verified in four different manners.

1. Visual check to verify pond height is not less than 12" below the face of the dam, using a point on the dam which has been verified by measurement.
2. Check for low level alarm from the Maurice PLC
3. Random physical measurement, of pond height.
4. Verify diversion pipe are flowing.

Stop gate is constructed with four diversion pipes:

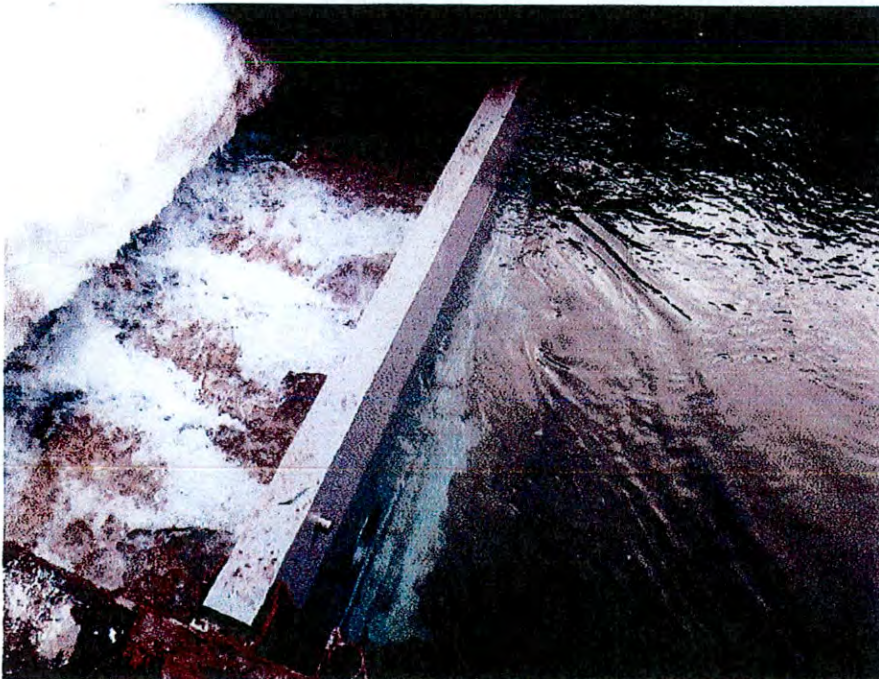
Three with 6.9" dia. & one with 5.6" dia

Three division 6.9" dia. pipes are used for the 6cfs diversion, with a pond height of >32", during the months of Oct. 1st to May 1st.

Two diversion 6.9 dia. pipes are used for 4 cfs diversion, with a pond height of >32", during the months of April 31st to Sept. 31st.

Diversion's operation start date was 2-2-2013; A&B Co. completed the construction with the three 6.9 dia. diversion pipes in operation. 6 cfs was verified with the correct height of the pond & cfs flow meter located at Spearfish Hydro Electric Plant, diversion flow measured >6cfs.

Shreadsheet is attached to file:



Maurice Dam Flow Orifice Requirement Summary Table									
Season	Average Power House Flow	Minimum Flow Release	Orifice 6.9 inch Required	Orifice 6.9 inch Required	Orifice 6.9 inch Required	Orifice 5.6 inch Required	Minimum Head Over Centerline of Orifice		Approximate Distance Down from Top of Dam
							Feet	Inches	Inches
Oct 1 - April 30	N/A	6 cfs	Yes	Yes	Yes	No	1.8	22	12
May 1 - Sept 30	> 40 cfs	4 cfs	Yes	Yes	No	No	1.8	22	12
	>35 cfs but < 40 cfs	3 cfs	Yes	No	No	Yes	1.8	22	12
	>30 cfs but < 35 cfs	2 cfs	Yes	No	No	No	1.8	22	12
	> 30 cfs	1 cfs	No	No	No	yes	1.3	16	18

