

Considered: _____

WATER PERMIT NO. 5218-3

MAP No. Same 987-3881

Name of Applicant City of Canton

Post Office Address 123 S Main, Canton SD 57013

Amount of Water Claimed 1.34 cfs Total Acres NA

Source of Water Supply ground water, 2 wells (Dakota Sandstone)

Water to be used for municipal use County Lincoln

About 1/2 miles W of Canton.

PROOF OF PUBLICATION: Received _____ Not Received _____

APPLICATION: Approved _____ Subject to _____

F.F. & C.L. Adopted _____ Not Approved _____ Deferred _____

PRIORITY _____ Date Received Aug 25, 1988 Fee \$400.00 Remarks _____

Corrected Application Received _____ Period of Annual Use Jan 1 - Dec 31

WATER QUALITY APPROVAL RECEIVED NA APPROVED/CONDITIONAL (Circle one)

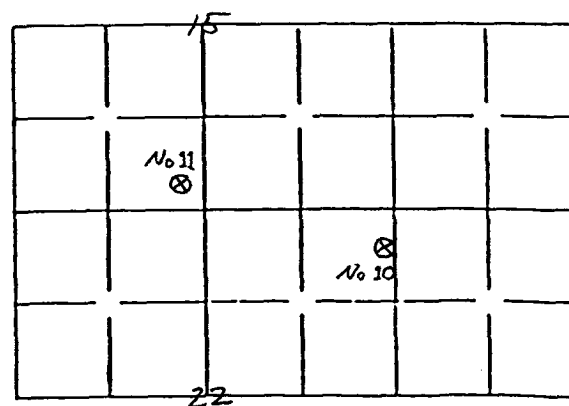
WI-1 Description same as Application YES _____ NO _____ REMARKS _____

Diversion Point Well No. 10: NE 1/4 NE 1/4 section 22;

well No. 11: SE 1/4 SW 1/4 section 15; all in

T98N-R49W

Land to be Irrigated NA



Well Log: Driller SDGS Licensed YES _____ NO _____

Depth of Well 558 to 590 REMARKS _____

Type of Map plat PREPARED BY D.G.R. Reviewed and the Number assigned on August By Ron Duval

**SOUTH DAKOTA
WATER PERMIT**

Date of first receipt of application August 25, 1988

Date of return to applicant for correction, amendments or changes required September 1, 1988

Date of receipt of corrected application September 23, 1988

The Water Management Board approved Water Permit Application No. 5218-3

on October 6, 1988 for City of Canton

(Applicant)

123 S. Main

(Street, RR or Box)

Canton

(City)

South Dakota

(State)

57013

(Zip Code)

authorizing the construction of the water use system and the placing of water to beneficial use subject to the following limitations, conditions and qualifications:

1. Water Permit No. 5218-3 appropriates 1.34 cfs from 2 wells 558 to 590 feet deep. The wells are to be located in the NE $\frac{1}{4}$ NE $\frac{1}{4}$ Section 22; SE $\frac{1}{4}$ SW $\frac{1}{4}$ Section 15; both in T98N, R49W.
2. The water appropriated shall be used for the purpose of supplying the City of Canton
and may not exceed the amount of water needed for beneficial use for municipal purposes
3. The water is to be used during the following described annual period: January 1 - December 31
4. The date from which applicant may claim the right is August 25, 1988
5. One-fifth of the construction is to be completed on or before April 6, 1991
6. All construction is to be completed on or before October 6, 1993
7. Water is to be put to beneficial use on or before October 6, 1997
8. Water rights obtained in compliance with the laws of the State of South Dakota may not be unlawfully impaired by this appropriation.

QUALIFICATIONS

1. That the City of Canton report to the Chief Engineer annually the amount of water withdrawn each year from the Dakota Formation.
2. The wells authorized by Permit No. 5218-3 shall be constructed by a licensed well driller and construction shall comply with Water Management Board Well Construction Rules, Chapter 74:02:04 with the well casing pressure grouted with cement (bottom to top) from the producing formation to the surface pursuant to Section 74:02:04:30.
3. The wells approved under this Permit will be located near domestic wells and other wells which may obtain water from the same aquifer. The well owner under this Permit shall control his withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights.

WATER MANAGEMENT BOARD

By: John H. [Signature]

Chief Engineer

FEB 13 1989

Division of Water Rights

Dept. of Water and Natural Resources

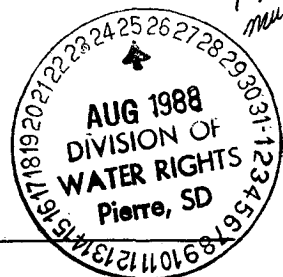
Mail to: Water Rights Div.
DWNR, Foss Bldg.
Pierre, SD 57501
(605) 773-3352

No. 5218-3 Hydrologic Unit 10170203
Map No. Same Basin Big Sioux
Newspaper Canton Sioux Valley News, Box 255 (Thurs)

Application For Permit To Appropriate Water Within The State Of South Dakota

Check use of water: Industrial ☐ Commercial ☐ Municipal ☒ Other Common Distribution System ☐
Rural Water System ☐ Suburban Housing ☐ Geothermal Heat ☐ Institutional ☐ Recreational ☐
Domestic ☐ (above 18gpm) Other ☐ *1 app*

Type of Application: Check one or more of the following



New ☒ Vested Right ☐ Future Use ☐ Change Use ☐

☐ Amend Permit No. _____ with old priority date retained

Change diversion point(s) ☐ Add diversion point(s) ☐ Other ☐ _____

☐ Application to: Change diversion point(s) ☐ Add diversion point(s) ☐ on Permit No. _____

☐ Construction to use water reserved by Future Use Permit No. _____

1. Name of Applicant City of Canton, South Dakota Phone No. 987-3881

Post Office Address 123 S. Main Canton State SD 57013
(Street, RR or Box) (City) Zip Code

2. Amount of water claimed (c.f.s.) 1.34 CFS

3. Source of water supply 2 wells, Dakota Sandstone Aquifer

4. Location of point of diversion Well No. 10, NE 1/4, Sec. 22, 98N, 49W

Well No. 11, SW 1/4, Sec. 15, 98N, 49W. Map attached

County Lincoln

5. Counties where water will be used Lincoln

6. Annual period during which water is to be used Year around January 1 - December 31

7. Give a brief description of proposed project. When available include any preliminary engineering report or other reports or information that will help explain the project. (Attach sheet if more space is needed)

Wells No. 10 and 11 are required by the City to provide their present, peak-day needs. Test holes have been constructed at each site. Logs of the test holes and an area map are attached.

Attachments: Attach Form 2A if diversion from a well or dugout, or if storage of water, is proposed. Attach map (see instruction)

STATE OF SOUTH DAKOTA)
County of Lincoln)^{ss}

I, John Anderson, Mayor of Canton the applicant, certify that I have read this application, have examined the attached map and that the matters stated are true and that I intend, and am able to complete the necessary construction.

Signed John D. Anderson

Subscribed and sworn to before me this 24th day of August 19 88

John M. Breckman
Notary Public

My Commission Expires May 1993

Supplemental Information

(type or print in ink)

1. Well Information - Proposed construction

- a) Drill Hole Diameter 16" upper/12" lower Depth 558' to 590'
- b) Casing Type steel Diameter 12" Thickness 0.375
- c) Screen Type stainless steel Diameter 6" Thickness 0.025 slot
- d) Gravel Pack Thickness 3" Length of Gravel Pack _____
- e) Depth to Top of Water Bearing Material 298' to 327'
- f) Depth to Water (ground surface to water level) estimated at 100'
- g) Distance to nearest existing domestic well:
- On applicants property _____ On property owned by others _____

2. Dugout Information Estimates

- a) Surface Dimensions _____ Depth _____
- b) Depth to water (ground surface to water level) _____

3. Water Storage Dams

If the proposed water use system contains one or more storage dams, please furnish the information requested below. The locations of each dam should be shown on the map submitted with the application.

- a) If a private engineering firm or government agency was involved in the design of this dam please give their name and address

b) Freeboard _____

c) Crest Width _____

Crest Length _____

d) Height _____

e) Primary Outlet Capacity _____
If Pipe, diameter _____

f) Secondary Spillway Capacity _____
Spillway width _____

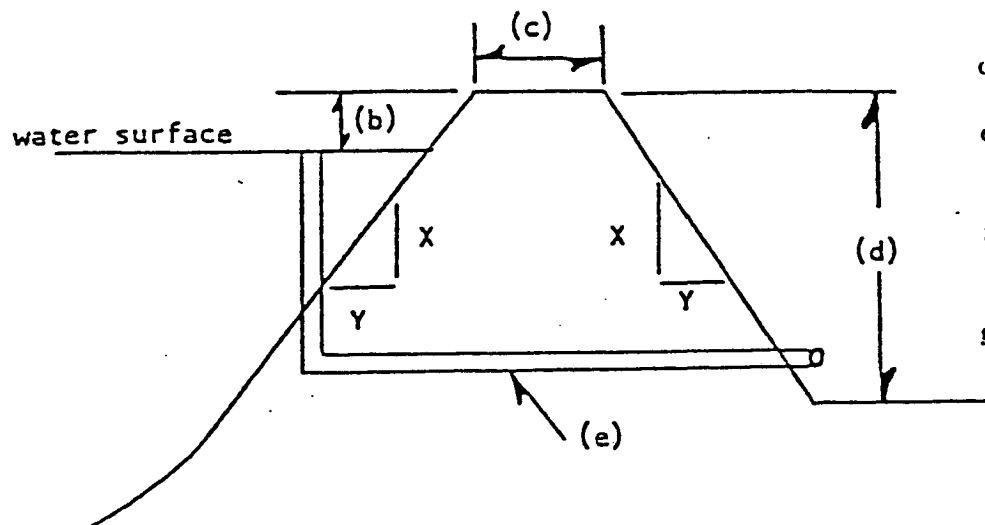
g) X & Y Slope
Upstream _____

Downstream _____

Surface Area of Impoundment _____

Storage _____ acre feet

Drainage area above dam _____



X John D. Anderson
Signature of Applicant

RECEIPT

Division of Water Rights

South Dakota Department of Water and Natural Resources

611400

Pierre, September 23, 1988

RECEIVED OF City of Canton, Canton, SD 57013

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

Fee for Application for Permit No. <u>5218-3</u> to Appropriate Water, to construct works and to put water to beneficial use _____	400	00
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 _____		
Fee for Filing Extension Request _____		
Fee for Certified Copy of _____		
Fee for Print Copy of Map _____		
Fee for Certifying _____		
Fee for _____		
(Any Other Work Provided by Law)	Total	400 00

By

Chief Engineer

John A. H. H.
JOHN A. H. H.

Canton, S. D.

#10

GROUND LEVEL

300' Total Setting
Including Pitless Unit

Draw Down Tying 300'

7' Bury

420'

580'

12" 0.375 wall
49.56 lbs. per ft.
A53-44A
P.E. steel casing
6"
50 H.P.
S.B.

neat
cement
grout
250 bags

30' lap

26' 6" P.S. 304 SS
leader pipe

Luther
Maddox
gravel
well pack

164' 6" P.S. 304 SS
#25 slot screen
with S.S. plate
bottom

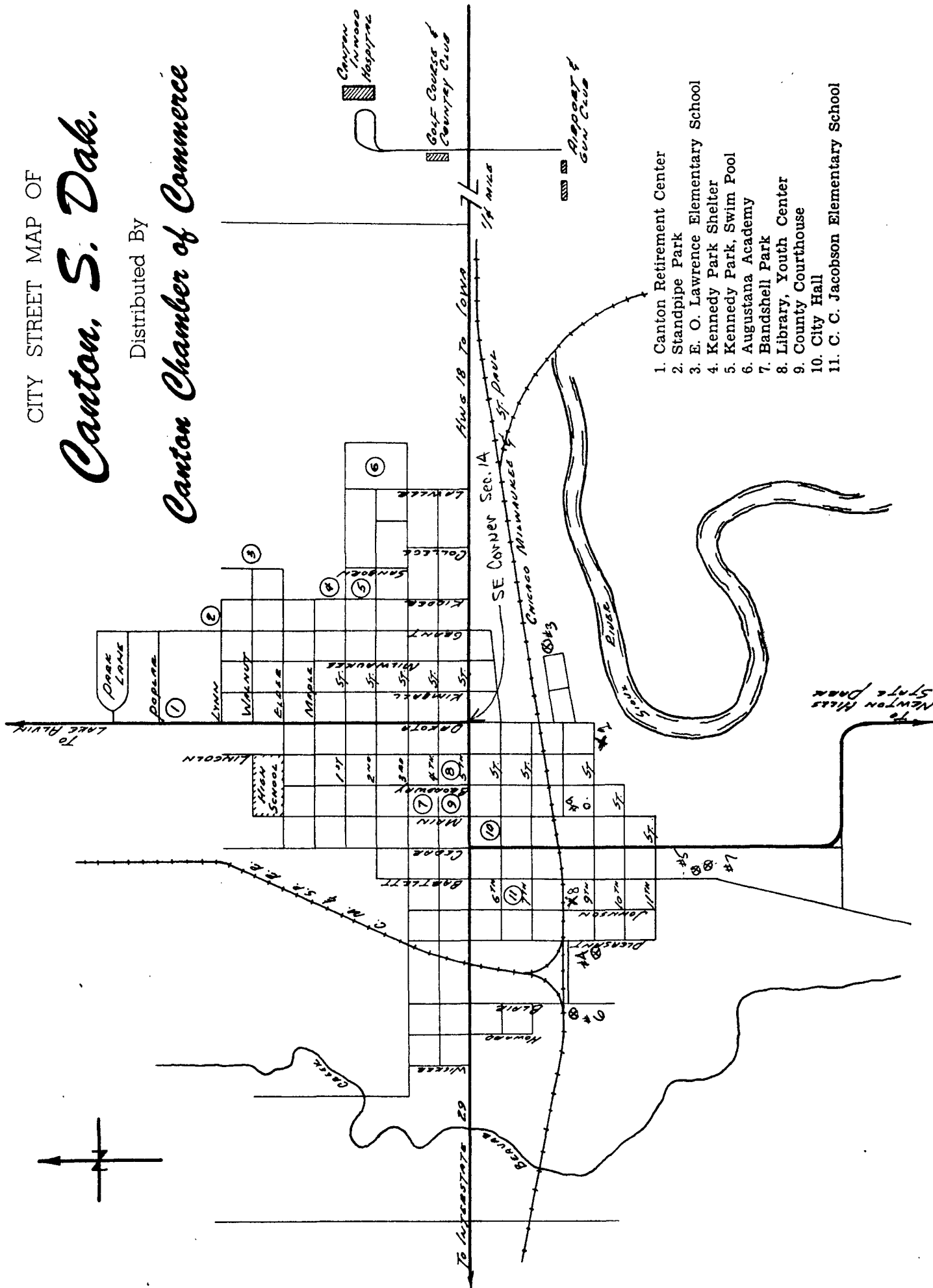
Drawing not to scale

[illegible]

Canton, S. Dak.

