

Water Right No. .1691-2

1. Considered January 30 1980
2. Name of Applicant PHILIP GEOTHERMAL, INC.
3. Post Office Address Box A - PHILIP, S.D.
4. Amount of Water Claimed 0.7
5. Source of Water Supply 4266' WELL
6. Water to be used for GEOTHERMAL HEATING
7. Acres to be irrigated — maximum — acre feet —
8. Water to be diverted and used in HAAKON County
- about IN CITY LIMITS miles — of —
9. PROOF OF PUBLICATION Received (initials) 2-4-80

Not Received —

APPLICATION Approved 1-30-80

Subject to GEO QUAL-CHG extend To 10 year

Not Approved —

Action deferred —

Priority 1-8-80 Date Received 1-8-80 Application Complete yes — no — FEE 150⁰⁰

Remarks provide Geo heat from schools
discharge.

Date information and/or fee or corrected Application received —

Period of Annual use SEPT. 1st to MAY 30th

WATER QUALITY

Received yes — no — APPROVED/CONDITIONAL (Circle one)

WI-1 Description same as application yes — no — Remarks —

Disapproved — Returned —

Diversion Point —

NE⁴ NE⁴ SE⁴ - 14-IN-20E

Lands-to-be-irrigated —

WELL LOs Remarks —

Driller — Licensed yes — no —

Depth 4,266' Deep

Water Right No. _____

MAP

Map No. 1397-2 Map located in Water Right X 11633-2 Map file _____
Type of Map Original Prepared by Engel & copy in this W/R

+++++

REVIEWED

This Application was reviewed within 30 days of date received, accepted as complete, Number assigned and written up for advertisement before the Board on 1-30-80.
Lesly Whitford
(Signed)

+++++

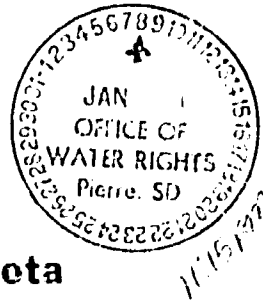
PROTESTS

Letters/Petitions in File - yes _____ no _____ Remarks _____

REMARKS

F.F. & C
OF LAW,
FINAL
DECISIONS
ETC.

Date _____
Final Decision, including F.F. & C of Law were adopted _____
Date _____
Final Decision mailed to parties and/or parties notified that Final Decision was adopted _____
Remarks _____

No. 1691-2Map No. 1397-2 Water Division No. 2 BAD RIVER District
Above for Office Use

APPLICATION FOR PERMIT To Appropriate Water within the State of South Dakota

Check one of the following:

New ☒ Vested Right _____ Future Use _____

Change in Diversion _____ Additional Diversion _____

Change in Acreage _____ Additional Acreage _____

1. Name of Applicant PHILIP GEOTHERMAL, INC. Phone No. _____Post Office Address Box A Philip State South Dakota 57567
(Street, RR, or Box) (Town) (Zip Code)

If a corporation show date and place of incorporation _____

2. Method of accomplishing work (contract, employment of others, or by direct labor) Contract3. Name of diversion work PHILIP SCHOOL #2 WELL4. Amount of water claimed (cubic feet per second) 0.75. Source of water supply Well6. Location of point of diversion City of Philip; Block 2, High School AdditionN2 of NE of SD 1 of S 14; T1 N; R 20 ECounty Huakon7. Annual period or periods during which water is to be used September 1 to May 308. Use to be made of water, (irrigation, industrial, municipal, commercial, recreation, etc.) Geo-Heating9. For irrigation use, N.A. Total number of acres to be irrigated _____

List below each forty acre subdivision, or lot, or fraction thereof and show number of acres to be irrigated in each.

Land Description	No. Acres Irr.

Land Description	No. Acres Irr.

Attach sheet if more space is needed

10. Time required to complete construction of water supply system 1 years. Additional time required to complete application of water to the proposed beneficial use — years.11. Choice of county newspaper for publication of Notice of Intent to Appropriate Water Pioneer Review
Philip, South Dakota

12. Principal Features of the Proposed Water Supply System.

A. Works proposed to divert water from its natural source.

Well which has already been completed and owned by the Huakon School District.