2/29/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	40.6	50.9
3/1/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	44.1	46.4
3/2/2016	>6 cfs	7 1/2" below	No low level alarm / visual inspect of pond height / divert pipes flowing	43.8	45.6
3/3/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	44.1	45.7
3/4/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	45.3	44
3/5/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	45.5	43.5
3/6/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	46.8	41
3/7/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	47.5	46.4
3/8/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	46.6	42.4
3/9/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	45.6	47.8
3/10/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	46.8	44.7
3/11/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	45.6	47.3
3/12/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	35.9	52
3/13/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	37.9	48.2
3/14/2016	>6 cfs	5 1/2" below	No low level alarm / visual inspect of pond height / divert pipes flowing	48.2	43.8
3/15/2016	>6 cfs	5" below	No low level alarm / visual inspect of pond height / divert pipes flowing	49.3	50.7
3/16/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	39.5	52.3
3/17/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	45	46.3
3/18/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	44.1	49.5
3/19/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	39.2	53.1
3/20/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	44.3	45.8
3/21/2016	>6 cfs	7" below	No low level alarm / visual inspect of pond height / divert pipes flowing	39.9	51.4
3/22/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	40.5	51.6
3/23/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	44.6	52.8
3/24/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	51.7	38.5
3/25/2016	>6 cfs	6 1/2" below	No low level alarm / visual inspect of pond height / divert pipes flowing	39.7	52.8
3/26/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	46	46.2
3/27/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	45.7	45
3/28/2016	>6 cfs	7" below	No low level alarm / visual inspect of pond height / divert pipes flowing	39.2	52.9
3/29/2016	>6 cfs	7" below	No low level alarm / visual inspect of pond height / divert pipes flowing	48.3	45.4
3/30/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	53.2	49
3/31/2016	>6 cfs	5" below	No low level alarm / visual inspect of pond height / divert pipes flowing	52	48.3
4/1/2016	>6cfs	6" below	No low level alarm / visual inspect of pond height / divert pipes flowing	50.2	46.4
4/2/2016	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	55.1	48.2
4/3/2016	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	55.5	49.2
4/4/2016	>6cfs	3 1/2" below	No low level alarm / visual inspect of pond height / divert pipes flowing	54.9	50.4
4/5/2016	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	56.1	52.1
4/6/2016	>6cfs	3/4" below	No low level alarm / visual inspect of pond height / divert pipes flowing	55.8	54
4/7/2016	>6cfs	1" below	No low level alarm / visual inspect of pond height / divert pipes flowing	54.5	55.2
4/8/2016	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	53.8	56
4/9/2016	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	54	56.4
4/10/2016	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	55.3	54.6
4/11/2016	>6cfs	Top	No low level alarm / visual inspect of pond height / divert pipes flowing	57.9	54.6
4/12/2016	>6cfs	1 1/2" below	No low level alarm / visual inspect of pond height / divert pipes flowing	56.2	53.4
4/13/2016	>6cfs	3/4" below	No low level alarm / visual inspect of pond height / divert pipes flowing	55.5	53.2
4/14/2016	>6cfs	visual	overflowing stop gate	57	54
4/15/2016	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	58.5	54.4
4/16/2016	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	53.9	55
4/17/2016	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	52.9	57
4/18/2016	>6cfs	1 1/2" below	No low level alarm / visual inspect of pond height / divert pipes flowing	55.6	51.6
4/19/2016	>6cfs	2 1/2" below	No low level alarm / visual inspect of pond height / divert pipes flowing	54.2	50
4/20/2016	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	55.3	51.2
4/21/2016	>6cfs	visual	overflowing (High water flows)	56.2	53.1
4/22/2016	>6cfs	visual	overflowing (High water flows)	59	49.8
4/23/2016	>6cfs	visual	overflowing (High water flows)	59.8	49.8
4/24/2016	>6cfs	visual	overflowing (High water flows)	59	59
4/25/2016	>6cfs	visual	overflowing (High water flows)	58.2	55
4/26/2016	>6cfs	visual	overflowing (High water flows)	57.5	53.8
4/27/2016	>6cfs	visual	overflowing (High water flows)	57	54.2
4/28/2016	>6cfs	visual	overflowing (High water flows)	57.4	54.2
4/29/2016	>6cfs	1" below	No low level alarm / visual inspect of pond height / divert pipes flowing	57.2	54.3
4/30/2016	>6cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	51.4	55.3