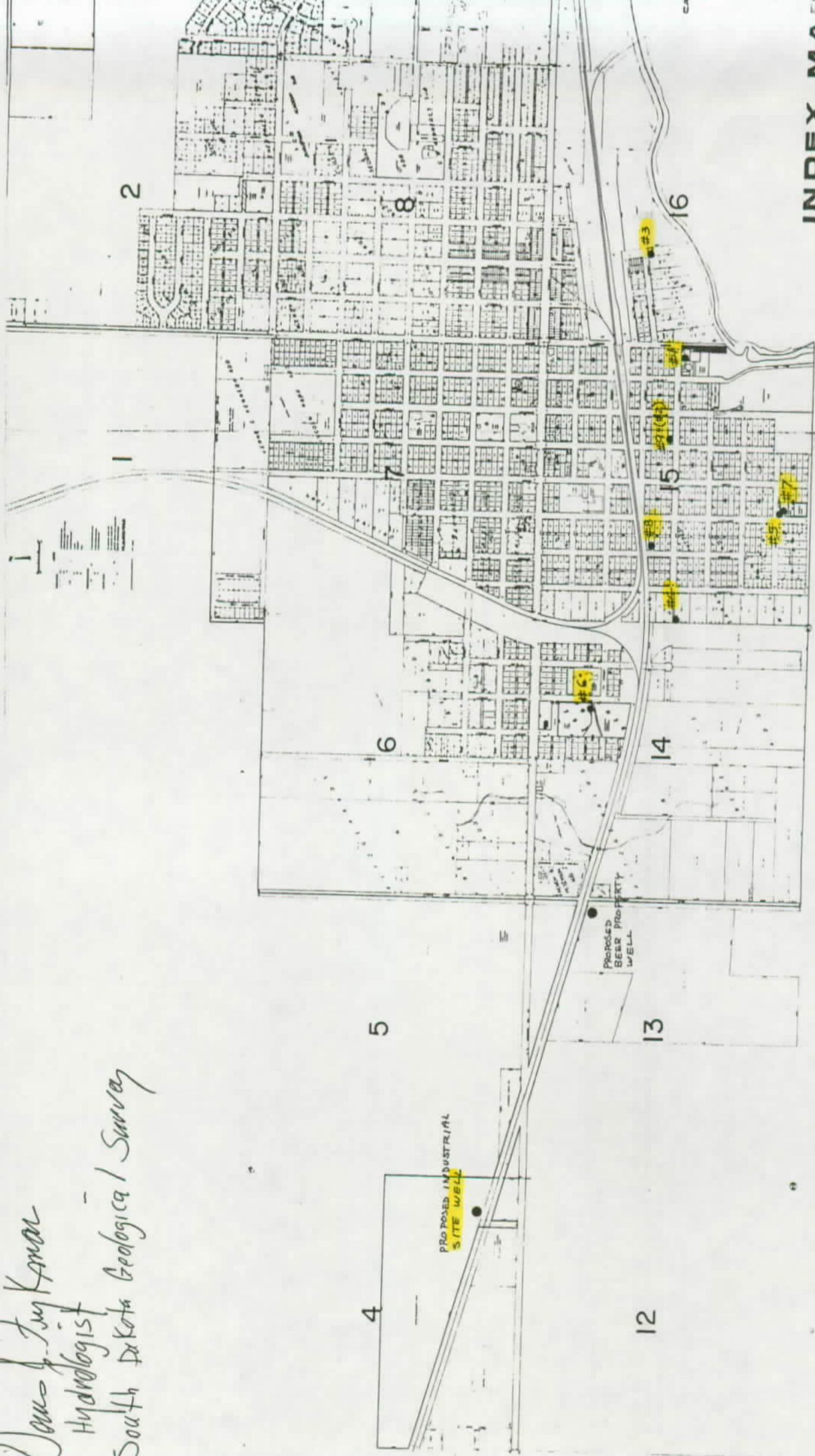
Distributed By

Canton Chamber of Commerce



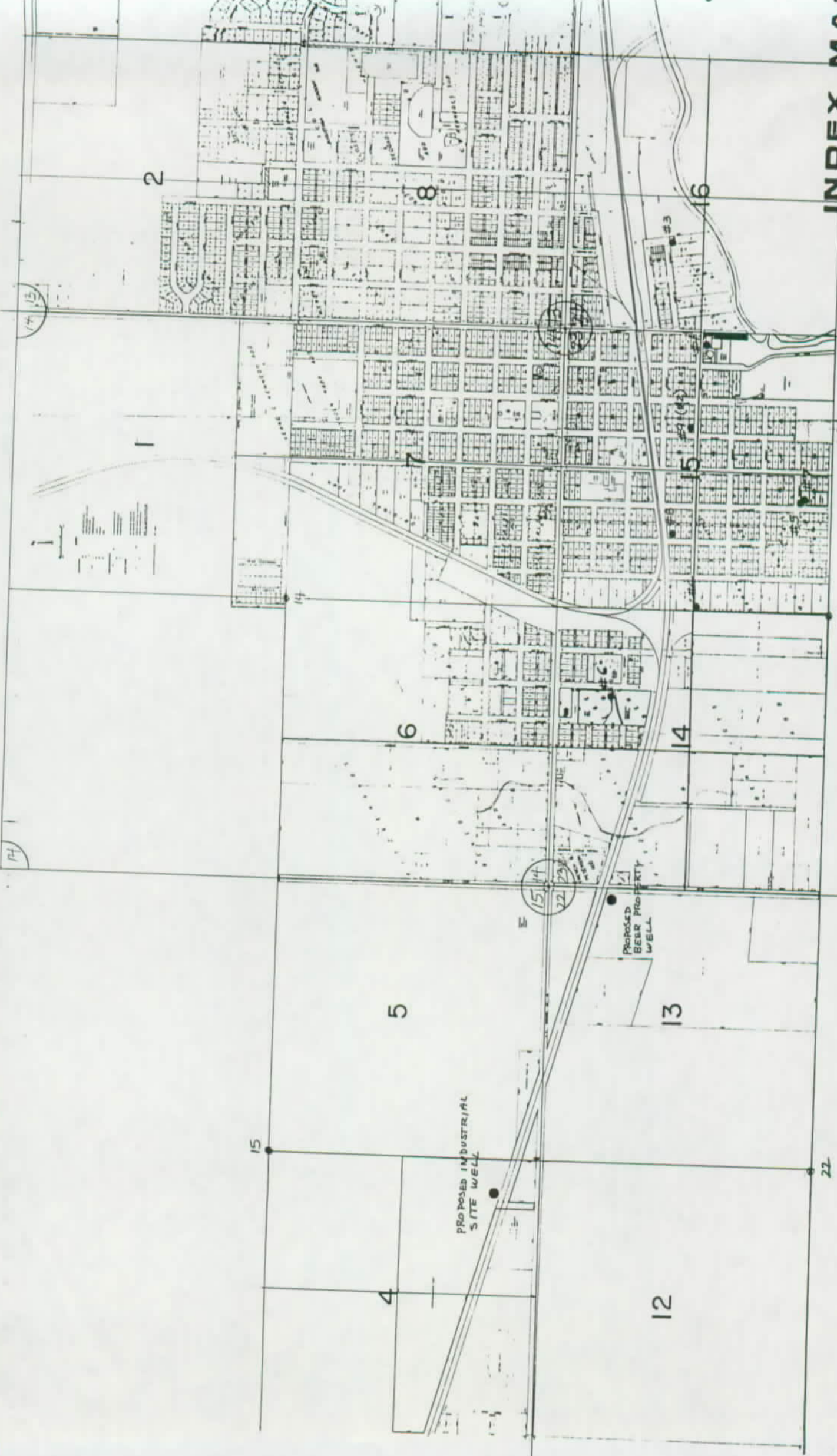
1. Canton Retirement Center
2. Standpipe Park
3. E. O. Lawrence Elementary School
4. Kennedy Park Shelter
5. Kennedy Park, Swim Pool
6. Augustana Academy
7. Bandshell Park
8. Library, Youth Center
9. County Courthouse
10. City Hall
11. C. C. Jacobson Elementary School

Dan J. J. J. J. J.
Hydrologist
South Dakota Geological Survey



INDEX MAP

Appl. No. 5218-3



Dear Property

SOUTH DAKOTA GEOLOGICAL SURVEY

DEPARTMENT OF NATURAL RESOURCE DEVELOPMENT

COMPANY South Dakota Geological Survey

LOCATION SE 4 NE 1/4 NE 1/4 Sec 22-T 98N-R 49W

WELL K2-88-22-

COUNTY Linn STATE SD

ELEVATION 1245 FT

K.B. _____

G.L. _____

LOGGING UNIT State Log

	RUN No. 1	RUN No. 2	MUD	RUN No. 1	RUN No. 2
DATE	8-9-88				
FIRST READING	565		pH		
LAST READING	7		DENSITY		
FOOTAGE LOGGED	558		NATURE		
BOTTOM (Driller)	Sec		VISCOSITY	°F	°F
CASING (from log)			RESISTIVITY	°F	°F
CASING (Driller)			RES. @ BHT	°F	°F
CASING SIZE			B.H.T.		
BIT SIZE:	5 3/4				
BIT SIZE:					
			LOGGED BY: <u>L.J. Frykman</u>		
			WITNESSED BY:		

REMARKS _____

FORMATION TOPS: Cardale Shale - 10, Greenhorn Limestone - 223, Brewster Shale - 256, Dakota Formation - 298