B. Works proposed to transport water to place of use.

Pipeline from School to heating district.

C. Works proposed to apply water to beneficial use.

Pipeline and retrofit of buildings for hot water heat.Estimated Total Cost \$ 38320.00

Attachment: Attach Form 2A if diversion from a well or dugout, or if storage of water, is proposed. Attach map (see instructions concerning preparation.)

STATE OF SOUTH DAKOTA)

County of Huakon) ss.I, Philip Geothermal, Inc. the applicant, certify that I have read the foregoing application and have examined the attached map and that the matters therein stated are true and that I intend, and am able to complete the necessary construction.Signed Philip Geothermal, Inc. memberSubscribed and sworn to before me this 1st day of January, 1980Yvonne WEBER

Notary Public (or other qualified officer)

KATHLEEN WEBER, Notary Public
My Commission Expires 1-13-1987

WATER RIGHT APPLICATION APPROVAL

The Board of Water Management hereby approves Water Right Application No. 1691-2

PHILIP GEOTHERMAL, INC.
(Applicant)

Box A, PHILIP
(Post Office Address)

SOUTH DAKOTA 57567
(State)

With the following qualifications

[REDACTED]

When definite plans are completed for secondary uses of this water, specific applications must be submitted to the Water Management Board for permits to cover such uses.

Secondary uses for total utilization of this water must be made within a 10 year period of construction of the well.

Date of first receipt of application JANUARY 8, 1980

Date of return to applicant for correction, amendments or changes required _____, 19____

Date of receipt of corrected application _____, 19____

Approved JANUARY 30, 1980, Recorded in Book 21 Page 130

WATER RIGHT PERMIT NO. 1691-2

The Board of Water Management hereby grants and issues this Water Right Permit No. 1691-2 authorizing the construction of the water use system and the putting of water to beneficial use as stated in the Application and as qualified in the Water Right Application approval, subject, however, to the following limitations and conditions:

1. The date from which applicant may claim right is JANUARY 8, 1980
2. The equivalent of at least one-fifth of the work above specified is to be completed on or before JULY 30, 1980
3. The whole of said work is to be completed on or before JANUARY 30, 1981
4. The limit of time from proof of beneficial use of water appropriated in accordance herewith is JANUARY 30, 1981
5. The water appropriated shall be used for the purpose of GEOTHERMAL HEATING

6. 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.

7. The amount of the appropriation herein granted shall not exceed .7 cubic feet per second; neither shall it exceed the capacity of the above described water supply system, nor shall it exceed the amount of water needed for beneficial uses served, and if for irrigation purposes said appropriation must be limited to not more than 2 acre feet per acre per year and 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 **USED FOR GEOTHERMAL HEATING**

for irrigation on or before JANUARY 30, 1981; said water to be used during the following described

annual period: SEPTEMBER 1ST TO MAY 30TH

Witness my hand this 5th day of FEBRUARY, 1980

THE BOARD OF WATER MANAGEMENT

By

John Hater
Chief Engineer, Water Rights

Certificate of Construction Issued _____, 19____

Water License Issued _____, 19____

12. Principal Features of the Proposed Water Supply System (continued)

D. Well Information

- (1) Drill Hole, Diameter 1 3/4" to 6 1/4", Depth 4,266 ft
- (2) Casing, Type Steel, Diameter 10 3/4" to 5", Thickness J55 40-507
(wood, concrete, steel, etc)
- (3) Screen, Type None, Diameter _____, Length _____
- (4) Gravel Pack, Thickness _____, Length of gravel pack _____
Cement grout behind casing

E. Dugout Information or Estimates

- (1) Surface dimensions, N/A, Depth _____

F. Fill out for Either a Well or a Dugout.

(1) Water Bearing Materials. (Attach a copy of test well log)

- Depth to top of water bearing material 3,895 ft
- Depth to bottom of water bearing material 4,266 ft
- Depth to water (ground surface to water level) Artesian flow