5/1/2016	>4 cfs	1" below	installed diversion cap changing from 6 cfs to summer 4 cfs diversion	51.9	49.9
5/2/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	51	55
5/3/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	55.7	49.7
5/4/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	54	56.2
5/5/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	53.7	55.6
5/6/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	44.8	59.1
5/7/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	50.2	53.9
5/8/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	49.8	53
5/9/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	56.4	45.7
5/10/2016	>4 cfs	4 1/2" below	No low level alarm / visual inspect of pond height / divert pipes flowing	44.2	58
5/11/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	55.7	52.5
5/12/2016	>4 cfs	3 1/2" below	No low level alarm / visual inspect of pond height / divert pipes flowing	56.4	44.4
5/13/2016	>4 cfs	3 1/2" below	No low level alarm / visual inspect of pond height / divert pipes flowing	54.7	42.2
5/14/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	39.9	52.8
5/15/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	43.8	49.7
5/16/2016	>4 cfs	4 1/2" below	No low level alarm / visual inspect of pond height / divert pipes flowing	53.7	40.8
5/17/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	43.7	53.2
5/18/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	53.3	39.3
5/19/2016	>4 cfs	4 1/2" below	No low level alarm / visual inspect of pond height / divert pipes flowing	39.5	53.5
5/20/2016	>4 cfs	4 1/2" below	No low level alarm / visual inspect of pond height / divert pipes flowing	53.2	39.1
5/21/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	51.3	41.7
5/22/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	42.5	47.9
5/23/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	42.9	53
5/24/2016	>4 cfs	4 1/2 below	No low level alarm / visual inspect of pond height / divert pipes flowing	52.6	39.4
5/25/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	53.1	41.2
5/26/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	52.7	40.2
5/27/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	52	39.6
5/28/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	45.5	47.8
5/29/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	45.5	48.3
5/30/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	47	45.6
5/31/2016	>4 cfs	3 3/4" below	No low level alarm / visual inspect of pond height / divert pipes flowing	51.6	39.2
6/1/2016	>4 cfs	4" below	No low level alarm / visual inspect of pond height / divert pipes flowing	51	38.3
6/2/2016	>4 cfs	5" below	No low level alarm / visual inspect of pond height / divert pipes flowing	47.6	43
6/3/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	52.5	37.2
6/4/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	45.5	45
6/5/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	45.5	44.3
6/6/2016	>4 cfs	6 1/2" below	No low level alarm / visual inspect of pond height / divert pipes flowing	44.9	45
6/7/2016	>4 cfs	6 1/2" below	No low level alarm / visual inspect of pond height / divert pipes flowing	51.5	35.8
6/8/2016	>4 cfs	6 1/2" below	No low level alarm / visual inspect of pond height / divert pipes flowing	52.6	35.2
6/9/2016	>4 cfs	6 1/2" below	No low level alarm / visual inspect of pond height / divert pipes flowing	36.4	52.4
6/10/2016	>4 cfs	6 1/2" below	No low level alarm / visual inspect of pond height / divert pipes flowing	53.7	35.3
6/11/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	50.1	41
6/12/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	50.6	40
6/13/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	53.4	34.4
6/14/2016	>4 cfs	6" below	No low level alarm / visual inspect of pond height / divert pipes flowing	53.9	35
6/15/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	41	50.9
6/16/2016	>4 cfs	7" below	No low level alarm / visual inspect of pond height / divert pipes flowing	39.9	52
6/17/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	43.5	50
6/18/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	45	48
6/19/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	44.9	50
6/20/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	44.3	49.8
6/21/2016	>4 cfs	7" below	No low level alarm / visual inspect of pond height / divert pipes flowing	40.8	44.5
6/22/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	45.5	41.1
6/23/2016	>4 cfs	7" below	No low level alarm / visual inspect of pond height / divert pipes flowing	40.2	43.6
6/24/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	40.3	43.8
6/25/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	42.1	41
6/26/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	42.9	40.3
6/27/2016	>4 cfs	8" below	No low level alarm / visual inspect of pond height / divert pipes flowing	42.6	40
6/28/2016	>4 cfs	7 1/2" below	No low level alarm / visual inspect of pond height / divert pipes flowing	40.5	43.5
6/29/2016	>4 cfs	7 3/4" below	No low level alarm / visual inspect of pond height / divert pipes flowing	39.6	43.3
6/30/2016	>4 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	39.3	43.2