BOTTOM HOLE FORMATION Cardale

GAMMA RAY 100/2 COUNTS/SECOND

SELF POTENTIAL _____ MILLIVOLTS/INCH

RESISTANCE 50 OHMS/INCH

INDUSTRIAL SITE

7

20

40

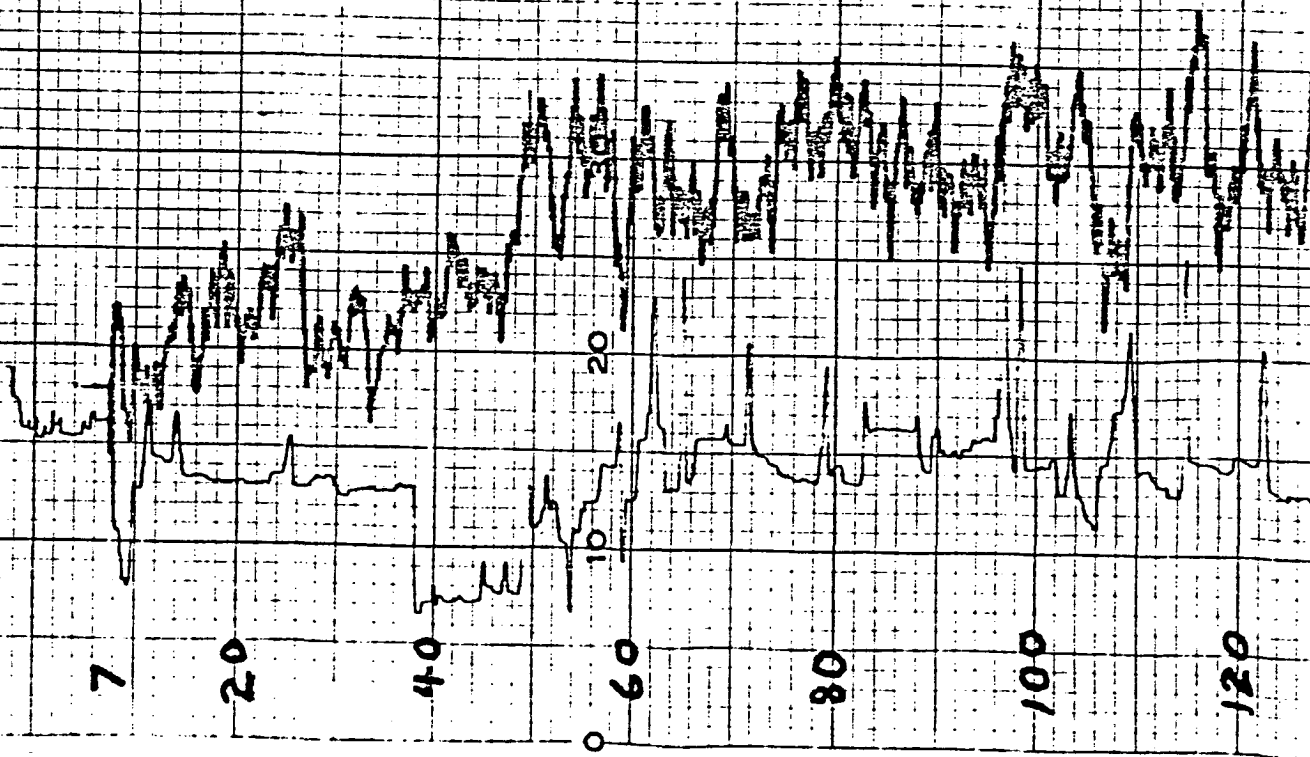
60

80

100

120

100
90
80
70
60
50
40
30
20
10
0



7

20

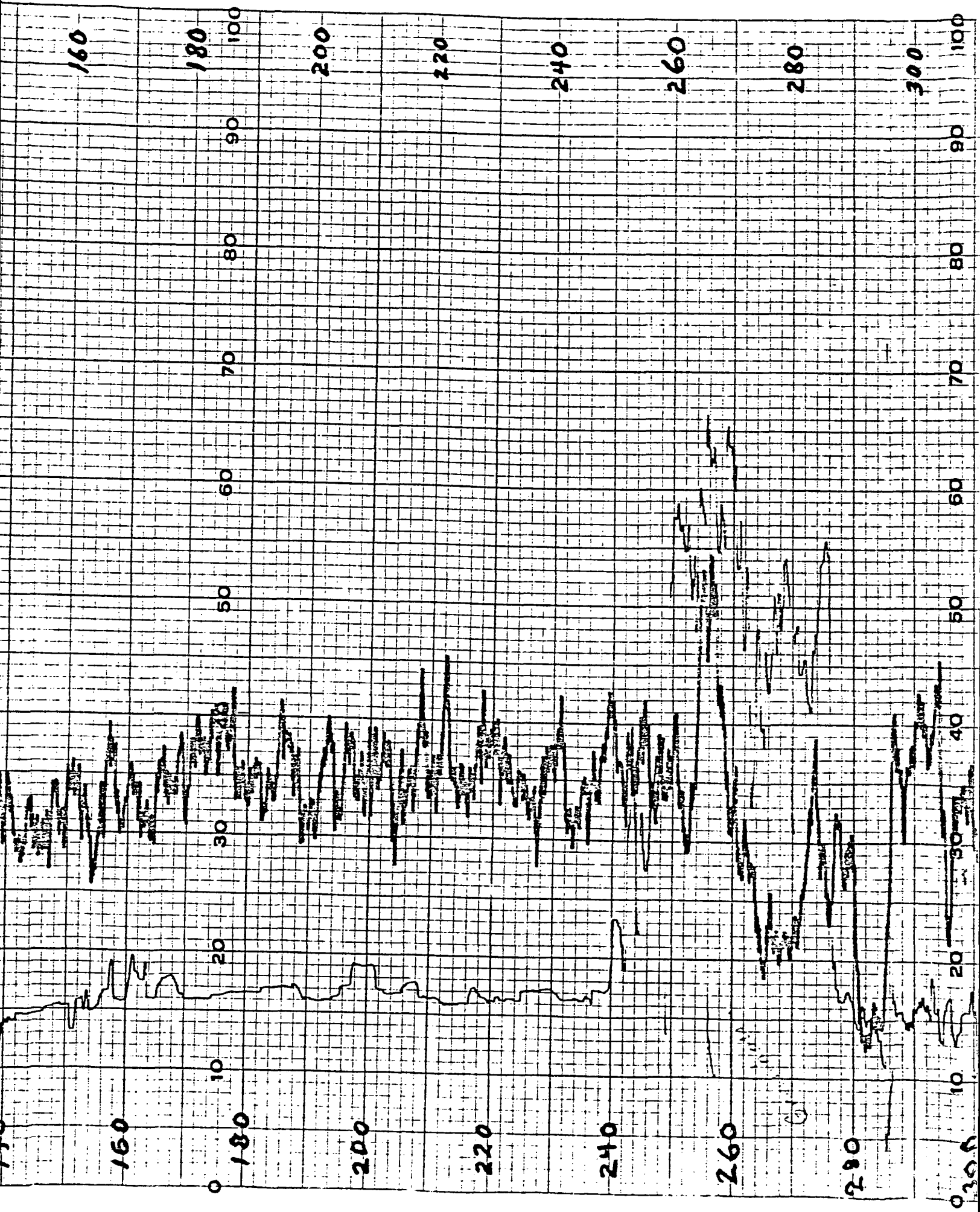
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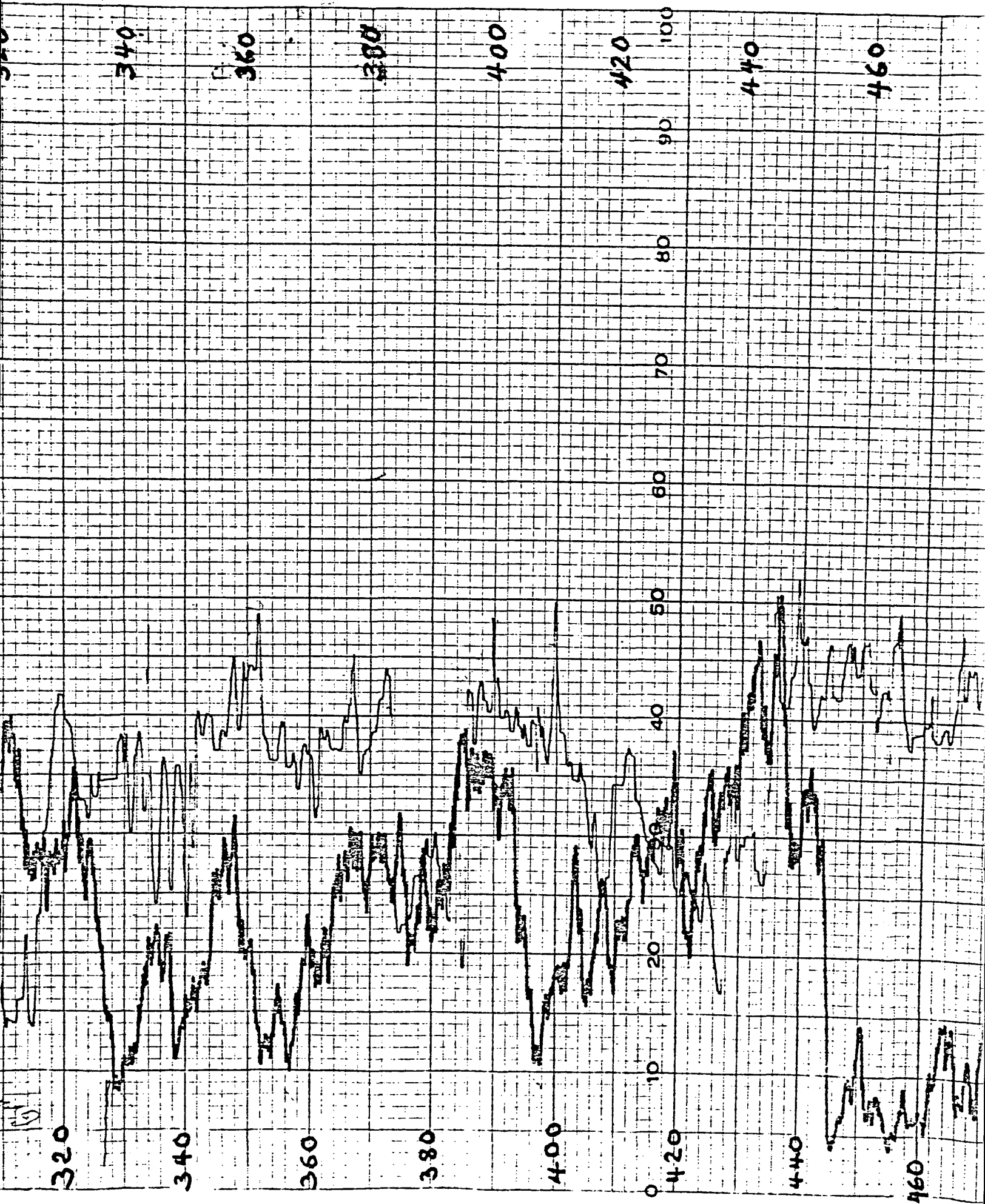
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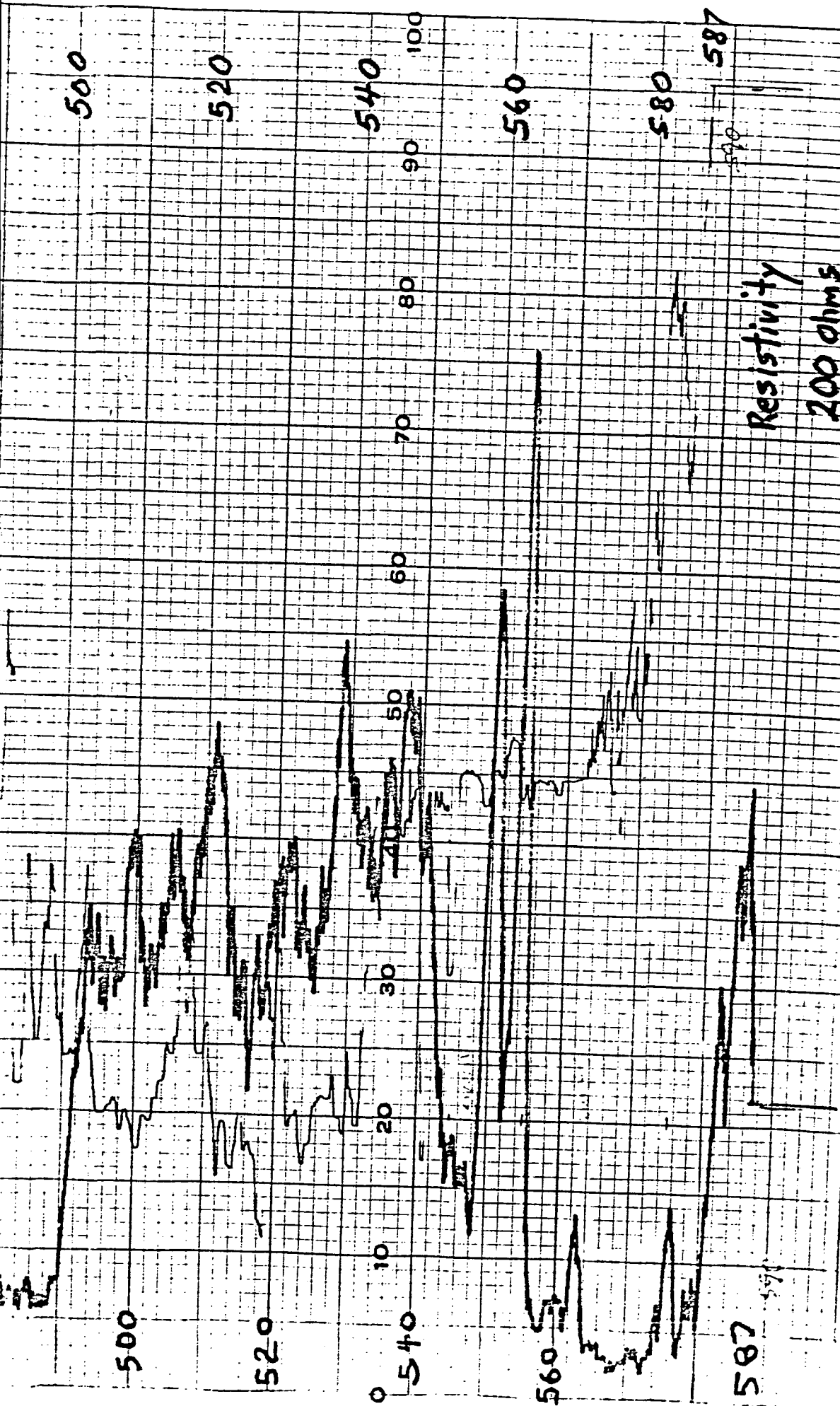
80

100

120







Resistivity
200 ohms

Gamma
100/2

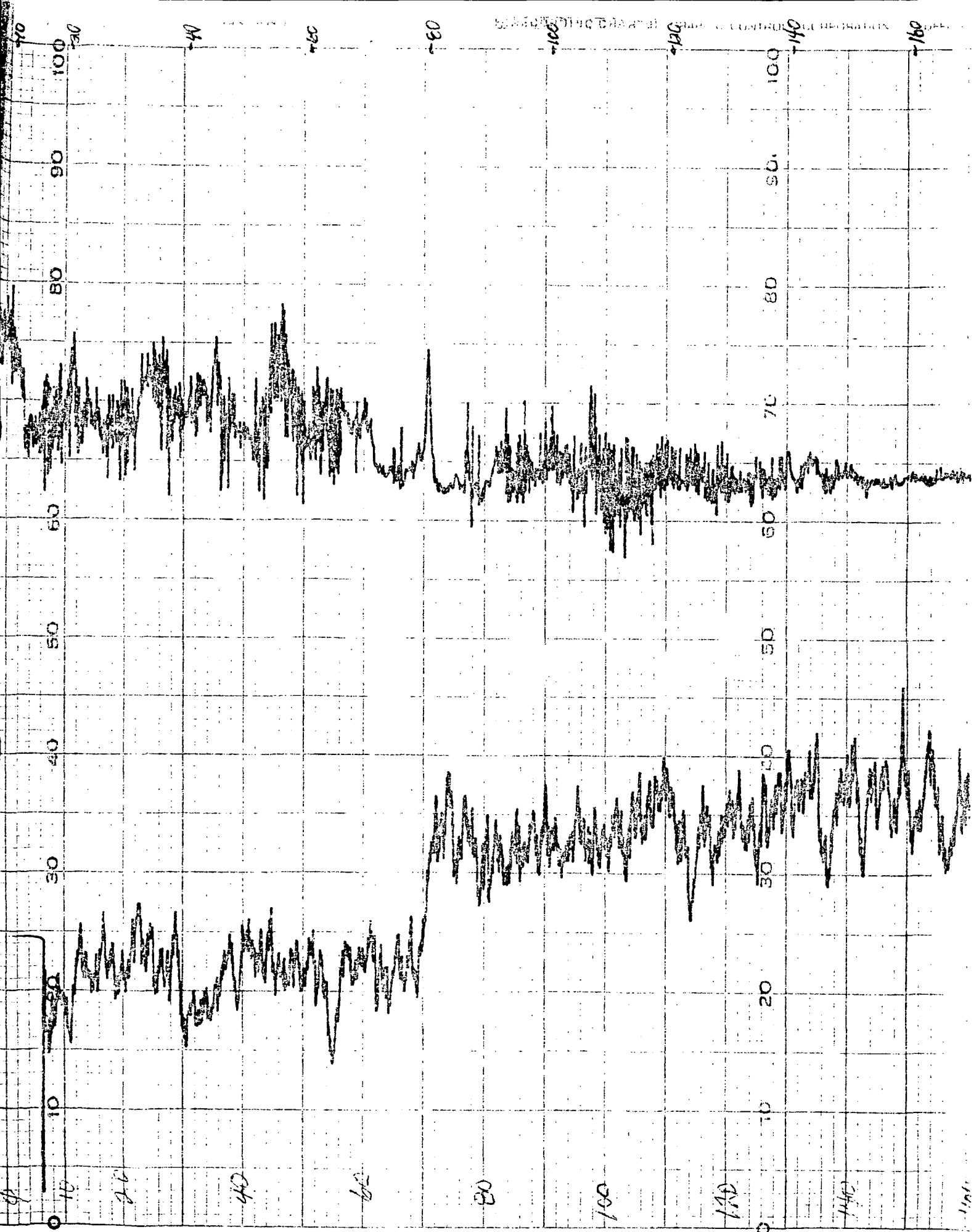
R2-88-9

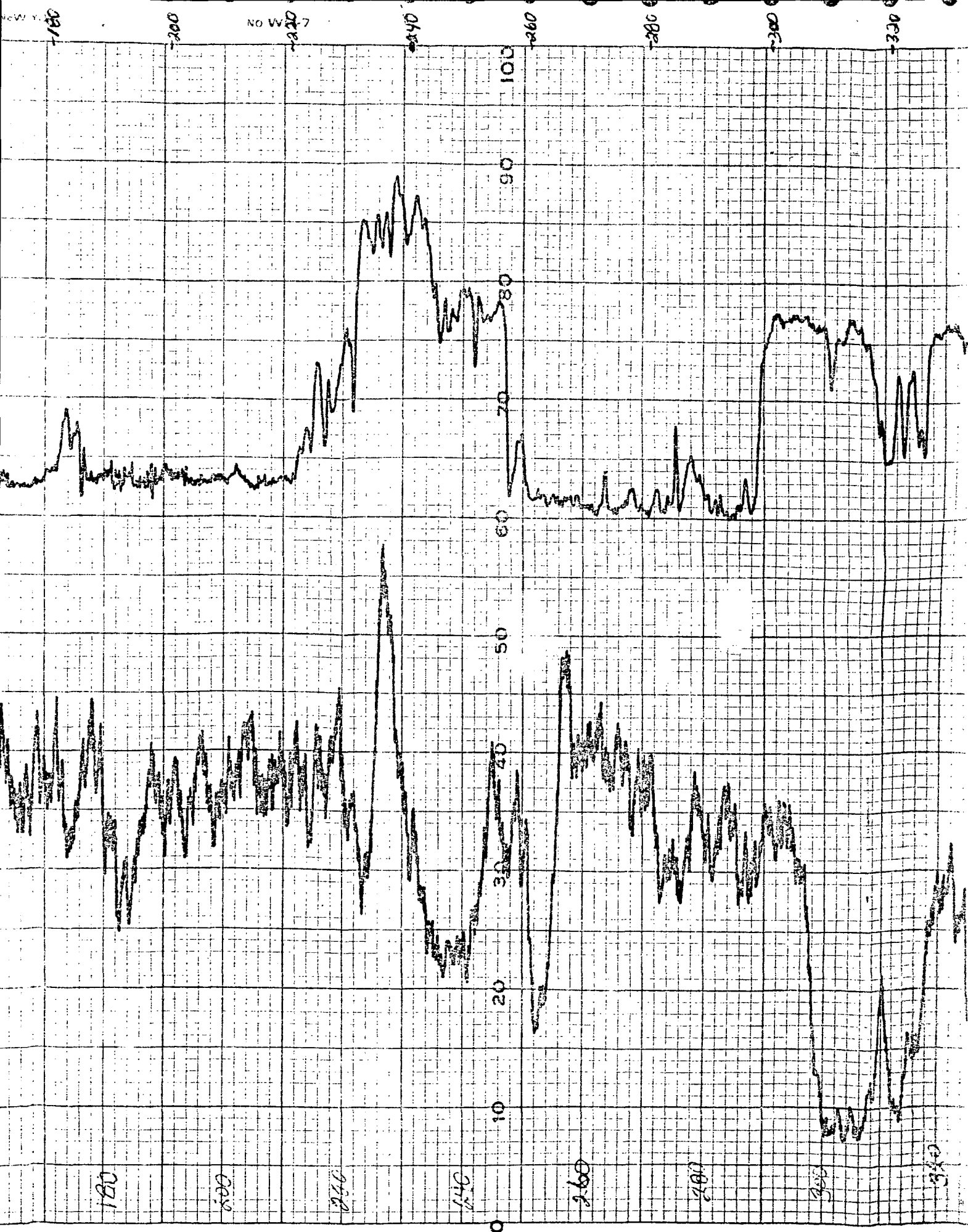
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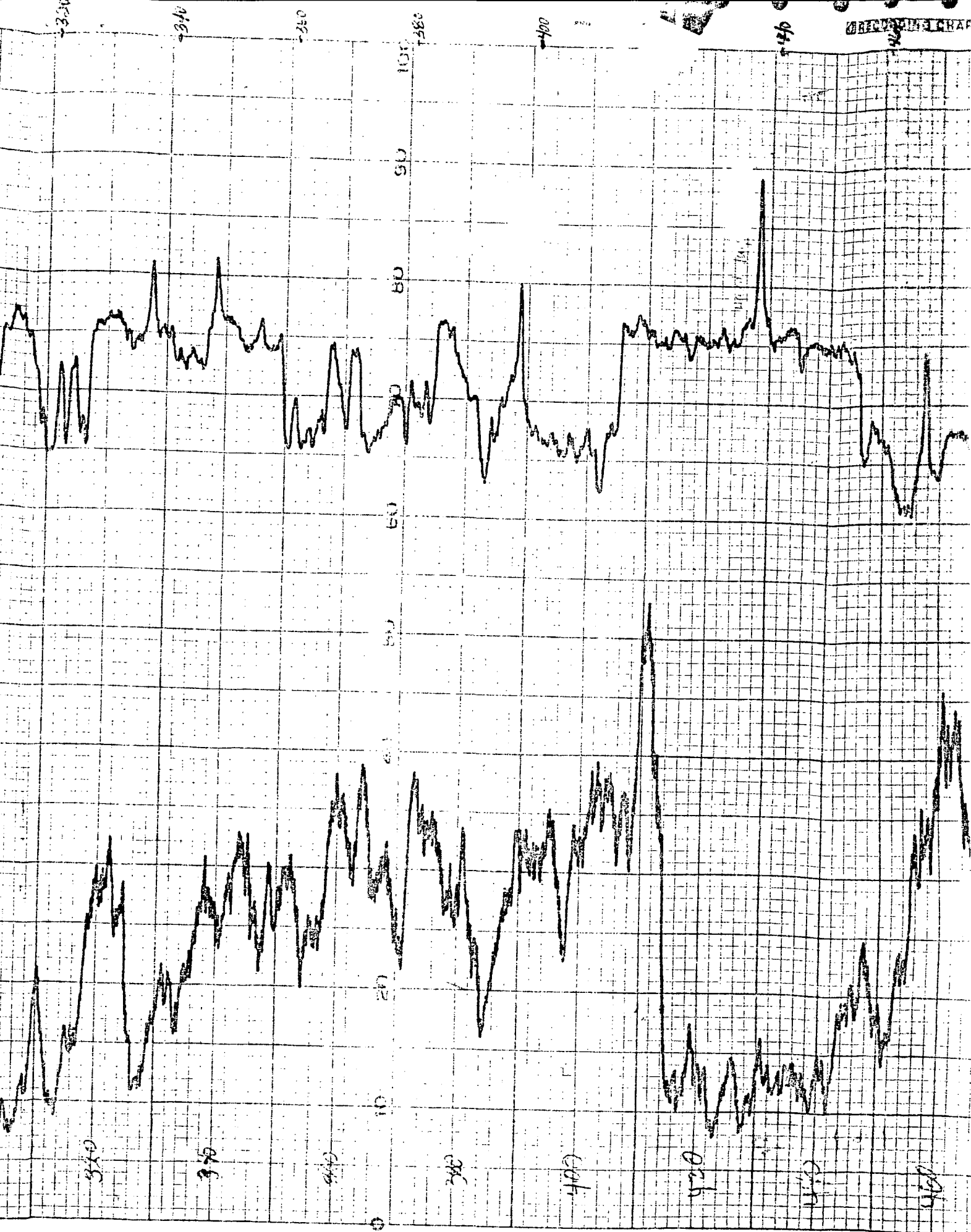
up 109