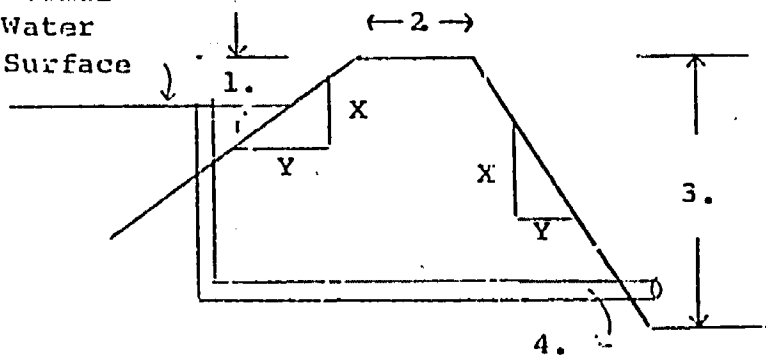
(2) Distance to nearest existing household or livestock watering well.

- On same owner's property none rds.
- On property owned by others none rds.

G. Water Storage Dams

If the proposed water use system contains one or more water storage dams, please show in the space below, the height, length, maximum water depth, surface area, drainage area, storage capacity, dam slope, dimensions, location and size of outlet works, of each storage dam. The location of each water storage dam should be shown on the water right map.

Normal
Water
Surface



1. Freeboard _____
2. Crest width _____
3. Height of Dam _____
4. Outlet dimensions:
Pipe diameter _____
Spillway width _____
- X & Y slope:
Upstream _____
Downstream _____
Surface area of impoundment _____
Drainage area above dam _____

Signature _____ Applicant

No. 1691-2

Publish first publication, on or before January 17, 1980

NOTICE OF HEARING ON
APPLICATION TO APPROPRIATE WATER

Pierre, South Dakota 57501

January 8, 1980

Notice is hereby given that Philip Geothermal, Inc. whose post office address is Philip, South Dakota, has made an application in accordance with the provisions of SDCL 46-1-1 thru 46-1-9, 46-1-14; 46-2-9 thru 46-2-11, 46-2-13; 46-5-1 thru 46-5-8; 46-5-10 thru 46-5-22, 46-5-41; 46-6-3, 46-6-3.1, 46-6-5, 46-6-6.1, 46-6-10, 46-6-14 and Board Rules ARSD 52:01:01:01 thru 52:01:01:13, for a permit to appropriate for beneficial use .7 cubic feet of water per second of time from groundwater

(one well existing) through the Philip School #2 Well, the point (xx) of diversion of which is (xxx) to be located in the NE 1/4 NE 1/4 S 1/4

of Section 14, Twp. 1N, Range 20E. Said water to be used for the purpose of providing Geothermal heat

Geothermal heat

This Application No. 1691-2 will be considered by the Water Management Board at Hearing Room #1, Knapp Building, Church & Illinois, Pierre SD upon the 30th day of January, 1980

at 10 A.M. The Board is authorized to make a determination on this application at the hearing. All interested persons may appear and be heard. Any person who may be affected by a Board decision who desires to present evidence or cross-examine witnesses according to SDCL 1-26 may notify the Board in writing prior to the hearing or orally at the hearing.

This hearing is an adversary proceeding. Any person has the right to be present or to be represented by a lawyer. These and other due process rights will be forfeited if they are not exercised at the hearing. Decisions of the Board may be appealed to the Courts as provided by law.