9/1/2016	>6 cfs	visual	Removed cap form three diversion pipe diverting winter >6 cfs	40.3	37.6
9/2/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	45.5	34
9/3/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	45	35.5
9/4/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	45	34.9
9/5/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	45.3	
9/6/2016	>6 cfs	8 1/4" below	No low level alarm / visual inspect of pond height / divert pipes flowing	42.3	36.7
9/7/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	42.6	37
9/8/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	42.8	36.2
9/9/2016	>6 cfs	7 3/4" below	No low level alarm / visual inspect of pond height / divert pipes flowing	42.7	37.2
9/10/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	43	37
9/11/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	45.5	34.9
9/12/2016	>6 cfs	8 1/4" below	No low level alarm / visual inspect of pond height / divert pipes flowing	46.2	31.8
9/13/2016	>6 cfs	7 1/2" below	No low level alarm / visual inspect of pond height / divert pipes flowing	48.3	38.4
9/14/2016	>6 cfs	8" below	No low level alarm / visual inspect of pond height / divert pipes flowing	46.6	30.7
9/15/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	48.3	32.7
9/16/2016	>6 cfs	7 1/2" below	No low level alarm / visual inspect of pond height / divert pipes flowing	48.1	38.9
9/17/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	45.5	36.2
9/18/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	43	38
9/19/2016	>6 cfs	8 1/4" below	No low level alarm / visual inspect of pond height / divert pipes flowing	47.2	32.2
9/20/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	47	31.8
9/21/2016	>6 cfs	8 1/2" below	No low level alarm / visual inspect of pond height / divert pipes flowing	48	28.8
9/22/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	45.5	33
9/23/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	45	34
9/24/2016	>6 cfs	7 3/4" below	No low level alarm / visual inspect of pond height / divert pipes flowing	45	35
9/25/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	46.2	32.4
9/26/2016	>6 cfs	8 1/4" below	No low level alarm / visual inspect of pond height / divert pipes flowing	45.1	33.1
9/27/2016	>6 cfs	8" below	No low level alarm / visual inspect of pond height / divert pipes flowing	35.5	43.1
9/28/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	37.3	37.2
9/29/2016	>6 cfs	8 1/4" below	No low level alarm / visual inspect of pond height / divert pipes flowing	40.8	35.4
9/30/2016	>6 cfs	8" below	No low level alarm / visual inspect of pond height / divert pipes flowing	43.5	33
10/1/2016	>6 cfs	8 1/2" below	No low level alarm / visual inspect of pond height / divert pipes flowing	40.9	35.8
10/2/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	42	38.1
10/3/2016	>6 cfs	8 1/2" below	Opened the #3 gate	38.6	42
10/4/2016	>6 cfs	8" below	No low level alarm / visual inspect of pond height / divert pipes flowing	37.2	45.2
10/5/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	37.2	41.8
10/6/2016	>6 cfs	8 1/4" below	No low level alarm / visual inspect of pond height / divert pipes flowing	42.2	34.4
10/7/2016	>6 cfs	8 1/4" below	No low level alarm / visual inspect of pond height / divert pipes flowing	37.1	41.1
10/8/2016	>6 cfs	8" below	No low level alarm / visual inspect of pond height / divert pipes flowing	41.7	34.7
10/9/2016	>6 cfs	9" below	No low level alarm / visual inspect of pond height / divert pipes flowing	39.6	36.7
10/10/2016	>6 cfs	9" below	No low level alarm / visual inspect of pond height / divert pipes flowing	33.8	43.5
10/11/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	41.6	33.2
10/12/2016	>6 cfs	8 3/4" below	No low level alarm / visual inspect of pond height / divert pipes flowing	39.2	36.8
10/13/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	37.5	39.4
10/14/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	34.8	41.3
10/15/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	35.4	38.9
10/16/2016	>6 cfs	8 3/4 below	No low level alarm / visual inspect of pond height / divert pipes flowing	37.2	36.9
10/17/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	41.5	32.6
10/18/2016	>6 cfs	8" below	No low level alarm / visual inspect of pond height / divert pipes flowing	35.7	41.6
10/19/2016	>6 cfs	9" below	No low level alarm / visual inspect of pond height / divert pipes flowing	34.9	40.2
10/20/2016	>6 cfs	9" below	No low level alarm / visual inspect of pond height / divert pipes flowing	33.3	40.3
10/21/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	36.1	38
10/22/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	35.5	39.1
10/23/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	37.2	36.3
10/24/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	32.9	40.9
10/25/2016	>6 cfs	9" below	No low level alarm / visual inspect of pond height / divert pipes flowing	33.1	39.8
10/26/2016	>6 cfs	9" below	No low level alarm / visual inspect of pond height / divert pipes flowing	31.9	36.1
10/27/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	33.8	39.1
10/28/2016	>6 cfs	9" below	No low level alarm / visual inspect of pond height / divert pipes flowing	32.1	40.1
10/29/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	30.2	41.8
10/30/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	33.7	39.9
10/31/2016	>6 cfs	9" below	No low level alarm / visual inspect of pond height / divert pipes flowing	35	38.2
11/1/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	33.4	41