T 98M - R 99W - 15.00006

14.777







DeWild Grant Reckert & Associates Co.

Architecture Engineering and Planning

315 First Avenue
Rock Rapids, Iowa 51246
(712) 472-2531

August 18, 1988

State of South Dakota
Water Rights Division
DWRN, Foss Building
Pierre, SD 57501



Attn: John Hatch

Re: Canton, South Dakota Well Project
File No. 36199

Dear John:

This is to document actions recently taken by the City of Canton to replace two existing wells within the City Limits. It is our understanding that because the new well replaces two existing wells with existing water use permits from the Dakota Aquifer, the City can utilize this new diversion point immediately at a rate equal to the combined permitted diversions from the two wells being replaced. The new well is known as Well No. 9 and has a potential capacity of 300 gallons per minute (.67 cfs). Well No. 2 has an approximate capacity of 67 gpm (.15 cfs), and Well No. 5 has an approximate capacity of 76 gpm (.17 cfs). The City, therefore, intends to operate Well No. 9 at the rate of 143 gallons per minute (.32 cfs) and file an appropriation permit to increase the rate of withdrawal from 143 gpm up to 300 gpm. It is our intent to file this permit application before September 1 so that it can be included in the next scheduled Hearing.

The City is also conducting further ground water exploration work in an area on the west edge of the City. It is anticipated that two additional wells of approximate capacity of 300 gpm each, will be located in this new area. It is anticipated that the City will be filing a permit application for two new diversion points in this area and because it is outside the old City Limits which defined the present Future Use Permit held by the City, the new diversions will constitute a completely new water right.

To help secure the City's future water needs it is anticipated that the City will be filing a Future Use Permit application which modifies the geographical area to include an area surrounding the City Limits and increases the quantity corresponding to their anticipated future needs.

Mr. Hatch
August 18, 1988
Page Two

This letter is being written at the request of the City as their Engineer. Questions can be directed either to DGR or the City of Canton.

Sincerely,

DEWILD GRANT RECKERT
& ASSOCIATES COMPANY

A handwritten signature in cursive script, reading "Gordon Krause".

Gordon B. Krause, P.E.
Project Engineer

GBK:jkv

cc: Palmer Erickson
Jan Boeckmann
Kelly Nelson

DeWild Grant Reckert & Associates Co.

Architecture Engineering and Planning

315 First Avenue
Rock Rapids, Iowa 51246
(712) 472-2531

August 23, 1988

State of South Dakota
Water Rights Division
DWRN, Foss Building
Pierre, SD 57501

Attn: John Hatch

Re: Canton, South Dakota Well Project
File No. 36199

Dear John:

As we mentioned in our letter of August 18 and discussed by telephone, we are enclosing four (4) separate permit applications for the City of Canton. We also enclose a map of the City showing the location of their present wells and the wells they propose to construct. A table summarizing their current well capacity information is also included to assist you in revising their Water Appropriation Permits.

The four (4) permit applications are as follows:

1. An application to increase the appropriation amount for Well No. 9. Well No. 9 was just recently constructed and replaces Well No. 2. Well No. 2 was constructed in 1937 and had a capacity of 70 gpm (0.15 cfs). Well No. 9 has a capacity of 300 gpm (0.67 cfs). The desired effect of the application is to increase the appropriation at this location by 230 gpm (0.52 cfs).
2. An application to add two new wells outside the old City limits on the west side of the City. These wells have not yet been constructed, but test holes have been drilled by the South Dakota Geological Survey and an anticipated yield of 300 gpm (0.67 cfs) is anticipated from each of these wells.
3. An application to increase the appropriation amount for a new well to be constructed near existing Well No. 5. Well No. 5 was constructed in 1946 and has a capacity of 80 gpm (0.18 cfs). Because of the capacity has deteriorated a new well at the same site is planned. Because the new well will more fully penetrate the aquifer, it is anticipated that it will have a capacity of 300 gpm (0.67 cfs). The desired effect of the application is to increase the appropriation at this location by 220 gpm (0.49 cfs).



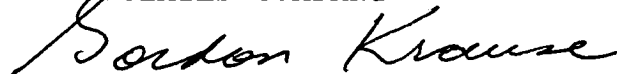
August 23, 1988
Mr. John Hatch
Page Two

4. An application for future needs which includes not only the present Canton City Limits but also an area adjacent to the City Limits. The quantity of future needs was calculated by doubling the amount appropriated by Canton by previous and the present applications.

If additional information is required, please contact me.
We very much appreciate your attention to this matter.

Sincerely,

DEWILD GRANT RECKERT
& ASSOCIATES COMPANY


Gordon B. Krause, P.E.

GBK:gbk

cc: Palmer Erickson
Jan Boeckmann
Kelly Nelson

SUMMARY OF WELL CAPACITY INFORMATION

CITY OF CANTON, SD

AUGUST 23, 1988

WELL NUMBER	YEAR CONSTRUCTED	CONDITION	AQUIFER	CAPACITY (gpm)	CAPACITY (cfs)
1.	1936	In Service	Dakota	100.0	0.22
2.	1937	Abandoned	Dakota	70.0	0.16
3.	1965	Out of Service	Dakota	100.0	0.22
4.	1950	In Service	Dakota	12.0	0.03
5.	1946	Abandoned	Dakota	80.0	0.18
6.	1965	In Service	Dakota	90.0	0.20
7.	1918	In Service	Shallow	100.0	0.22
8.	1977	In Service	Dakota	140.0	0.31
9.	1988	In Service	Dakota	300.0	0.67
10.	--	Proposed	Dakota	300.0	0.67
11.	--	Proposed	Dakota	300.0	0.67
12.	--	Proposed	Dakota	300.0	0.67



Department of Water & Natural Resources

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

September 1, 1988

John Anderson, Mayor
City of Canton
123 S Main
Canton SD 57013

Dear Mayor Anderson:

This letter is in response to the water permit applications received from the City of Canton on August 25, 1988. The following information is needed to complete the applications:

- 1) Application fees of \$275.00, \$250.00 and \$400.00 are needed for Application Nos. 5216-3, 5217-3 and 5218-3. The application fee for Future Use Permit Application No. 5219-3 is subject to change based on the amount of water that is specified on the application. The fee for Application No. 5219-3 will be requested after the amount of the appropriation is determined.
- 2) The enclosed map needs to be signed by either a South Dakota registered land surveyor, a South Dakota registered professional engineer or a government employee that normally prepares maps as part of his or her duties. A map is also needed outlining the proposed future use area and the map needs to be signed as specified above.

Application Nos. 5216-3, 5217-3 and 5218-3 can not be considered by the Water Management Board until the fees and the maps are received. Please remit the fees and return the maps as soon as possible. Contact me if you have any questions.

Sincerely,

Ron Duvall
Natural Resources Engineer
605 773-3352

enc.



 **Department of
Water & Natural Resources**

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

January 10, 1989

Gordon Krause
DeWild, Grant, Reckert & Associates
315 First Avenue
Rock Rapids IA 51246

Karl Osberg
Huron Drilling
PO Box 1422
Huron SD 57350

Jan Boeckman, Finance Office
City of Canton
PO Box 128
Canton SD 57013

RE: Problems With New City of Canton Well

I am writing in regard to the new City of Canton well. Gordon Krause, of DeWild, Grant, Reckert & Associates has asked for our opinion of proposed changes in the construction of the new City of Canton well. We have discussed the well problems with Karl Osberg of Huron Drilling, Gordon Krause and the Geological Survey Division. Apparently, a break exists in the casing approximately 360 feet below land surface. Mr. Krause has asked if a proposal to extend the blind casing (6 inch stainless steel) to above the break in the surface casing would be acceptable and comply with the South Dakota Well Construction Rules?

It is our understanding that Huron Drilling will be doing further tests to determine if the break is the source of the silt problem. Considering the water level and pumping drawdowns expected in the well, extending the blind casing will not affect the production of the well. However, this is something the engineer and the City of Canton should discuss and determine if it is acceptable to them. The proposed well construction would prevent the City from lowering a high capacity pump which is more than approximately 5 inches in diameter below the top of the 6 inch blind casing.



January 10, 1989

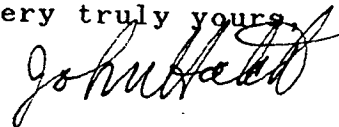
Gordon Krause, Carl Osberg, Jan Boeckman

Page 2

The Well Construction rules allow the proposed construction; however, grouting with neat cement between the 6 inch blind casing and 12 inch casing will be required. Although Mr. Osberg has made a request to use a bentonite and sand mixture behind the blind casing to seal the break, this procedure does not comply with the intent of the well construction rules.

In summary, the well can be made to comply with the SD Well Construction Standards. The use of a sand-bentonite mixture between the 6 inch and 12 inch casings is not acceptable. Several unknowns and the option of redrilling the well remain which I believe are a contractual matter between the City, the engineer and the driller.

Very truly yours,

A handwritten signature in dark ink, appearing to read "John Hatch", written over the typed name.

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

RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 5218-3, City of Canton

Pursuant to SDCL 46-2A-2, the following is the recommendation of the Chief Engineer, Water Rights Division, Department of Water and Natural Resources concerning Water Permit Application No. 5218-3, City of Canton, 123 S Main, Canton SD.

The Chief Engineer is recommending APPROVAL of Application No. 5218-3 because 1) there is reasonable probability that there is unappropriated water available for the applicant's proposed use, 2) the proposed diversion can be developed without unlawful impairment of existing rights, 3) the proposed use is a beneficial use and 4) in the public interest with the following qualifications:

1. That the City of Canton report to the Chief Engineer annually the amount of water withdrawn each year from the Dakota Formation.
2. The wells authorized by Permit No. 5218-3 shall be constructed by a licensed well drillers and construction shall comply with Water Management Board Well Construction Rules, Chapter 74:02:04 with the well casing pressure grouted with cement (bottom to top) from the producing formation to the surface pursuant to Section 74:02:04:30.
3. The wells approved under this Permit will be located near domestic wells and other wells which may obtain water from the same aquifer. The well owner under this Permit shall control his withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights.

See the attached report for additional information.


JOHN HATCH, Chief Engineer
August 30, 1988

REPORT ON PERMIT APPLICATIONS
Nos. 5216-3, 5217-3, and 5218-3
August 31, 1988

Water Permit Application No. 5216-3 proposes to construct well No. 9 and place to beneficial use 0.52 cubic feet of water per second (cfs) reserved by Future Use Permit No. 1262-3. This application also proposes to transfer authority to divert 0.15 cfs from well No. 2 (drilled in 1937) described on Vested Water Right Claim No. 1262-3 to replacement well No. 9. The transfer of diversion authority from well No. 2 also transfers the 1937 priority date for diversion of 0.15 cfs to well No. 9.

Water Permit Application No. 5217-3 proposes to construct one well and place to beneficial use 0.50 cubic feet of water per second (cfs) reserved by Future Use Permit No. 1262-3. This application also proposes to transfer authority to divert 0.17 cfs from well No. 5 (drilled in 1946) described on Vested Water Right Claim No. 1262-3 to the proposed replacement well. The transfer of diversion authority from well No. 5 also transfers the 1946 priority date for diversion of 0.17 cfs to the replacement well. This application authorizes a total of 0.67 cfs from the replacement well (Dakota Sandstone Formation) 520 feet deep for municipal use by the City of Canton. The replacement well is to be located in the SW⁴NE⁴ Sec. 23, T98N-R49W, and well No. 5, located in the same described area, is to be used as an observation well.

Water Permit Application No. 5218-3 proposes to appropriate 1.34 cubic feet of water per second from 2 wells (Dakota Sandstone Formation) 558 to 590 feet deep to be located in the NE⁴NE⁴ Sec. 22; and the SE⁴SW⁴ Sec. 15, T98N-R49W. Water is to be used for municipal purposes by the City of Canton.

Aquifer: Dakota Formation

Geology and Aquifer Characteristics:

The Dakota Formation consists of interbedded sand, sandstone, clay, and sandy clay, as much as 300 feet thick in this area. The Dakota underlies approximately 484 square miles of Lincoln County and contains an estimated 4.3 million acre-feet of recoverable water in storage in the county (Hedges, 1982). The lithology of the Dakota is quite variable both laterally and vertically, and it has been postulated that the explanation for this is that the Dakota was deposited in a fluvial environment.

The Division of Water Rights monitors 38 observation wells completed into the Dakota in Lincoln County. The Dakota is under artesian conditions and the observation wells fluctuate in response to withdrawals from the aquifer.