WATER MANAGEMENT BOARD

BETTY WETLUND
Water Rights Specialist

cc. Philip Geothermal, Inc.
Box A
Philip SD 57567

FORM 6 - Notice of Intent to Appropriate Water
GROUNDWATER

**NOTICE OF HEARING ON
APPLICATION TO
APPROPRIATE WATER
Pierre, South Dakota 57501
January 8, 1980**

January 8, 1980

Notice is hereby given that Philip Geothermal, Inc. whose post office address is Philip, South Dakota, has made an application in accordance with the provisions of SDCL 46-1-1 thru 46-1-9, 46-1-14; 46-2-9 thru 46-2-11, 46-2-13; 46-5-1 thru 46-5-8; 46-5-10 thru 46-5-22, 46-5-41; 46-6-3, 46-6-3.1, 46-6-5, 46-6-6.1, 46-6-10, 46-6-14 and Board Rules ARSD 52:01:01:01 thru 52:01:01:13, for a permit to appropriate for beneficial use 7 cubic feet of water per second of time from groundwater (one well existing) through the Philip School #2 Well, the point (XX) of diversion of which is to be located in the NE¼ NE¼ SE¼ of Section 14, Twp. 1N, Range 20E. Said water to be used for the purpose of providing Geothermal heat.

This Application No. 1691-2 will be considered by the Water Management Board at Meeting Room #1, Knein Building, Church & Illinois, Pierre SD upon the 30th day of January, 1980 at 10 A.M. The Board is authorized to make a determination on this application at the hearing. All interested persons may appear and be heard. Any person who may be affected by a Board decision who desires to present evidence or cross-examine witnesses according to SDCI 1-26 may notify the Board in writing prior to the hearing or orally at the hearing.

This hearing is an adversary proceeding. Any person has the right to be present or to be represented by a lawyer. These and other due process rights will be forfeited if they are not exercised at the hearing. Decisions of the Board may be appealed to the Courts as provided by law.

WATER MANAGEMENT BOARD

/s/ Betty Westlund

BETTY WESTLUND

Water Rights Specialist

(Publish January 17 & 24, 1980)

I, Andrea Cook hereby

Water was taken from the Pioneer Review

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 Philip

County of Haakon and State of South Dakota;
that the said notice was published in said newspaper on the following
two dates:

January 17, 1980

January 24, 1980

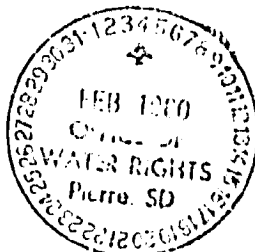
Andrew Clark
(Signature)

Editor

(Title)

February 1, 1980

(Date Signed)



RECEIPT

WATER RIGHTS COMMISSION

No 4 7209

State of South Dakota

January 8

20

PIERRE, _____, 19____

RECEIVED OF Darrel D. Brooks for Philip Geothermal Inc., Philip SD

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

Fee for Application for Permit to Appropriate Water No. <u>1621-2</u> (examination, processing, recording and filing) _____	150	00
Fee for inspecting Construction, and issuing Cert. of Construction No. _____		
Fee for inspecting Beneficial Use, and issuing Water License No. _____		
Fee for issuing Location Certificate-Dry Draw, No. _____		
Fee for filing _____		
Fee for certified copy of _____		
Fee for Print copy of map _____		
Fee for Certifying _____		
Fee for _____ (any other work as provided by law)		
TOTAL	150	00

WATER RIGHTS COMMISSION

By John Barker
Chief Engineer, Executive Officer
JOHN BARKER

Copy of Notes Taken for Permit "1633-1"
Same well is used for #1631-2. Philip
Geothermal, Inc.

1633-1

4/13/81

By J. H. H. H. H.

Well depth 4200 ± Ft.

Flowing 330 gpm wide open

Pressure Max 100 psi.

Temperature 150° F.

Water runs thru an exchanger so the water does
not go thru the school system and corrode the pipes.

The remainder runs thru a number of
business in town. It & business places so that
their buildings.

\$68,000 of fuel. Now 55¢ per day for the
electric pump.

Water is run thru a Treatment plant before it
is out to the Bad River.

1691-2

BENNETT & MAIN

ATTORNEYS AT LAW
318 STATE STREET
BELLE FOURCHE, SD 57717
(605) 892-2011

DONN BENNETT
MAX MAIN
JACQUELINE MARQUEK
NEIL CARBRUD

August 11, 1983

Mr. Kent J. Horne
Horne Farms, Ltd.
722 North 10th Street
Bismarck, ND 58501

RE: Use of Water from City of
Philip Well;
Our File #1561.001.