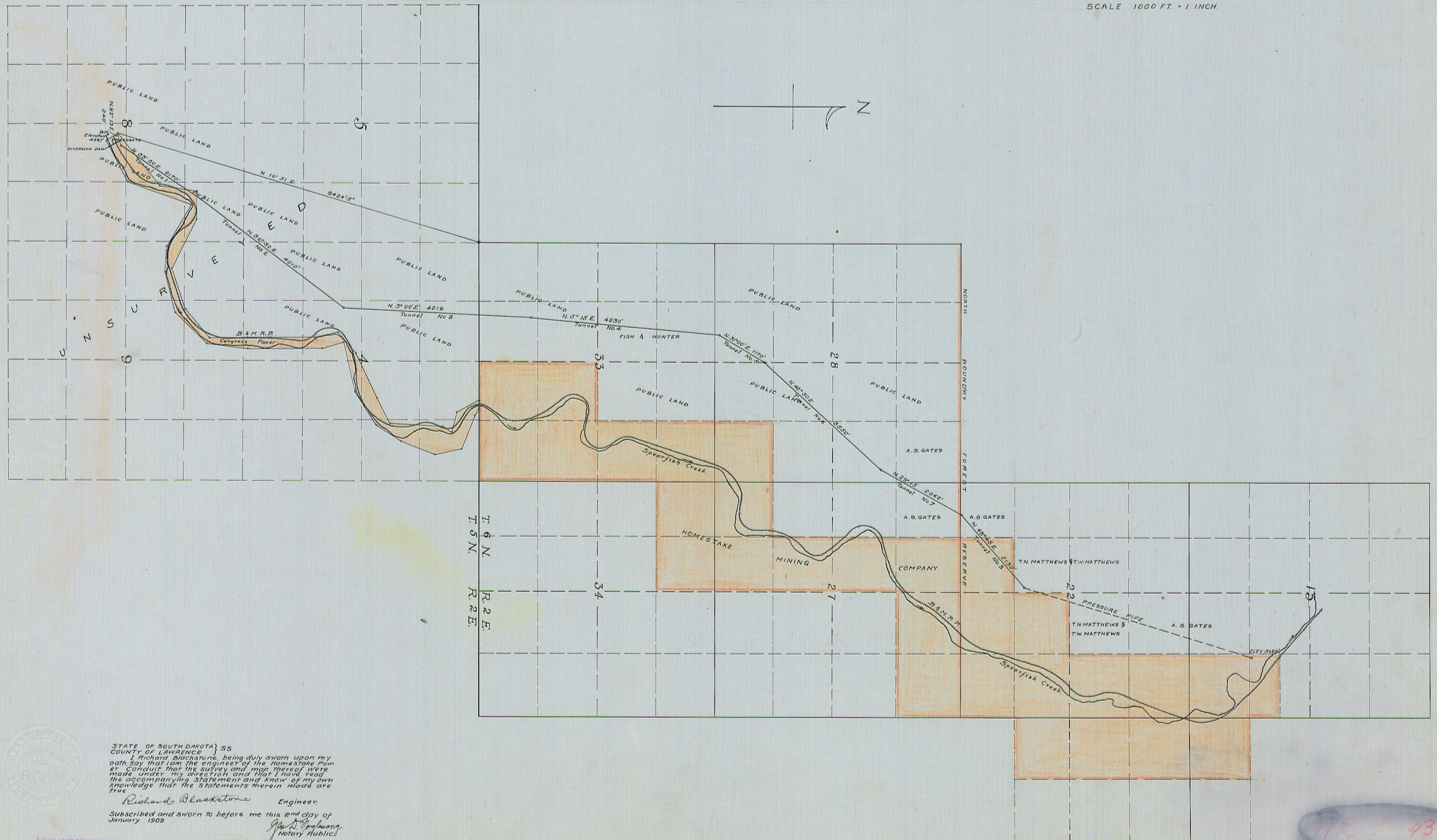
11/2/2016	>6 cfs	9" below	No low level alarm / visual inspect of pond height / divert pipes flowing	33.1	41
11/3/2016	>6 cfs	9" below	No low level alarm / visual inspect of pond height / divert pipes flowing	33.6	40.3
11/4/2016	>6 cfs	9" below	No low level alarm / visual inspect of pond height / divert pipes flowing	40.2	34
11/5/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	39	34.1
11/6/2016	>6 cfs	visual	Generator #1 down due to broken drive belt divert water to #2 generator	11.8	58.4
11/7/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	10.5	58.4
11/8/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	11.5	59.5
11/9/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	14	59.7
11/10/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	11.5	56.9
11/11/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	11.8	56.8
11/12/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	14	59.7
11/13/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	12	59.6
11/14/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	11.3	59.4
11/15/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	14	59.6
11/16/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	14	59.7
11/17/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	14	57.3
11/18/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	11.5	58.8
11/19/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	12.3	58.7
11/20/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	11.9	58.9
11/21/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	10.7	59.3
11/22/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	11	58.9
11/23/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	11.5	58.7
11/24/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	12	59.6
11/25/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	13.1	59.4
11/26/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	11.5	59.9
11/27/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	12.6	59.8
11/28/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	14.1	59.7
11/29/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	14.2	58.7
11/30/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	13.3	61.2
12/1/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	11.5	57.3
12/2/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	12	58
12/3/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	14	56.7
12/4/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	12	57.9
12/5/2016	>6 cfs	visual	Generator #1 back online after belt broke	9	58.5
12/6/2016	>6 cfs	visual	Grizzly bars iced over Maurice overflowing chopped ice	38.4	32.8
12/7/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	28.5	23.6
12/8/2016	>6 cfs	visual	Grizzly bars iced over Maurice overflowing chopped ice	21	10.4
12/9/2016	>6 cfs	overflowing	Chopped ice	28.5	23.6
12/10/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	35.5	34.7
12/11/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	35.8	35.2
12/12/2016	>6 cfs	visual	Chopped ice	24	52.9
12/13/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	19.8	52.2
12/14/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	35.5	34
12/15/2016	>6 cfs	visual	Chopped ice	15	53.3
12/16/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	35.9	31.2
12/17/2016	>6 cfs	visual	Grizzly bars iced over Maurice overflowing chopped ice	11.6	17.1
12/18/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	47.2	39
12/19/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	37.2	45.5
12/20/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	41.8	48.9
12/21/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	38.2	41.3
12/22/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	35.5	37.3
12/23/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	32.8	40.3
12/24/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	43.9	28.5
12/25/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	44.9	28.4
12/26/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	45.1	32.4
12/27/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	43.1	27.3
12/28/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	44.1	32.8
12/29/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	43.8	30
12/30/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	43.4	31.3
12/31/2016	>6 cfs	visual	No low level alarm / visual inspect of pond height / divert pipes flowing	43.1	31