Illes (1984), Goodman (1985), and Goodman (1987), identify potential recharge areas for the Dakota. Data indicates a hydraulic connection exists between the Dakota and a Buried Glacial aquifer to the west and north, and a potential hydraulic connection with the Sioux Quartzite which directly underlies the Dakota. These apparent sources of recharge contain inferior quality water than is presently in the Dakota. Apparently, recharge water mingling with the Dakota is degrading the water quality of the aquifer. Increased withdrawals from the Dakota will increase the rate of this deterioration. The rate of groundwater deterioration has not been quantified. The Division of Water Rights samples the state's observation wells every 2 to 3 years for common ions. There is no significant change in the water quality of the Dakota for the period of record.

Review of Existing Water Permits:

There are 15 existing Water Permits appropriating water from the Dakota in Lincoln County. They include:

841-3 ₁	Beresford	0.69 cfs	municipal	2 wells
1262-3 ₂	Canton	4.02 cfs	municipal	7 wells
4118-3	Thomas	0.10 cfs	commercial	1 well
4300-3 ₃				
4300-3A ₃	SLRWS	2.00 cfs	RWS	3 wells
4300-3B ₃				
4312-3	Canton	0.48 cfs	municipal	2 wells?
4401-3	Worthing	0.17 cfs	municipal	2 wells
4672-3	Elcock	0.05 cfs	commercial	3 wells
4817-3	SLRWS	1.33 cfs	RWS	(future use)
4982-3	Fairview	0.11 cfs	municipal	1 well
5101-3 ₄	Lennox		municipal	(future use)
5116-3 ₅	SLRWS	0.67 cfs	RWS	1 well
5155-3	NSLRWS	3.00 cfs	RWS	(future use)
5156-3	NSLRWS	3.00 cfs	RWS	2-5 wells

Notes:

1. Permit No. 841-3 is apparently not being used by Beresford, another water supply has been developed
2. Permit No. 1262-3 appropriates 4.45 cfs. diversion of 1.44 cfs is authorized from 7 wells, however 1 well (0.22 cfs.) is from the Big Sioux Aquifer, and 3.00 cfs is reserved for future use. Permit No. 4312-3 authorized development of 0.48 cfs from the future use portion of Permit No. 1262-3. A total of 2.67 cfs remains reserved in the future use portion of Permit No. 1262-3.
3. Permit Nos. 4300-3, 4300-3A, 4300-3B authorize SLRWS to divert 2.00 cfs (1.44 cfs is developed) from 3 wells with a total diversion of 1048 acre-feet per year.

4. Permit Application No. 5101-3 for the City of Lennox has been deferred at the request of the City of Lennox.
5. Application No. 5116-3 authorizes SLRWS to drill an additional well and divert 0.67 cfs but does not authorize any increase in the 1048 acre-feet per year limitation.

Although recharge to the Dakota formation has not been quantified, approval of Applications No. 5216-3, 5217-3, and 5218-3 will not jeopardize the supply of water in the Dakota Aquifer, nor will there be adverse impacts on prior water rights and adequate domestic wells.

The City of Canton first began pumping from the Dakota in 1918. We are not aware of any complaints due to pumping by Canton during the past 70 years.

A cone of influence has resulted from the 70+ years the City of Canton has pumped from the Dakota Aquifer. Data is not available to define the extent of the cone of influence or the decline in head pressure within the cone in the Canton area. However, Dakota aquifer head pressure declines within the cone of influence caused by South Lincoln Rural Water System are well documented. Hydrographs of observation wells monitored by the Division of Water Rights indicate the cone of influence has not stabilized in the area, this is primarily due to additional demands upon the aquifer.

Pumpage from a confined aquifer (such as the Dakota) affects a relatively large area. The cone of influence may continue to expand for an unknown amount of time, maybe years, maybe tens of years, before it would reach equilibrium. Theoretically, the cone of influence will continue to expand indefinitely if withdrawal from a confined aquifer exceeds recharge to the aquifer.

SDCL 46-6-3 provides that "no application to appropriate groundwater may be approved if, according to the best information reasonably available, it is probable that the quantity of water withdrawn annually from a groundwater source will exceed the quantity of the average estimated annual recharge of water to the groundwater source...". There is high value to the public in allowing appropriations for beneficial use from the Dakota Formation, a reliable source of water, whether the head pressure is declining or reaching equilibrium. The public interest is served by continuing to allow appropriations from the Dakota.

SDCL 46-6-3.1 further provides that:

"... an application may be approved, however, for withdrawals of groundwater from any groundwater formation older than or stratigraphically lower than the Greenhorn Formation in excess of the average annual recharge for use by water distribution systems."

Available data does not support applying this exception to the review of these applications, although it could be applied if necessary.

Conclusions:

1. Water Permit Applications No. 5216-3 and 5217-3 propose to construct 2 wells and place to beneficial use 1.52 cfs reserved by the future use portion of Permit No. 1262-3, and transfer authority of 0.32 cfs appropriated by Permit No. 1262-3. Applications No. 5216-3 and 5217-3 do not request any new appropriation.
2. Water Permit Application No. 5218-3 proposes to appropriate 1.34 cfs from 2 wells completed in the Dakota Aquifer.
3. Test holes, monitor wells, and historical water use data indicate water is available in the Dakota Formation.
4. SDCL 46-6-3.1 allows that withdrawals of groundwater can be appropriated from the Dakota Formation in excess of the average annual recharge for use by water distribution systems.
5. The Dakota Formation is under artesian conditions. Withdrawals will influence the head pressure of Dakota wells in the area, however, there will be no adverse impacts on prior water rights and adequate domestic wells.
6. Potential sources of recharge to the Dakota contain water which is inferior in quality to the water that is currently in the Dakota. Increased withdrawals from the Dakota will increase the rate of deterioration of the water quality in the Dakota Aquifer.
7. There has been 70+ years pumpage by Canton with no reported complaints.



KENT BUHLER
Natural Resources Engineer

Bibliography:

- Goodman, J.A., 1985, Report on Application No 4300-3B, South Lincoln Rural Water System (SLRWS), DWNDR-Division of Water Rights, Joe Foss Building, Pierre SD 57501
- Goodman, J.A., 1987, Report on Application No 5116-3, South Lincoln Rural Water System, DWNDR-Division of Water Rights, Joe Foss Building, Pierre, SD 57501
- Hedges, L.S., S.Burch, D.Iles, R.Barrari, R.Schoon, 1982, Evaluation of Groundwater Resources, Eastern South Dakota and Big Sioux River, South Dakota and Iowa, US Army Corps of Engineers, DWNDR-Division of Geological Survey, Vermillion SD 57069
- Iles, D.L., 1982, Pleistocene Recharge to Dakota Formation in Lincoln County, South Dakota. "Geohydrology of the Dakota Aquifer, Proceedings of the C.V. Theis Conference on Geohydrology", NWWA, 500 W Wilson Bridge Road, Worthington, Ohio 43085
- Water Rights Division, 1988, "Observation Well Files, and Water Permit Files", DWNDR-Division of Water Rights, Joe Foss Building, Pierre, SD 57501



Department of Water & Natural Resources

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

September 19, 1988

John Anderson, Mayor
City of Canton
123 S Main
Canton SD 57013

Dear Mayor Anderson:

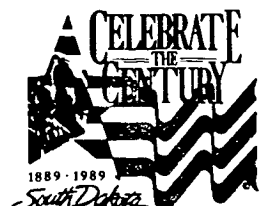
Enclosed are the Report and Recommendations of the Chief Engineer for Water Permit Application Nos. 5216-3, 5217-3, 5218-3, City of Canton.

Sincerely,

Karen Schlaak

KAREN SCHLAAK
Senior Secretary
605 773-3352

enclosures





Department of Water & Natural Resources

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

August 31, 1988

Sioux Valley News
Box 255
Canton SD 57013

Dear Sir:

Enclosed is a Notice of Hearing on Application Nos. 5216-3, 5217-3 and 5218-3 to be published twice. Please publish the first notice on or before September 8, 1988 with the second publication 7 days later.

The APPLICANT MUST VERIFY TO YOU THAT THE NOTICE IS TO BE PUBLISHED, before you make the first publication. Please BILL the APPLICANT for the cost of publication. The APPLICANT is John Anderson, Mayor, City of Canton, 123 S Main, Canton SD.

A copy of BOTH publications must be SENT to the WATER RIGHTS DIVISION. IMMEDIATELY return the FIRST publication with the FIRST Transmittal form on the bottom of this page. The first copy is needed to check the publication for errors so any corrections can be made in the second publication. Publication errors can invalidate the public notice and cause the applicant costly delays.

Please be sure the SECOND publication is returned IMMEDIATELY with the enclosed Proof of Publication form. DO NOT WAIT until the end of the month or the billing cycle. The permit application cannot be considered by the Water Management Board until proof of publication has been received.

Sincerely,

Ron Duvall
Natural Resources Engineer
605 773-3352

enclosures

-----CUT HERE-----

FIRST TRANSMITTAL NOTICE
No. _____

TO: Water Rights Division
Joe Foss Building
Pierre SD 57501-3181

Date _____

We are in receipt of your letter of _____ enclosing Notice of Hearing to
Appropriate Water by Application No. _____ which was first published in our issue
of _____. ENCLOSED IS A COPY OF THIS FIRST PUBLICATION.

Name

Newspaper





Department of Water & Natural Resources

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

August 31, 1988

NOTE: TO BE SURE OF PUBLICATION ON
THE CORRECT DATES, CONTACT
THE NEWSPAPER RIGHT AWAY.

John Anderson, Mayor
City of Canton
123 S Main
Canton SD 57013

Dear Mayor Anderson:

Your Application Nos. 5216-3, 5217-3 and 5218-3 for permits to appropriate water for municipal use have been examined and found to comply with the South Dakota Water Laws and applicable rules. Notice of your intent to appropriate water has been sent to the Publisher of the Sioux Valley News printed at Canton SD. For your information, a copy of the notice is enclosed. The recommendations of the Chief Engineer and reports on the applications will be sent later. Please review the notice prior to publication and notify this office, if you have any corrections or questions.

Be sure to contact the above newspaper to authorize publication of your Notice of Intent to Appropriate Water and to arrange for payment. Early contact with the paper can eliminate delays. The publisher has been instructed to publish your notice once each week for two consecutive weeks with the last publication to occur twenty days before the board meeting. We must receive Proof of Publication before the application can be considered by the Water Management Board.

Sincerely,

Ron Duvall
Natural Resources Engineer
605 773-3352

enclosures



Instruction to Newspaper - Publish first Notice on or before September 8, 1988 with 2nd publication 7 days later. The applicant is responsible for payment.

NOTICE OF HEARINGS on Application Nos. 5216-3, 5217-3 and 5218-3 to Develop Water Reserved by Future Use Permit No. 1262-3 and to Appropriate Water

Notice is given that the City of Canton, 123 S Main, Canton SD 57013 has filed three applications for water permits. Application No. 5216-3 is to construct well No. 9 and place to beneficial use 0.52 cubic feet of water per second (cfs) reserved by Future Use Permit No. 1262-3. This application also proposes to transfer authority to divert 0.15 cfs from well No. 2 (drilled in 1937) described on Vested Water Right Claim No. 1262-3 to replacement well No. 9. The transfer of diversion authority from well No. 2 also transfers the 1937 priority date for diversion of 0.15 cfs to well No. 9. This application is to authorize a total of 0.67 cfs from well No. 9 (Dakota Sandstone Formation) 520 feet deep for municipal use by the City of Canton. The wells are located in the NE 1/4 NE 1/4 Section 23-T98N-R49W and well No. 2 is abandoned.

Application No. 5217-3 is to construct one new well and place to beneficial use 0.50 cfs reserved by Future Use Permit No. 1262-3. This application also proposes to transfer authority to divert 0.17 cfs from well No. 5 (drilled in 1946) described on Vested Water Right Claim No. 1262-3 to the proposed replacement well. The transfer of diversion authority from well No. 5 also transfers the 1946 priority date for diversion of 0.17 cfs to the replacement well. This application authorizes a total of 0.67 cfs from the replacement well (Dakota Sandstone Formation) 520 feet deep for municipal use by the City of Canton. The replacement well is to be located in the SW 1/4 NE 1/4 Section 23-T98N-R49W and well No. 5, located in the same described area, is to be used as an observation well.

Application No. 5218-3 is to appropriate 1.34 cfs from 2 wells (Dakota Sandstone Formation) 558 to 590 feet deep to be located in the NE 1/4 NE 1/4 Section 22; SE 1/4 SW 1/4 Section 15; both in T98N-R49W. Water is to be used for municipal purposes by the City of Canton.

Pursuant to SDCL 46-2A-2, the Chief Engineer of the Water Rights Division recommends APPROVAL of Application Nos. 5216-3 and 5217-3 because 1) existing rights will not be unlawfully impaired, 2) it is a beneficial use of water and 3) it is in the public interest and recommends APPROVAL of Application No. 5218-3 because 1) unappropriated water is available, 2) existing rights will not be unlawfully impaired, 3) it is a beneficial use of water and 4) it is in the public interest. These applications will be considered by the Water Management Board in Room 216, Joe Foss Building, 523 E Capitol, Pierre SD on October 5, 1988 at 10:00 am. The Chief Engineer's recommendation is not final or binding upon the Board. The Board is authorized to 1) approve, 2) approve with qualifications, 3) defer or 4) deny these applications based on the facts presented at the public hearing.

Any interested person that intends to participate in a hearing before the Board by presenting evidence or cross-examining witnesses according to SDCL 1-26, must file a written petition with BOTH the applicant and Chief Engineer by September 23, 1988. The Chief Engineer's address is "Water Rights Division, Foss Building, 523 E Capitol, Pierre SD 57501 (605 773-3352)". The petition may be informal, but must include a statement describing the petitioner's interest in the application, the petitioner's reasons for opposing or supporting an application and the signature and mailing address of the petitioner or legal counsel if legal counsel is obtained. The applicant need not file a petition. Contact the Water Rights Division to request information on these applications or to assure access to the hearing by the handicapped.

(continued)

These hearings are adversary proceedings. Any person filing a petition and/or the applicant have the right to be represented by a lawyer. These and other due process rights will be forfeited if not exercised. Decisions of the Board may be appealed to the Circuit Court and State Supreme Court as provided by law. The time of a hearing will also be automatically delayed for at least twenty days upon written request to the Chief Engineer from the applicant or a petitioner. The request for a delay must be received by September 23, 1988.

These applications are made pursuant to SDCL 46-1-1 thru 46-1-9, 46-1-12 thru 46-1-15; 46-2-3.1, 46-2-9, 46-2-11, 46-2-13, 46-2-17; 46-2A-1 thru 46-2A-10, 46-2A-12, 46-2A-14, 46-2A-15; 46-5-1 thru 46-5-11, 46-5-13 thru 46-5-15, 46-5-24, 46-5-25, 46-5-30.2, 46-5-30.4, 46-5-31; 46-6-3, 46-6-3.1, 46-6-6.1, 46-6-10, 46-6-13, 46-6-14; 46-5-38 thru 46-5-40; and Board Rules ARSD 74:02:01:01 thru 74:02:01:15.

Form 8 - Proof of Publication - Notice of
Intent to Appropriate Water

No. _____

PROOF OF PUBLICATION

STATE OF SOUTH DAKOTA)
County Lincoln) ss.

I, Sonja Oakland hereby
certify that the annexed printed copy of Notice of Intent to Appropriate

Water was taken from the The Sioux Valley News

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 Canton _____

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

September 8, 1988

September 15, 1988

Sonja Oakland
(Signature)

September 15, 1988
(Title)

Bookkeeper
(Date Signed)

VERNON R. THORSON
My commission expires
January 20, 1995.

Cost of Printing: \$60.16



WNR-808-7/79
Proof of Publication

T98N-R49W. Water is to be used
for municipal purposes by the City
of Canton.