Dear Kent:

On August 1, 1983, the City Council of Philip, South Dakota, in response to a letter request from you, passed a Resolution agreeing to supply to Horne Farms, Ltd. up to 500 gallons per minute of water from the Philip artesian well for heating and fire prevention purposes. Pursuant to the terms of your letter request, Horne Farms, Ltd. will return all water used for heating purposes to the City. All water used for heating purposes will be in a closed system which, along with the supply and return lines, will be designed by registered professional engineers.

Based on the foregoing, and for the following reasons detailed below, it is my opinion that Horne Farms, Ltd. is not required to obtain a state water permit or a state discharge permit; in fact, it is my opinion that Horne Farms, Ltd. has no legal standing to apply for such permits.

It is my understanding that the City of Philip long ago obtained the necessary water permit to use water from the subject artesian well. The City of Philip is well within its authority in so acquiring such a water permit and in using water from the subject artesian well, since SDCL §9-47-1 (1983 Interim Supp.) provides that every "municipality may construct, establish, operate and maintain a system of water works and facilities in connection therewith; may regulate the distribution and use of water supplied thereby; [and] may acquire a suitable supply of water, whether within or without the municipality." Further, SDCL §9-47-20 provides that "[e]very municipality shall have power to establish and maintain artesian wells." It is my opinion that Horne Farms, Ltd. need not obtain a separate water permit of its own to purchase water

from the City's artesian well, for the reason that by purchasing water from the City of Philip, Horne Farms, Ltd. is not "appropriating" water, but is only purchasing it from the City, and the City is authorized to so sell water, pursuant to SDCL §9-47-1 (1983 Interim Supp.). Horne Farms, Ltd. has no legal necessity to comply with SDCL ch. 45-6. Purchasing water from an entity that already has a valid permit, especially a municipality, is not the same as appropriating water.

With regard to any discharge permit, perhaps the issue which is more important than whether one is required is the issue of who must obtain such a permit if one is required. Based on the Philip City Council's Resolution accepting your letter proposal, which proposal states that all water will be returned to the City at a location designated by the City, it is my opinion that the City is the only entity that could apply for such a permit if any is required. Stated directly, since the City is the entity disposing the utilized water, it must apply for and obtain any needed discharge permit. SDCL ch. 34A-2, and especially SDCL §34A-2-27, contain provisions on discharge which are aimed at the entity doing the discharging, which in this case is the City of Philip.

Mention should also be made of SDCL §§46-6-14 and 21 (1983 Interim Supp.) which together provide in substance that owners of property on which large capacity artesian wells are located and owners and persons in control of large capacity artesian wells shall not allow such wells to flow to waste or to flow without proper checking, if it is feasible to control the flow. It has been asserted that these new statutes may be some authority for requiring the City of Philip to diminish the flow of its artesian well. However, by passing the above-mentioned Resolution on August 1, 1983, the City of Philip has obligated itself to provide to Horne Farms, Ltd. up to 500 gallons per minute. Therefore, it is my opinion that the City will honor the Resolution and so provide you with water. If the City would not require any other water from its well other than the amount required by Horne Farms, Ltd., which is limited to 500 gallons per minute, and if it were feasible to reduce the flow of the well to the quantity required by Horne Farms, Ltd., then it may be proper for the City to make such a reduction; but in no event could the City reduce the flow below the requirements of Horne Farms, Ltd.

In summary, the City of Philip will control the water both before and after it is utilized by Horne Farms, Ltd.; you will take water from the City just as any other consumer, and you will return the used water to the City just as any other consumer. In such case, it is my opinion that Horne Farms, Ltd. is not required to obtain its own separate water permit and has no basis on which to apply for any discharge permit.