11/29/2017	>60cfs	visual	Stream connected with Hydro plant flow Closed all valves and sandbaged bypassing all water	0	0
11/30/2017	>60cfs	visual	Stream connected with Hydro plant flow Closed all valves and sandbaged bypassing all water	0	0
12/01/2017	>60cfs	visual	Stream connected with Hydro plant flow Closed all valves and sandbaged bypassing all water	0	0
12/02/2017	>60cfs	visual	Stream connected with Hydro plant flow Closed all valves and sandbaged bypassing all water	0	0
12/03/2017	>60cfs	visual	Stream connected with Hydro plant flow Closed all valves and sandbaged bypassing all water	0	0
12/04/2017	>60cfs	visual	Stream connected with Hydro plant flow Closed all valves and sandbaged bypassing all water	0	0
12/05/2017	>60cfs	visual	Stream connected with Hydro plant flow Closed all valves and sandbaged bypassing all water	0	0
12/06/2017	>60cfs	visual	Stream connected with Hydro plant flow Closed all valves and sandbaged bypassing all water	0	0
12/07/2017	>60cfs	visual	Stream connected with Hydro plant flow Closed all valves and sandbaged bypassing all water	0	0
12/08/2017	>60cfs	visual	Stream connected with Hydro plant flow Closed all valves and sandbaged bypassing all water	0	0
12/09/2017	>60cfs	visual	Stream connected with Hydro plant flow Closed all valves and sandbaged bypassing all water	0	0
12/10/2017	>60cfs	visual	Stream connected with Hydro plant flow Closed all valves and sandbaged bypassing all water	0	0
12/11/2017	>60cfs	visual	Stream connected with Hydro plant flow Closed all valves and sandbaged bypassing all water	0	0
12/12/2017	>60cfs	visual	Stream connected with Hydro plant flow Closed all valves and sandbaged bypassing all water	0	0
12/13/2017	>60cfs	visual	Stream connected with Hydro plant flow Closed all valves and sandbaged bypassing all water	0	0
12/14/2017	>60cfs	visual	Stream connected with Hydro plant flow Closed all valves and sandbaged bypassing all water	0	0
12/15/2017	>60cfs	visual	Stream connected with Hydro plant flow Closed all valves and sandbaged bypassing all water	0	0
12/16/2017	>60cfs	visual	Stream connected with Hydro plant flow Closed all valves and sandbaged bypassing all water	0	0
12/17/2017	>60cfs	visual	Stream connected with Hydro plant flow Closed all valves and sandbaged bypassing all water	0	0
12/18/2017	>6cfs	visual	Reinstalled Main stop gate removed sandbags flowing normal to hydro @ 58cfs	58.2	0
12/19/2017	>6cfs	visual	Reinstalled Main stop gate removed sandbags flowing normal to hydro @ 58cfs	58.3	0
12/20/2017	>6cfs	visual	Generator #1 online 58 cfs / Penstock installed and flowing hydro water	58.3	0
12/21/2017	>6cfs	12" below	Maurice dam is packed with ice chunks opened grizzly bars but still full of ice chunks	27.6	0
12/22/2017	>6cfs	4" below	No low level alarm / visual inspect of pond height / bypass pipes flowingChipped ice	48.3	0
12/23/2017	>6cfs	11.5" below	No low level alarm / visual inspect of pond height / bypass pipes flowing	54.7	0
12/24/2017	>6cfs	visual	No low level alarm / visual inspect of pond height / bypass pipes flowing	55.3	0
12/25/2017	>6cfs	visual	No low level alarm / visual inspect of pond height / bypass pipes flowing	48.9	0
12/26/2017	>6cfs	visual	No low level alarm / visual inspect of pond height / bypass pipes flowing	48.9	0
12/27/2017	>6cfs	visual	No low level alarm / visual inspect of pond height / bypass pipes flowing	51.3	0
12/28/2017	>6cfs	visual	No low level alarm / visual inspect of pond height / bypass pipes flowing	56.5	0
12/29/2017	>6cfs	visual	No low level alarm / visual inspect of pond height / bypass pipes flowing	58.2	0
12/30/2017	>6cfs	visual	Maurice plugged with brush moved down with last weeks ice flow used backhoe-12 deg	26.3	0
12/31/2017	>6cfs	visual	No low level alarm / visual inspect of pond height / bypass pipes flowing iced over -13 deg	49.8	0