Pursuant to SDCL 46-2A-2, the
Chief Engineer of the Water
Rights Division recommends
APPROVAL of Application Nos.
5216-3 and 5217-3 because 1)
existing rights will not be
unlawfully impaired, 2) it is a
beneficial use of water and 3) it is
in the public interest. These
applications will be considered by
the Water Management Board in
Room 216, Joe Foss Building, 523
E Capitol, Pierre SD on October 5,
1988 at 10:00 AM. The Chief
Engineer's recommendation is not
final or binding upon the Board.
The Board is authorized to 1)
approve, 2) approve with
qualifications, 3) defer or 4) deny
these applications based on the
facts presented at the public
hearing.

Any interested person that
intends to participate in a hearing
before the Board by presenting
evidence or cross-examining
witnesses according to SDCL 1-
26, must file a written petition with
BOTH the applicant and Chief
Engineer by September 23, 1988.
The Chief Engineer's address is
"Water Rights Division, Foss
Building, 523 E Capitol, Pierre SD
57501 (605 773-3352)". The petition
may be informal, but must include
a statement describing the
petitioner's interest in the
application, the petitioner's
reasons for opposing or
supporting an application and the
signature and mailing address of
the petitioner or legal counsel if
legal counsel is obtained. The
applicant need not file a petition.
Contact the Water Rights Division
to request information on these
applications or to assure access
to the hearing by the
handicapped.

These hearings are adversary
proceedings. Any person filing a
petition and/or the applicant have
the right to be represented by a
lawyer. These and other due
process rights will be forfeited if
not exercised. Decisions of the
Board may be appealed to the
Circuit Court and State Supreme
Court as provided by law. The time
of a hearing will also be
automatically delayed for at least
twenty days upon written request
to the Chief Engineer from the
applicant or a petitioner. The
request for a delay must be
received by September 23, 1988.

These applications are made
pursuant to SDCL 46-1-1 thru 46-1-
9, 46-1-12 thru 46-1-15; 46-2-3.1, 46-
2-9, 46-2-11, 46-2-13, 46-
2-17; 46-2A-1 thru 46-2A-10, 46-2A-
12, 46-2A-14, 46-2A-15; 46-5-1 thru
46-5-13, 46-5-15; 46-5-
24, 46-5-25, 46-5-30.2, 46-5-30.4, 46-
5-31; 46-6-3, 46-6-3.1, 46-6-6.1, 46-6-
10, 46-6-13, 46-6-14; 46-5-38 thru 46-
5-40; and Board Rules ARSD
74:02:01:01 thru 74:02:01:15.
(9-8,15)

NOTICE OF HEARINGS
On Application Nos. 5216-3, 5217-
3 and 5218-3 to Develop Water
Reserved by Future Use Permit
No. 1262-3 and to Appropriate
Water

Notice is given that the City of
Canton, 123 S. Main, Canton SD
57013 has filed three applications
for water permits. Application No.
5216-3 is to construct well No. 9
and place to beneficial use 0.52
cubic feet of water per second
(cfs) reserved by Future Use
Permit No. 1262-3. This
application also proposes to
transfer authority to divert 0.15 cfs
from well No. 2 (drilled in 1937)
described on Vested Water Right
Claim No. 1262-3 to replacement
well No. 9. The transfer of
diversion authority from well No. 2
also transfers the 1937 priority
date for diversion of 0.15 cfs to
well No. 9. This application is to
authorize a total of 0.67 cfs from
well No. 9 (Dakota Sandstone
Formation) 520 feet deep for
municipal use by the City of
Canton. The wells are located in
the NE 1/4 NE 1/4 Section 23-T98N-
R49W and well No. 2 is
abandoned.

Application No. 5217-3 is to
construct one new well and place
to beneficial use 0.50 cfs reserved
by Future Use Permit No. 1262-3.
This application also proposes to
transfer authority to divert 0.17 cfs
from well No. 5 (drilled in 1946)
described on Vested Water Right
Claim No. 1262-3 to the proposed
replacement well. The transfer of
diversion authority from well No. 5
also transfers the 1946 priority
date for diversion of 0.17 cfs to the
replacement well. This application
authorizes a total of 0.67 cfs from
the replacement well (Dakota
Sandstone Formation) 520 feet
deep for municipal use by the City
of Canton. The replacement well
is to be located in the SW 1/4 NE 1/4
Section 23-T98N-R49W and well
No. 5, located in the same
described area, is to be used as an
observation well.

Application No. 5218-3 is to
appropriate 1.34 cfs from 2 wells
(Dakota Sandstone Formation)
558 to 590 feet deep to be located
in the NE 1/4 NE 1/4 Section 22;
SE 1/4 SW 1/4 Section 15; both in



Department of Water & Natural Resources

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

FEB 13 1989

John Anderson, Mayor
City of Canton
123 S. Main
Canton, South Dakota 57013

Dear Mr. Anderson:

Enclosed is Water Permit No. 5218-3 as approved by the Water Management Board authorizing you to construct your water diversion system and put the water to beneficial use, not exceeding the limits as specified in Water Permit No. 5218-3.

Also enclosed is Form 10, Notice of Completion of Works and Application of Water to Beneficial Use, which you are to complete and submit to the Chief Engineer when you have completed the system and/or have put the water to beneficial use. An inspection can then be scheduled so that the Water License may be issued, thus completing your acquisition of a Water Right.

Very truly yours

A handwritten signature in black ink, appearing to read "John Hatch". The signature is written in a cursive, flowing style.

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

JH: ms

enclosure

PLEASE NOTE: Certain changes can be made in your permit within the five year construction period, usually without affecting the priority date provided an application to amend your permit is made within the five year period - i.e. changes in location or number of diversion points (wells) or location of land to be irrigated. Well locations for wells into the same aquifer can be moved up to 660 feet without application.

Applications to amend a permit after the five year construction period will be assigned a new priority date. Applications to change water sources, to add lands or increase original diversion rates, if approved will usually receive the date of the new application as a priority date regardless of the five year construction period.

5218-3

City of Canton

1971	64,960,000 gal	199.4 AF
1972	79,270,000 gal	243.3 AF
1973	104,240,000 gal	319.9 AF
1974	110,411,000 gal	338.8 AF
1975	102,210,000 gal	313.7 AF
1976	119,575,000 gal	367.0 AF
1977	?	
1978	99,870,000 gal	306.5 AF
1979	102,563,000 gal	314.8 AF
1980	119,900,000 gal	368.0 AF
1981	108,183,000 gal	332.0 AF
1982	110,540,000 gal	339.2 AF
1983	107,627,000 gal	330.3 AF
1984	112,880,000 gal	346.4 AF
1985	108,956,000 gal	334.4 AF
1986	107,890,000 gal	331.1 AF
1987	140,170,000 gal	430.2 AF
1988		



Department of Water & Natural Resources

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

February 14, 1989

John Anderson, Mayor
City of Canton
P.O. Box 128
Canton, SD 57013

Dear Mr. Anderson:

Pursuant to qualification No. 1 on Water Permit Nos. 5216-3, 5217-3, and 5218-3, copies of which are enclosed, we are requesting the City of Canton to report the amount of water pumped from the Dakota formation during 1988. If you have any questions on qualification Nos. 1 or other water rights questions, please contact Susan Bowar, Water Rights Engineer, (605) 773-3352.

Very truly yours,

JOHN HATCH, Chief Engineer
Water Rights Division

enclosures

cc: Palmer Ericksen, Public Works Director



CITY OF CANTON

P.O. BOX 28

CANTON SD

57013

	<u>1971</u>
JAN.	4,070,000
FEB.	4,350,000
MAR.	4,100,000
APR.	3,710,000
MAY	6,890,000
JUNE	7,030,000
JULY	7,840,000
AUG.	4,260,000
SEPT.	7,150,000
OCT.	5,090,000
NOV.	4,850,000
DEC.	<u>5,620,000</u>
	64,960,000 - Total

177,973 - Daily ave.



1972

JAN.	3,880,000
FEB.	5,120,000
MAR.	4,820,000
APR.	5,900,000
MAY	6,480,000
JUNE	6,880,000
July	9,720,000
Aug.	9,350,000
Sept.	6,610,000
Oct.	5,960,000
NOV.	6,890,000
DEC.	<u>7,660,000</u>
	79,270,000 - Total

217,178 - Daily ave.

1973

JAN.	6,950,000
FEB.	5,950,000
MAR.	7,100,000
APR.	7,650,000
MAY	9,175,000
JUNE	11,985,000
JULY	12,550,000
AUG.	12,140,000
SEPT.	7,530,000
OCT.	7,890,000
NOV.	7,400,000
DEC.	<u>7,920,000</u>
	104,240,000 - Total

285,589 - Daily ave.

1974

JAN. 9,135,000
FEB 8,040,000
MAR. 8,100,000
APRIL 7,890,000
MAY 8,447,000
JUNE 11,070,000
July 15,034,000
Aug. 10,450,000
Sept. 8,570,000
Oct. 8,750,000
NOV. 7,215,000
DEC. 7,710,000

110,411,000 - Total

302,495 - Daily ave.

1975

JAN. 7,690,000

FEB. 6,620,000

MAR. 7,500,000

APR. 7,310,000

MAY 8,690,000

JUNE 9,180,000

JULY 14,160,000

AUG. 10,050,000

SEPT. 8,290,000

OCT. 8,120,000

NOV. 7,100,000

DEC. 7,500,000

102,210,000 - Total

280,027 - Daily ave.

1976

JAN. 7,480,000

FEB. 7,020,000

MAR. 8,560,000

APR. 9,890,000

MAY 13,010,000

JUNE 12,580,000

JULY 14,590,000

AUG. 12,810,000

SEPT. 10,115,000

OCT. 8,840,000

NOV. 7,380,000

DEC. 7,300,000

119,575,000 - TOTAL

387,603 - Daily ave.

1977

JAN. 8,670,000

FEB. 8,070,000

MAR. 4,010,000

APR.

MAY

JUNE

JULY

AUG.

SEPT.

OCT.

NOV.

DEC. _____

- Total.

- Daily ave.

1978

JAN. 7,690,000
FEB. 8,440,000
MAR. 9,090,000
April-97,640,000
MAY 9,660,000
JUNE 10,680,000
July 10,200,000
Aug. 10,820,000
Sept. 9,130,000
Oct. 8,030,000
NOV. —
DEC. 8,490,000
99,870,000 - Total

273,616 - Daily ave.

1979

JAN.	9,000,000	
FEB.	4,210,000	
MAR.	2,070,000	
APR.	8,670,000	
MAY	9,530,000	
JUNE	10,588,000	
July	13,115,000	
Aug	9,700,000	
Sept.	9,100,000	
Oct.	8,920,000	
NOV.	8,930,000	
DEC.	<u>8,610,000</u>	
	102,563,000	Total

280,995 - Daily ave.

1980

JAN.	8,250,000
FEB.	7,760,000
MAR.	8,350,000
APR.	8,550,000
MAY	12,090,000
JUNE	12,420,000
July	15,000,000
AUG.	11,210,000
Sept.	9,810,000
OCT.	9,980,000
NOV.	8,100,000
DEC.	<u>8,320,000</u>
119,900,000 - Total	

328,493 - Daily ave.

1981

JAN.	10,510,000
FEB.	8,074,000
MAR.	9,510,000
APR.	10,460,000
MAY	13,200,000
JUNE	10,810,000
July	14,120,000
Aug.	10,539,000
Sept.	11,150,000
OCT.	7,210,000
NOV.	—
DEC.	<u>2,000,000</u>
	108,183,000 - Total

296,392 - Daily ave.

1982

JAN.	8,680,000
FEB.	9,190,000
MAR.	8,130,000
APR.	8,690,000
MAY	9,430,000
JUNE	11,400,000
July	11,800,000
Aug	13,900,000
Sept.	7,940,000
Oct.	6,130,000
NOV.	7,590,000
DEC.	<u>7,490,000</u>
	110,540,000 - Total

302,849 - Daily ave.

1983

JAN.	7,380,000
FEB.	5,960,000
MAR.	6,926,000
APR.	7,030,000
MAY	8,966,000
JUNE	10,164,000
July	11,949,000
Aug.	14,632,000
Sept.	10,200,000
OCT.	8,610,000
NOV.	7,510,000
DEC.	<u>8,300,000</u>
	107,627,000 - Total

294,868 - Daily ave.

1984

JAN.	9,200,000
FEB.	7,900,000
MAR.	8,800,000
APR.	8,390,000
MAY	9,120,000
JUNE	8,580,000
July	13,110,000
Aug	13,010,000
Sept.	9,930,000
Oct.	7,810,000
Nov.	9,040,000
DEC.	<u>7,810,000</u>
	112,880,000 - Total

309,260 - Daily ave.

1985

JAN.	7,603,000
FEB.	6,730,000
MAR.	7,690,000
APR.	8,510,000
MAY.	10,360,000
JUNE	12,070,000
JULY	14,024,000
AUG.	9,660,000
SEPT.	8,070,000
OCT.	8,440,000
NOV.	7,680,000
DEC.	8,120,000
	108,956,000 - Total

298,509 - Daily AVE.

Water USE 1986

	gallons	gallons per day
Jan.	7,475,000	241,000
Feb.	6,385,000	228,000
March.	7,850,000	253,000
April.	8,330,000	278,000
May.	9,160,000	295,500
June.	10,740,000	358,000
July.	12,010,000	387,400
Aug.	12,010,000	387,400
Sept.	8,470,000	282,300
Oct.	8,470,000	273,200
Nov.	8,560,000	285,300
Dec.	8,430,000	272,000

107,890,000 total gallons
=

295,600 avg. daily gallons

Dominic Jones - City of Canton

1987

1988 to date

140,170,000 gal

122,510,000

under water restrictions

both years

1987 430 AC-FT

1988 376 AC-FT

5218-3

SOUTH DAKOTA
Department of
Water & Natural Resources

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

December 5, 1990

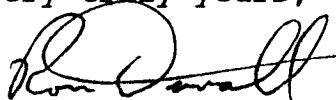
CITY OF CANTON
JAN BOECKMAN
123 S MAIN
CANTON SD 57013

Dear MS. BOECKMAN:

Pursuant to a qualification on Water Permit/Right No(s). 5218-3; 5216-3; 5217-3, we are requesting that the CITY OF CANTON report to the Chief Engineer the amount of water withdrawn for the year 1990. Please respond by JANUARY 31, 1991.

If you have any questions concerning this or other water rights questions, please contact Regan Fanning, Natural Resource Analyst, (605) 773-3352.

Very truly yours,



Ron Duvall,
Natural Resource Engineer
for JOHN HATCH, Chief Engineer
Water Rights Division

130,680,000 gallons.



40% off used



5218-3

**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

January 7, 1992

City of Canton
Jan Boeckman
123 S. Main
Canton SD 57013

Dear Ms. Boeckman:

Pursuant to a qualification on Water Permit/Right No(s).
5216-3; 5217-3 & 5218-3, we are requesting that the City
of Canton report to the Chief Engineer the amount of water
withdrawn for the year 1991. Please respond by February
10, 1992.

If you have any questions concerning this or other water
rights questions, please contact Don Frye, Natural
Resources Analyst, (605) 773-3352.

Very truly yours,

Ron Duvall,
Natural Resources Engineer
for JOHN HATCH, Chief Engineer
Water Rights Division





5218-3

City of Canton

123 South Main - Canton, SD 57013
Phone (605) 987-2881



Water Usage - 1991

Month -----	Wells -----	Avg. per day -----
January	8,660,000 Gallons	279,000
February	7,860,000 Gallons	281,000
March	9,160,000 Gallons	295,000
April	11,630,000 Gallons	388,000
May	11,850,000 Gallons	395,000
June	12,110,000 Gallons	404,000
July	13,640,000 Gallons	440,000
August	13,440,000 Gallons	434,000
September	11,200,000 Gallons	373,000
October	11,140,000 Gallons	359,000
November	8,470,000 Gallons	282,000
December	8,270,000 Gallons	267,000

Total	127,430,000 Gallons	349,000
Average use per day	349,000 Gallons	
Peak Day	July 18	720,000 Gallons

5218-3

City of Canton

123 South Main - Canton, SD 57013
Phone (605) 987-2881



January 6, 1993

John Hatch
DENR - Water Rights Division
Pierre, SD 57501-3181

Dear Mr. Hatch:

In regard to Water Permit/Right No(s). 5216-3;
5217-3; and 5218-3, the City of Canton diverted
112,550,000 gallons of water under the permit(s)
during 1992.