If you have any questions, please feel free to contact

Sincerely yours,

BENNETT & MAIN

Max Main

Max Main

MM/cg

Permit No. 1691-2
Bad River - Water District

Report Of Examination Of Works And/Or Application of Water To Beneficial Use

TO: Chief Engineer, Division of Water Rights, DENR, Foss Bldg., Pierre, SD 57501

I have this day, (June 11, 1992), made a thorough examination of the water use system constructed by Philip Geothermal, Inc. of Philip, SD holder of Permit No. 1691-2, bearing the priority of January 8, 1980 authorizing the diversion of 0.7 cu. ft. per second of groundwater for geothermal heating purposes, in Haakon County.

I have to report on the conditions of the same as follows:

A. Works used to divert the water:

A well 4,266 feet deep, located 2000 feet N12°W of the SE Corner of Sec.14, T1N-R20E (authorized by Water Right No. 1633-2).

B. Works used to transport water to place of use:

A pipeline as described in Water Right No. 1633-2, transports water to a point 675 feet N22°E of the SW Corner of Sec.13, T1N-R20E. A double pipeline consisting of 4" diameter Spun Fiberglass, glass lined pipes, extends from a point 675 feet N22°E of the SW Corner of Sec.13, T1N-R20E through 8 buisnesses to a point 500 feet S85°E of the SW Corner of Sec.13, T1N-R20E. A single pipeline consisting of 4" diameter Spun Fiberglass, glass lined pipe, extends from a point 450 feet S85°E to treatment ponds located 1510 feet S55°W of the SW Corner of Sec.13, T1N-R20E. Before the water is treated with Barium Chloride before being discharged to the Bad River at a point 1880 feet S53°W from the NE Corner of Sec. 23, T1N-R20E.

C. Works used to apply water to beneficial use:

Water runs through heat exchangers at each buisness. The water is then piped to treatment ponds and discharged to the Bad River

The system is in the following condition good. The point of diversion is located 2000 feet N12°W of the SE Corner of Sec.14, T1N-R20E, [(60 feet N83°W from the SE corner of Lot 6, Block 2 High School addition to the City of Philip,)(NE 1/4 NE 1/4 SE 1/4 Sec. 14, T1N-R20E)]. The works are capable of diverting and conveying to the place of use 0.74 cu. ft. per second of water which is to be used for geothermal heating. Water has been put to beneficial use to the maximum extent as follows:

8 buildings located in Block One, City of Philip

and the license should be issued for 0.7 cfs.

Applicable permit qualifications have been complied with: Yes No

Exceptions to compliance are:

Date: November 21, 1993



Ken Buhler
Natural Resources Engineer
DENR, Water Rights Division

1691-2

File No. 1691-2

**Water Rights Division
File Documentation**

NAME OF PERSON OR FILE: Philip Geothermal, Inc.

ADDRESS: Box A, Philip, SD 57567 COUN. ... Haakon

DATE: November 24, 1993 TELEPHONE: (605) 859-2540 (Kemnitz)

RE: Inspection of Water Permit 1691-2

COMMENTS:

On June 11, 1992, I met with Corky Thorson, Darrel Brooks, Charle Ekstrum, and Ralph "Chip" Kemnitz, to discuss Water Permit No. 1691-2. I was informed that water from a well owned by Haakon School District #27-1, authorized by Water Right 1633-2, is used to heat to 8 buisnesses including the Bank, Corky's Super Value, Kennedy Implement, Don Burns (old Chevy garage and Philip Motors), John Ringer (Ringer Appliance), City of Philip -Fire Hall, and Kemnitz Law. The system was engineered by Raymond Hengal of Hengal Associates, P.C.; Rapid City SD. The Report of Examination of Works which accompanies, describes the system.



Ken Buhler
Natural Resources Engineer



1691-2

DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE SOUTH DAKOTA 57501-3181

January 10, 1994

1691-2

Darrel Brooks
Philip Geothermal, Inc.
Box A
Philip, SD 57567

Dear Mr. Brooks:

The inspection of your water use system and the inspection of the extent of application of water to beneficial use, as developed under Water Permit No. 1691-2, has been completed. Your final water right document, the Water License, can now be issued.