MAP OF
HOMESTAKE POWER CONDUIT

SPEARFISH CREEK - LAWRENCE COUNTY, - SOUTH DAKOTA

SCALE 1000 FT. = 1 INCH



STATE OF SOUTH DAKOTA } SS
 COUNTY OF LAWRENCE }
 I, Richard Blackstone, being duly sworn upon my oath, say that I am the engineer of the Homestake Power Conduit, that the survey and map thereof were made under my direction and that I have read the accompanying statement and know of my own knowledge that the statements therein made are true.
 Richard Blackstone Engineer.
 Subscribed and sworn to before me this 2nd day of January, 1909.
 J. D. Connelley, Notary Public.

RECEIVED
 JAN 4 1909
 OFFICE OF STATE ENGINEER,
 PIERRE, S. DAK.

WR 43-1
 Map 42-1



Ben Tieszen

March 18, 2022

Spearfish Hydro Plant Superintendent
625 N. 5th Street
Spearfish, SD 57783

625 N. 5TH STREET
SPEARFISH, SD 57783

Eric Gronlund
Chief Engineer
DENR
523 E. Capitol Avenue
Pierre, SD 57501-3181

Dear Mr. Gronlund,

REPORTING OF FLOW RECORDS ANNUAL REPORT, FERC # P-12775-001

The submission of this annual report fulfills the reporting requirements for the City of Spearfish for the reporting year of 2021. On May 1st, 2021, the orifices on the stop gate at the Maurice Intake were adjusted to release 4 CFS to Spearfish Creek. On October 1st, 2021, the orifices were adjusted to release 6 CFS to Spearfish Creek. Change in flows was noted at the Hydro Plant.

The volume of water that is being released into Spearfish Creek is controlled by the size of the orifices that are installed into the stop gate during the specified periods that are outlined within our permit. There are three different methods that are used daily, Monday through Friday to monitor the level of the Maurice Intake.