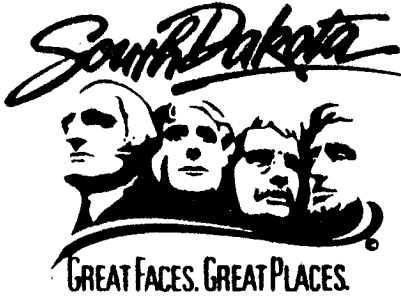
If any further information is needed please contact me.

Sincerely,

Dominic Jones

Dominic Jones
Water Supt.
City of Canton

jf



5218-3

**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

January 13, 1994

Jan Boeckman
City of Canton
123 S. Main
Canton, SD 57013

Dear Ms. Boeckman:

Pursuant to a qualification on Water Permit/Right Nos. 5216-3; 5217-3 & 5218-3, I am requesting that the City of Canton report the total amount of water diverted from the Dakota Formation during 1993. Please respond by January 31, 1994.

If you have any questions concerning this or other water rights questions, please contact Barry McLaurry, Natural Resources Analyst, (605) 773-3352.

Sincerely,

RON DUVALL, Natural Resources Engineer
for JOHN HATCH, Chief Engineer
Water Rights Division

City of Canton

123 South Main - Canton, SD 57013
Phone (605) 987-2881



January 27, 1994

John Hatch, Chief Engener
Water Rights Division
Joe Foss Building
523 East Capital
Pierre, South Dakota 57501-3181

RE: 1994 Water Use under Water Permit/Right Nos. 5216-3; 5217-3; 5218-3;

Dear Mr Hatch:

The total amount of water diverted from the Dakota Formation
in 1993 was 114,450,000 gallons of water.

Would you please change the contact person name to Jeff Fossum.
If you have any other questions please contact me at 987-2881.

Sincerely,

Jeffrey L. Fossum
Water/wastwater Department



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

April 29, 2004

5216-3
5217-3
5218-3

City of Canton
Jeff Fossum, Water Super.
210 N Dakota St
Canton SD 57013

Dear Mr. Fossum:

On October 15, 2003 the investigation of the city's water use system, including the extent of application of water to beneficial use, as developed under Water Permit Nos. 5216-3, 5217-3 and 5218-3, was completed by Lynn Beck, a staff engineer with our program. The final water right documents, the water licenses, can now be issued.

State law requires that we charge a \$50.00 fee for the investigation and issuance of each water license. Upon receipt of the \$150.00 fee from the city, we will complete processing the water license. The check or money order for the fee should be made payable to the "Water Rights Program". The city has several other water permits, but the license fees for those have been paid.

A licensed water right will be similar to a property right that can not be lost as long as the water use continues and the city abides by the permit requirements.

If you have any questions regarding the water permits, investigation of the water use systems or payment of the fee, please contact Lynn Beck or me.

Sincerely,

Karen Schlaak
Water Rights Program
(605) 773-3352

RECEIPT

WATER RIGHTS PROGRAM

South Dakota Department of Environment and Natural Resources

Date May 21, 20 04

RECEIVED OF Treasurer of the City of Canton, 210 N Dakota St., Canton SD 57013

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	50	00
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. <u>5218-3</u>		
Fee for Filing Transfer Form _____		
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	50.00

No.

001328

By

J. Darlene Eubank
Chief Engineer

City of Canton's Water Rights

May 5, 2004

	Amount	Priority date	Permit where Priority date comes from	Licensed Under
Well # 1	0.12 cfs 0.15 cfs <u>0.01 cfs</u> 0.28 cfs = 126 gpm	3-16-66 1-1-36 3-16-66	4312A-3 4312B-3 6499-3	6499-3
Well # 6	0.30 cfs = 134 gpm	3-16-66	1262A-3	1262A-3
Well # 7 standby well	0.22 cfs = 100 gpm capable of 250 gpm – throttled to 0.22 cfs	1-1-18	1262B-3	1262B-3
Well # 8	0.31 cfs <u>0.09 cfs</u> 0.40 cfs = 180 gpm	3-16-66 3-16-66	4312A-3 6499-3	6499-3
Well # 9	0.15 cfs <u>0.52 cfs</u> 0.67 cfs = 300 gpm	1-1-37 3-16-66	1262B-3 1262C-3	5216-3
Well # 10	0.72 cfs = 325 gpm	8-25-88	5218-3	5218-3
Well # 11	0.11 cfs <u>0.42 cfs</u> 0.53 cfs = 240 gpm	1-1-50 3-16-66	1262B-3 1262C-3	5217-3

Permit No. 5218-3
Big Sioux River - Water District

Report of Examination of Works and/or Application of Water to Beneficial Use

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

I have this day, **October 15, 2003**, made a thorough examination of the water use system constructed by **City of Canton** of **210 N Dakota Street, Canton SD 57013** holder of Permit No. **5218-3**, bearing the priority of **August 25, 1988** authorizing the diversion of **1.34** cu. ft. per second of the waters of **Dakota Sandstone Aquifer** for **municipal** purposes, in **Lincoln** County.

Inspection contact & relationship **Jeff Fossum, Water and Sewer Superintendent**
to permit holder, if applicable:

A. Works used to divert the water:

Well Information: City well #10 built 2-25-1989.

- 1) Well Drilling Firm: **Huron Well Drilling**
- 2) No. of Wells **1**
- 3) Depth(s) **580** feet
- 4) Well log is available **yes**
- 5) Comment: **DGR and Associates, Rock Rapids Iowa, provided as built.**

Casing:

- 1) Diameter **12** inches
- 2) Length **420** feet
- 3) Type **steel**

Screen:

- 1) Type **stainless steel**
- 2) Length **164.5** feet
- 3) Static water level _____ feet

Pump:

- 1) Make **Pitless Submersible**
- 2) Model **2366186025**
- 3) Size **6"**
- 4) Capacity **325** GPM

Motor:

- 1) Make Hitachi
- 2) Model No.
- 3) Horsepower rating 50 hp

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

6" line directly into distribution system.

C. Works used to apply water to beneficial use:

Municipal water distribution system.

D. Compliance with Permit Requirements:

- 1) Permit qualifications being abided by yes
- 2) Exceptions to compliance are: none

The system is in good condition with the point(s) of diversion located as follows: 450' N and 2940' W of the SE corner Section 15, T98N, R49W (43.302166, -96.619924). The works are capable of diverting and conveying to the place of use 0.72 cu. ft. per second of water which is to be used for municipal purposes. Water has been put to beneficial use to the maximum extent as follows:

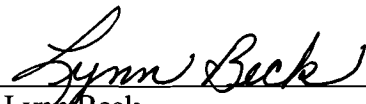
Municipal water supply.

The license should be issued for 0.72 cfs.

All structures, wells and lands on map yes

Comments or other permit(s) associated with the project:

City of Canton Water Right Nos. 1262-3, 4312-3, 5216-3, 5217-3 and 5218-3

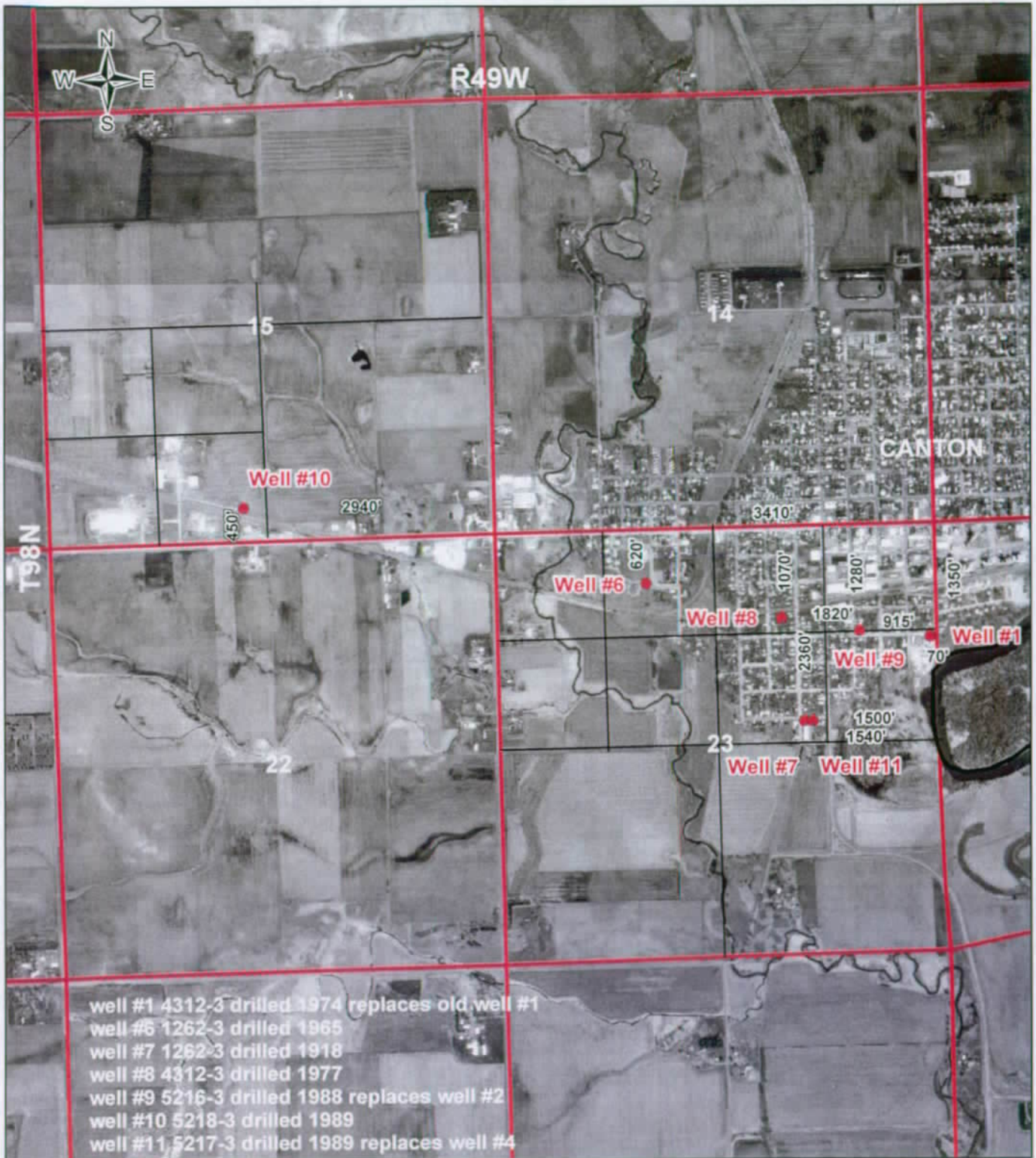


Lynn Beck

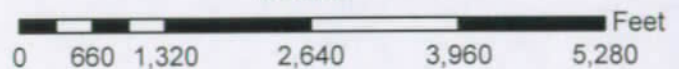
Natural Resources Engineer Specialist
DENR, Water Rights Program

Date report completed: March 3, 2004

WATER RIGHT NOS. 1262-3, 4312-3, 5216-3, 5217-3 & 5218-3 CITY OF CANTON



SCALE



South Dakota Department of
Environment and Natural Resources



Protecting South Dakota's Tomorrow... Today

Lynn Beck
 Lynn Beck
 Natural Resources Engineer Specialist
 DENR, Water Rights Program
 March 1, 2004

STATE OF SOUTH DAKOTA

WATER LICENSE NO. 5218-3

(1) City of Canton, 210 N Dakota St, Canton SD 57013 made Application No. 5218-3, August 25, 1988 for a water permit to divert 1.34 cubic feet of water per second (cfs) from groundwater (two wells), Lincoln County, South Dakota for municipal purposes. Permit No. 5218-3, with a priority date of August 25, 1988 was approved October 6, 1988 and issued with construction of the described water supply system and the application to beneficial use of water completed.

(2) The water supply system has been completed and water applied to beneficial use in accordance with South Dakota State Law. Pursuant to South Dakota Codified Law 46-5-30.1, the holder and/or owner of Water Right No. 5218-3 is issued a license, bearing a priority date of August 25, 1988 to appropriate 0.72 cfs from Well #10.

Well #10 is located: 450 feet north and 2,940 feet west from the southeast corner of Section 15-T98N-R49W (SE ¼ SW ¼).

(3) This license is subject to South Dakota Water Law, any limitations or conditions listed in Water Permit No. 5218-3 including the following now applicable qualifications:

- That the City of Canton report to the Chief Engineer annually the amount of water withdrawn each year from the Dakota Formation.
- The well authorized by Permit No. 5218-3 shall be constructed by a licensed well driller and construction shall comply with Water Management Board Well Construction Rules, Chapter 74:02:04 with the well casing pressure grouted with cement (bottom to top) from the producing formation to the surface pursuant to Section 74:02:04:30.
- The well approved under this Permit will be located near domestic wells and other wells which may obtain water from the same aquifer. The well owner under this Permit shall control his withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights.



Garland Erbele, Chief Engineer
Water Rights Program
Department of Environment and Natural Resources

JUN 23 2005

date





JUN 23 2005

**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

City of Canton
Jeff Fossum, Water Superintendent
210 N Dakota St
Canton SD 57013

Dear Mr. Fossum:

Enclosed are the following: Reissued Water License Nos. 1262A-3, 1262B-3 and 1262C-3, Water License Nos. 5216-3, 5217-3, 5218-3 and Water Permit and License No. 6499-3. These are the final water right documents completing the city's process of obtaining Water Rights.

Also enclosed for your records is a map showing the location of each of the wells and an information sheet listing the applicable information for each well. All the required fees have been paid. Enclosed are three receipts for license fees submitted earlier.

As long as the city uses the water beneficially, as stated in the Water Licenses, State Water Laws provides that the city has a continuing right to use the water.

Sincerely,

Garland Erbele, Chief Engineer
Water Rights Program
(605) 773-3352

enclosures



DeWild Grant Reckert and Associates Company
Consulting Engineers

1302 South Union Street
P.O. Box 511
Rock Rapids, IA 51246
[712] 472-2531
Fax [712] 472-2710

August 24, 2006

Eric Gronlund
South Dakota DENR
Joe Foss Building, PMB-2020
523 East Capital
Pierre, SD 57501-3181

RE: City of Canton
Construction of Well No. 12 and Well No. 13

RECEIVED
AUG 28 2006
WATER RIGHTS
PROGRAM

Dear Eric:

The City of Canton recently submitted an application for permit to appropriate water within the State of South Dakota. The project is identified as Canton Well No. 12. We understand from the permit information that you recently provided that the City of Canton currently has permitted appropriations of 2.9 cfs from the Dakota Formation. The 2.9 cfs corresponds to about 1,300 gpm, which is adequate to meet the City's demands at this time. On behalf of the City of Canton, we request that the new Well No. 12 be considered an additional diversion point as additional appropriations are not required at this time.

We also want to inform the DENR of the City's intent to replace existing Well No. 10. The existing well will be sealed in accordance with State of South Dakota Regulations. The replacement well will be located within approximately 300 feet of the existing well and will be in the same 1/4 quarter of Section 15. We understand from a conversation with you yesterday, that the City can refer to the replacement well as Well No. 10, rather than having to give it a new number.

Also from the information you provided to me recently, we understand that the City currently has two future use permits on file; one for 1,175 acre feet and one for 674 acre feet annually. It is the City's intent to leave these future use permits alone such that they are not affected by the current Well No. 12 and replacement Well No. 10 project.