Statutes require that we charge a \$50.00 fee for the inspection and issuance of the Water License. Upon receipt of the \$50.00 fee from you, we will begin processing your Water License.

South Dakota Water Law 46-5-30.1 requires that a permit holder may not divert water until the \$50.00 license fee has been paid. Please contact us if you have any questions.

Sincerely,

Cheryl F. Frost
Secretary
Water Rights Division
(605) 773-3352

NOTE: On check or money order, please specify your permit number. This will insure proper handling of the fee.

1691-2

First National Bank In Philip

Box 910
Philip, South Dakota 57567
605 859-2525

January 13, 1994

Dept. of Env. & Natural Resources
523 East Capitol
Pierre, S.D. 57501-3181



Charles W. Ekstrum
President

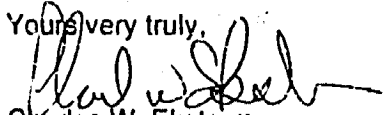
Re: Your letter 1-10-94

Ms: Frost:

I enclose Philip Geothermal, Inc.'s check in the amount of \$50.00 to cover you fee for inspection and issuance of the water license.

I believe our permit number is 1691-2.

Yours very truly,


Charles W. Ekstrum
Treas. Philip Geothermal, Inc.

P.S. Please mail all future correspondences in care of myself at the above address.

RECEIPT

Division of Water Rights

South Dakota Department of Environment and Natural Resources

Pierre, January 14, 1995

1691-2
413994

RECEIVED OF Philip Geothermal, Inc., First Nat'l Bank in Philip, Box 910, Philip, SD 57567
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. 1691-2	50	00
Fee for Filing Transfer Form _____		
Fee for Filing Extension Request _____		
Fee for _____		

(Any Other Work Provided by Law)	Total	50 00

By John Hatch
Chief Engineer

11691-2

ENGINEERING & MINING EXPERIMENT STATION
of the
SOUTH DAKOTA SCHOOL OF MINES & TECHNOLOGY

REPORT OF ANALYSIS

Rapid City, S. D., March 1979, 19--

Mr. Philip High School

Philip, SD 57567

The sample of water has been analyzed and the results obtained are as follows:

Certificate No. 789868

Your sample No. #2



SUBSTANCE	mg/L	SUBSTANCE	mg/L
Total Dissolved Solids	1128	Calcium (Ca)	205
Volatile Dissolved Solids		Magnesium (Mg)	44
Total Suspended Solids	17	Sodium (Na)	15
Volatile Suspended Solids		Potassium (K)	8
		Iron (Fe)	0.03
Total Hardness	692	Manganese (Mn)	0.07
Carbonate Hardness	105		
Non-Carbonate Hardness	587		
		Chloride (Cl)	11
pH --- 7.5		Sulfate (SO ₄)	778
Alkalinity (Phenolph'n)	0	Silica (SiO ₂)	
Alkalinity (Met. Orange)	105	Nitrate (N)	.305
		Orthophosphate (PO ₄)	.032
Turbidity (J.U.) ---		Total Phosphate (PO ₄)	.058
Spec. Conductance ---			

REMARKS:

The Engineering and Mining Experiment Station assumes no responsibility as to the source of the above samples.

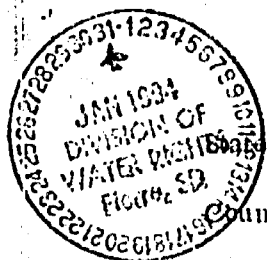
Analyst.

D. D. Carda, Research Associate

hb

From DR. J.P. GRIES
SDSM&T

11691-2



South Dakota

= Philip School Dist
Farm Madison well No 2

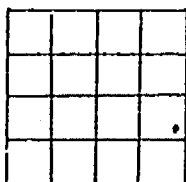
County Haakon

Company City of Philip

Sec. 14 T. 1N R. 20E Driller Northern Wyoming Drilling Co.