- Visual checks to verify that the pond height is no more than 10 inches below a verified point on the dam
- Ultrasonic probes are utilized to measure pond height, which are connected to a PLC that sends an alarm to staff via telephone if the pond height is out of normal operating range. Testing and calibration of this sensor is performed annually, under the manufacture's guidelines
- Random physical measurements are performed to verify accuracy of instrumentation

Please do not hesitate to contact me with any further questions that you may have.

Respectfully,

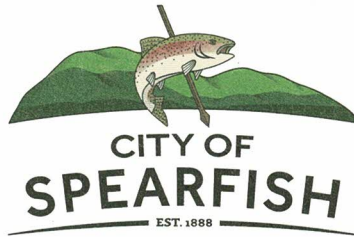
Ben Tieszen

Spearfish Hydro Plant Superintendent

642.1335 BUILDING & DEVELOPMENT SERVICES
642.1325 FINANCE OFFICE
642.1313 FIRE DEPARTMENT
642.1354 HUMAN RESOURCES

LIBRARY 642.1330
PARKS & REC 722.1430
POLICE DEPARTMENT 642.1305
PUBLIC WORKS 642.1333

WWW.CITYOFSPEARFISH.COM



Ben Tieszen

February 14, 2023

Spearfish Hydro Plant Superintendent
625 N. 5th Street
Spearfish, SD 57783

625 N. 5th STREET
SPEARFISH, SD 57783

Eric Gronlund

DENR

523 E. Capitol Avenue
Pierre, SD 57501-3181

Dear Mr. Gronlund,

REPORTING OF FLOW RECORDS ANNUAL REPORT, FERC # P-12775-008

The submission of this annual report fulfills the reporting requirements for the City of Spearfish for the reporting year of 2022. On May 13th, 2022, the orifices on the stop gate at the Maurice Intake were adjusted to release 4 CFS to Spearfish Creek. On September 29th, 2022, the orifices were adjusted to release 6 CFS to Spearfish Creek. Change in flows was noted at the Hydro Plant.

The volume of water that is being released into Spearfish Creek is controlled by the size of the orifices that are installed into the stop gate during the specified periods that are outlined within our permit. There are three different methods that are used daily, Monday through Friday to monitor the level of the Maurice Intake.

- Visual daily checks of pond level
- Ultrasonic probes are utilized to measure pond height, which are connected to a PLC that sends an alarm to staff via telephone if the pond height is out of normal operating range. Testing and calibration of this sensor is performed annually, under the manufacture's guidelines
- Random physical measurements are performed to verify accuracy of instrumentation

Please do not hesitate to contact me with any further questions that you may have.

Respectfully,

Ben Tieszen

Spearfish Hydro Plant Superintendent

642.1335 | BUILDING & DEVELOPMENT SERVICES
642.1325 | FINANCE OFFICE
642.1313 | FIRE DEPARTMENT
642.1354 | HUMAN RESOURCES

LIBRARY | 642.1330
PARKS & REC | 722.1430
POLICE DEPARTMENT | 642.1305
PUBLIC WORKS | 642.1333

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Ben Tieszen
Spearfish Hydro Plant Superintendent
625 N. 5th Street
Spearfish, SD 57783

February 13, 2024

Eric Gronlund
DENR
523 E. Capitol Avenue
Pierre, SD 57501-3181

Dear Mr. Gronlund,

REPORTING OF FLOW RECORDS ANNUAL REPORT, FERC # P-12775-008

The submission of this annual report fulfills the reporting requirements for the City of Spearfish for the reporting year of 2023. On May 2nd, 2023, the orifices on the stop gate at the Maurice Intake were adjusted to release 4 CFS to Spearfish Creek. On October 2nd, 2023, the orifices were adjusted to release 6 CFS to Spearfish Creek. Change in flows was noted at the Hydro Plant.

The volume of water that is being released into Spearfish Creek is controlled by the size of the orifices that are installed into the stop gate during the specified periods that are outlined within our permit. There are three different methods that are used daily, Monday through Friday to monitor the level of the Maurice Intake.

- Visual daily checks of pond level
- Ultrasonic probes are utilized to measure pond height, which are connected to a PLC that sends an alarm to staff via telephone if the pond height is out of normal operating range. Testing and calibration of this sensor is performed annually, under the manufacture's guidelines
- Random physical measurements are performed to verify accuracy of instrumentation

Please do not hesitate to contact me with any further questions that you may have.

Respectfully,

Ben Tieszen

Spearfish Hydro Plant Superintendent

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