Please contact us if you have any questions or comments regarding this information.

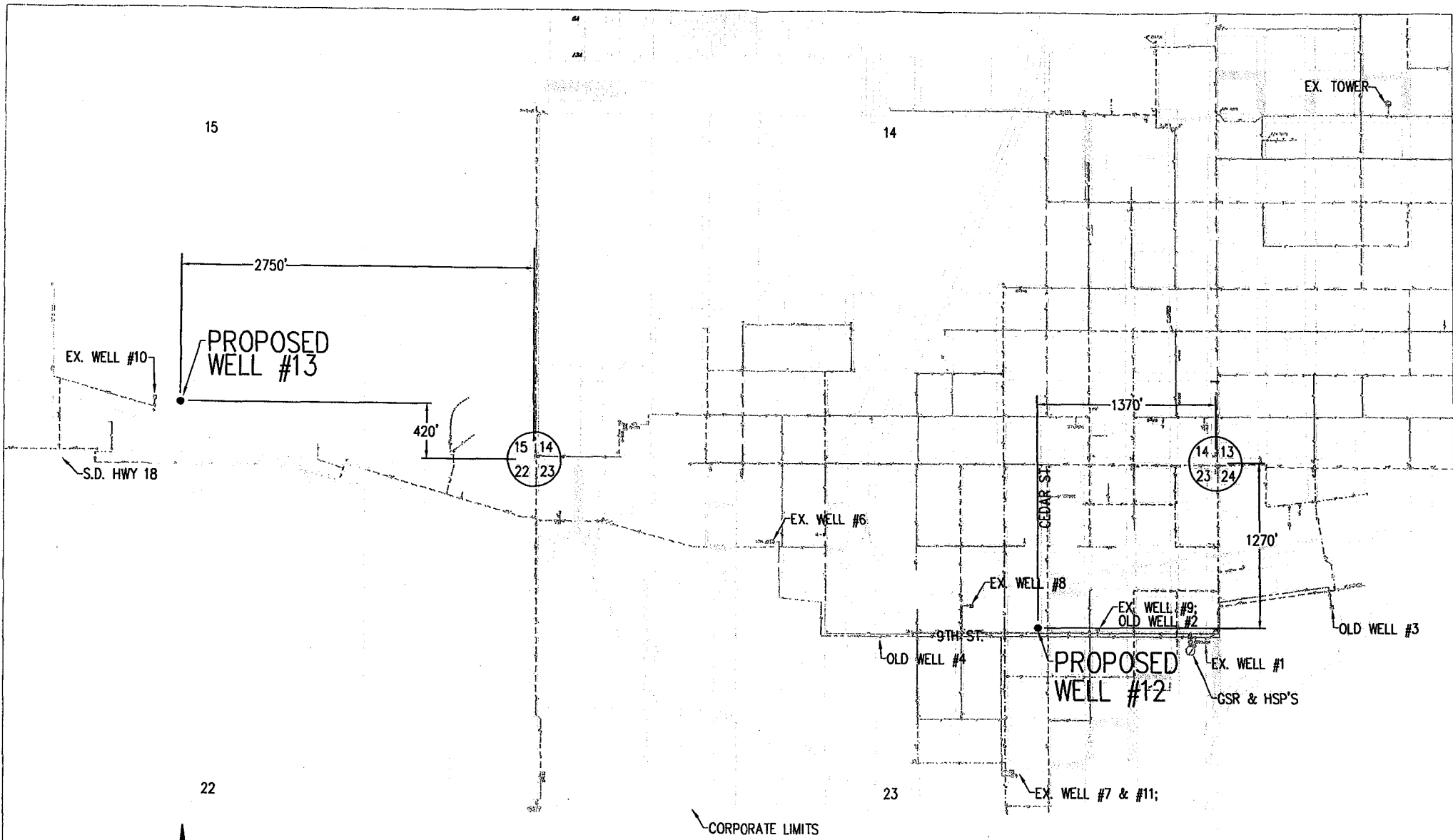
Sincerely,

DEWILD GRANT RECKERT
& ASSOCIATES COMPANY

Darin Schriever, P.E.
Project Manager

DLS:cvm

cc: Jeff Fossum, City of Canton



LOCATION PLAN
T98N, R49W

CONSTRUCTION OF
WELLS #12 & #13
CANTON, SOUTH DAKOTA

Date AUG 2006
Drawn By JMG
Approved DLS
Revised
Project No. 812230

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision, and that I am a duly Registered Professional Engineer under the laws of the State of South Dakota Registration No. 7785
By: Don L. Schirmer
Date:

David Grant Reckert
and Associates, Inc.
Consulting Engineers
Rock Rapids, Iowa
Sioux City, Iowa
Sioux Falls, South Dakota



Project No.
812230
Sheet

Water Rights Program - File Documentation

NAME: Jeff Fossum, Water Superintendent

ADDRESS: City of Canton

DATE: 3-6-07 **COUNTY:** LN **TELEPHONE:** 605 987-2881

RE: Replacement Well

COMMENTS:

Jeff Fossum stated the well completion report we received from Layne-Western for Well #13 is the replacement well for Well #10 authorized by Water Right No. 5218-3.

Mr. Fossum indicated that he thought Well #10 would be plugged this spring.



Karen Schlaak
Environmental Scientist

SOUTH DAKOTA WATER WELL COMPLETION REPORT

11-02

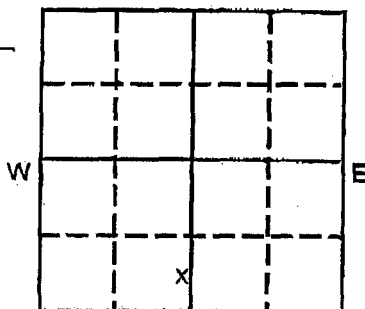
Location SW ¼ SE ¼ Sec 15 Twp 98N Rg 49W

County

Lincoln

North

Please mark well location with an "X"



Well Completion Date

11/17/2006

Distance to nearest potential pollution source (Septic tank, abandoned well, feed lot, etc.)

? ft. from N/A (Identify source)

PROPOSED USE:

☐ Domestic/Stock ☒ Municipal ☐ Business ☐ Test Holes
☐ Irrigation ☐ Industrial ☐ Institutional ☐ Monitoring well

METHOD OF DRILLING:

Reverse Circulation Rotary

CASING DATA:

☒ Steel ☐ Plastic ☐ Other

If other describe

PIPEWEIGHT	DIAMETER	FROM	TO	HOLE DIAMETER
49.6 LB/FT	12.00 IN	0.0 FT	419.0 FT	18.00 IN
16.0 LB/FT	10.00 IN	419.0 FT	440.0 FT	18.00 IN
LB/FT	IN	FT	FT	IN

GROUTING DATA:

Grout Type	No. of Sacks	Grout Weight	From	To
Neat Cement	638	14.0 Lb/gal	0.0 Ft	420.0 Ft
		Lb/gal	Ft	Ft

Describe grouting procedure

Tremie grouted neat cement from bottom of annular space to the top.

SCREEN:

☐ Perforated pipe ☒ Manufactured

Diameter 10.00 Inches Length 30.0 Feet

Material Stainless steel

Slot Size 0.025" Set From 440.0 Feet to 470.0 Feet

Other information

WAS A PACKER OR SEAL USED?

☒ Yes ☐ No

If so, what material? Bentonite seal

Describe packer(s) and location

Bentonite seal from 420' to 425' between gravel & grout

DISINFECTION: Was well disinfected upon completion?

☒ Yes, How? Sodium hypochlorite

☐ No, Why Not?

Lab sample sent to for water quality analysis

Well Owner: City of Canton

Business Name:

Address: 210 North Dakota Street

City, State, Zip: Canton SD 57013

WELL LOG:

DEPTH

FORMATION

FROM

TO

See attached log

STATIC WATER LEVEL

165.3 FEET

If flowing: closed in pressure

PSI

GPM flow

through

Inch pipe

Controlled by ☐ Valve ☐ Reducers ☐ Other

Reduced flow rate

GPM

Can well be completely shut in?

WELL TEST DATA:

☒ Pumped

Describe:

Airlifted and bailed well for development, and completed step test and constant rate test with test pump only

☒ Bailed☒ Other

Pumping Level Below Land Surface

327.5 Ft. After 24.0 Hrs. pumped 425.0 GPM

Ft. After Hrs. pumped GPM

If pump installed, pump rate:

GPM

REMARKS

Canton Municipal Well #13

This well was drilled under license #

513

And this report is true and accurate.

Drilling firm: Layne-Western

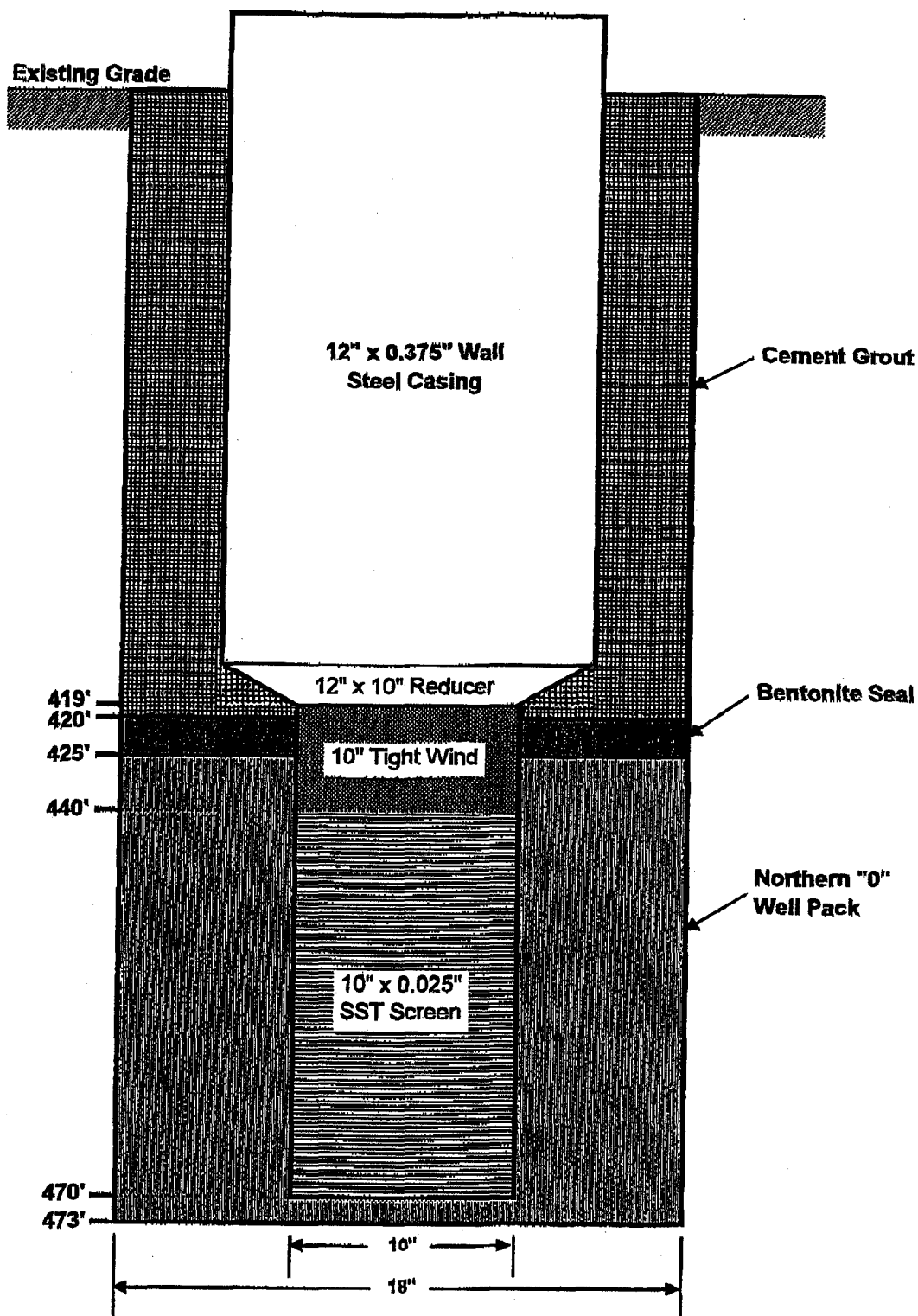
Signature of License Representative:

Signature of Well Owner or Equitable Property Holder:

Date:

2-12-07

**WELL #13 FINAL CONSTRUCTION DETAIL
CITY OF CANTON, SOUTH DAKOTA
NOVEMBER 17, 2006**



NOT TO SCALE



Layne Western
 5600 Gateway Drive, Suite B
 Grimes, IA 50111
 (515) 986-3462 / 3474 Fax

TEST HOLE REPORT



CONTRACT NAME: City of Canton

JOB NO: 59-0209

DATE: 09/14/06

CITY: Canton

STATE: SD

TEST HOLE

NO: 02-06 (Well #13)

DRILLER: Duane Trask

TEST HOLE LOCATION:

At proposed site of Well #13, 200 feet east of existing Well #10

Distance and direction from permanent landmark or previous test hole.

FROM (FEET)	TO (FEET)	MARSH FUNNEL VISCOSITY (SEC)	MUD PIT LOSS (INCHES)	APPROXIMATE STATIC WATER LEVEL: _____
FORMATION LOG				
0	33	27	8	Brown clay
33	50	27	↓	Loose sand & gravel
50	62	27	↓	Dark gray till
62	111	27	↓	Sand
111	268	29	0	Shale w/sandstone layers
268	275	29	↓	Hard layer
275	315	29	↓	Shale w/sandstone
315	325	32	3	Sandstone
325	385	32	↓	Sandy shale
385	388	32	↓	Sandstone
388	430	29	5	Sandy shale
430	431	29	↓	Hard layer
431	440	29	↓	Shale
440	458	29	↓	Clean sandstone
458	460	29	↓	Hard layer
460	473	29	↓	Clean sandstone
473	474	29	↓	Shale
474	475	29	↓	Very sandy shale
475	483	29	↓	Clean sandstone
483	485	29	↓	Sandy shale

SIZE MUD PIT: _____ LENGTH: _____ WIDTH: _____ DEPTH: _____

COMMENTS: _____

File Nos. 5216-3, 5217-3, 5218-3, 5219-3, 6499-3,
1262A-3, 1262B-3, 1262C-3, 6743-3, 4401-3,
4982-3, 5647-3, 6490-3, 6311-3, 6300-3,
6435-3, 6456-3, 6727-3

Water Rights Program File Documentation

DATE: 04/02/2008

The table below represents the water use reported from the Dakota Formation from Lincoln County by the major water users (City of Canton, Town of Worthing, Town of Fairview and South Lincoln Rural Water Sytem).

	Canton	Worthing	Fairview	SLRWS
	Acre-feet per year*			
2006	406	110	10	863
2005	403	34	8	769
2004	411	37	5	904
2003	384	48	9.2	725
2002	352	NA	NA	786
2001	331	NA	NA	877
2000	370	NA	NA	843
1999	384	4	9.4	781
1998	395	33	12	693
1997	427	36	9	663
1996	394	34	13	689
1995	397	30	11	707
1994	383	25	13	766
1993	351	24	12	630
1992	345	26	8	680
1991	391	28	10	696
1990	401	26	9	669
1989	402	31	NA	650
1988	388	26	20	660
1987	430	32	14	453
1986	330	25	22	370
1985	334	27	22	370
1984	346	27	24	368
1983	330	27	NA	341

* Numbers shown in black originated from Non Irrigation Questioner Data Base

Numbers in blue originated from 4/2/2008 personal correspondence with John Sievers (SLRWS manager)

Numbers shown in red originated from Jim Goodman's report on Application Nos. 5155-3 and 5156-3 (with permit files)

NA= not available

Ken Buhler
Natural Resources Engineer