1550 FSL
1500 FEL

Authority _____ Samples Set 646



Date spudded Dec. 1978 Completed Feb. 1979

2239 KB

Elevation 2232 gna Method TM T.D. _____

150000

70000

Casing 10" @ 1000 ft 7" @ 3723 KB

Quad Philip

Static level Flow

Date 7/7

Flow _____ SIP _____ Logs Birdwell 1ES Density _____

Remarks Flow (after seal?) 290 gpm

Sharon Spr best	1078 - 1057
T. No 10	1260
T. No 10 ch	1360
3 No 10 ch	1476
T. No 10 fr	1742
T. No 10 line	1812
X test	1850-53 or 1965-71
1st D-4	2078
T. No 10	2112
Sh-11 fr	2418
F-9	2556
Finer	2685
dsu	2694
Orange	2838
T. No 10	2980 or 2996
T. Madison	3250 or 3875



FEB 2 1994

1691-2
DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE SOUTH DAKOTA 57501-3181

1691-2

Philip Goothermal, Inc.
c/o Charles W. Ekstrum, Treasurer
P.O. Box 910
Philip, SD 57567-0910

Dear Mr. Ekstrum:

Enclosed is Water License No. 1691-2 and Receipt No. 413994 for \$50.00 which was assessed for an inspection and issuance of the license. Water License No. 1691-2 is the final document which completes the process of obtaining a water right.

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

Very truly yours,

JOHN HATCH, Chief Engineer
Water Rights Division
(605) 773-3352

gm
enclosures

1691-2

STATE OF SOUTH DAKOTA
WATER LICENSE NO. 1691-2

(1) Philip Geothermal, Inc., %Charles Ekstrum, Treasurer, PO Box 910, Philip, SD 57567-0910 made Application No. 1691-2, January 8, 1980 for a water permit to appropriate 0.70 cubic feet of water per second from groundwater (one existing well), Haakon County, South Dakota for geothermal purposes. Permit No. 1691-2, with a priority date of January 8, 1980 was approved January 30, 1980 and issued to the applicant(s) for diversion of water with construction of the described water supply system to be completed on or before January 30, 1981 and for the application to beneficial use of said water on or before January 30, 1981.

(2) It is certified that the applicant has complied with the provisions of South Dakota State Law relating to completion of the construction of the water supply system and is entitled to divert 0.70 cubic feet of water per second for beneficial use. The location of the diversion point is 2000 feet N 12°W of the SE corner of Section 14, T1N, R20E (NE¼NE¼SE¼).

(3) The applicant has complied with the provisions of South Dakota State Law relating to the application of water to beneficial use. The water from the well is utilized by the Haakon County School District (authorized under Water Right No. 1633-2) for geothermal purposes. The water is then transported through a pipeline and utilized by Philip Geothermal, Inc. in eight buildings located in Block One, City of Philip.

(4) Pursuant to South Dakota Water Law 46-5-30.1 Philip Geothermal, Inc., %Charles W Ekstrum, Treasurer the holder and/or owner of Water Permit No. 1691-2 is issued a license to appropriate water, the right to use 0.70 cubic feet of water per second from groundwater (one well) with a priority date of January 8, 1980 from the location specified in (2) of this license. The water is utilized for the purpose of geothermal use. This license is subject to any limitations or qualifications listed in Water Permit No. 1691-2 and subject to South Dakota State Law.

John Hatch
JOHN HATCH, Chief Engineer
Water Rights Division
Department of Environment and Natural Resources

FEB 2 1994

date

T1N-R20E

WELL AUTHORIZED BY
WATER RIGHT NO. 1633-2

N

1691-2 GETS WATER
DOUBLE PIPELINE BEGINS

LAST BUSINESS ON 1691-2
DOUBLE PIPELINE ENDS

TREATMENT
PONDS

DISCHARGE
TO BEAD RIVER

Alan Bush
NATURAL RESOURCE ENGINEER
WATER RIGHTS DIVISION

1691-2

HAAKON SCHOOL DISTRICT 27-1 WELL LOCATED IN LOT 6 BLOCK 2 HIGH SCHOOL
ADDITION TO THE CITY OF PHILIP
HAAKON COUNTY, SOUTH DAKOTA

