

Water Right Number 3494-3

1. Considered 2-23, 19 77

2. Name of Applicant WILLMAN BROS.

3. Post Office Address WESSINGTON SPRINGS, S.D.

4. Amount of Water claimed 2.0

5. Source of Water supply 90' WELL

6. Water to be used for IRR

Acres to be irrigated 140

7. Water to be diverted and used in JERAULD County

about 15, 16 W miles of WESSINGTON SPRINGS

8. Proof of Publication Received 2-17-77

Not Received _____

9. Application Approved _____

Subject to _____

Not Approved _____

Action Deferred _____

10. Remarks:

No. 3474-3Map No. 2774-3 Water Division No. 5 MISSOURI RIVER District
(Blanks to be Filled by the Engineer for the W. R. C.)

APPLICATION FOR PERMIT

In Appropriate Water within the State of South Dakota

(NOTE--Draw a line through items not applicable)

1. Name of Applicant Willman Brothers
Postoffice address Wessington Springs, State South Dakota 57382
If a corporation show date and place of incorporation _____
2. Method of accomplishing work (contract, employment of others, or by direct labor) Contract
3. Name of diversion work Well
4. Amount of water claimed (cubic feet per second) 1000-0PM 2.0 MAXIMUM ALLOWABLE
5. Source of water supply Well
6. Location of point of diversion Center of SE 1/4 17 - 107-67

- County Jerauld
7. Annual period or periods during which water is to be used April - September
8. Use to be made of water, (irrigation, industrial, municipal, commercial, recreation, etc.) Irrigation
9. For irrigation use, Total number of acres to be irrigated 140

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.
SE 1/4 17 - 107-67	140		

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 1 years.
11. Choice of newspaper for Notice of Intent to Appropriate Water publication Wessington Springs Independent
12. Principal Features of the Proposed Water Supply System.

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

Well

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

Pipeline

C. Works proposed to apply water to beneficial use.

Center pivot sprinkler systemEstimated Total Cost \$ 45,000Attachments: 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 Jerauld)I, Willman Brothers 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 Willman Bros Willard WillmanSubscribed and sworn to before me this 2nd day of December 1976Brad D. Bonnyne
Notary Public (or other qualified officer)my comm. expires March 29, 1984

WATER RIGHT APPLICATION APPROVAL

The Water Rights Commission hereby approves Water Right Application No. 3494-3

WILLMAN BROS
(Applicant)

WESSINGTON SPRINGS
(Post Office Address)

SOUTH DAKOTA 57332
(State)

With the following modifications:

The irrigation well approved under this Permit will be located near domestic wells and of irrigation wells which may obtain water from the same aquifer. The irrigation well owner, under this Permit, shall control his irrigation withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in irrigation wells having prior water rights.

Date of first receipt of application DECEMBER 27, 19 76

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

Date of receipt of corrected application _____, 19 _____

Approved FEBRUARY 24, 19 77, Recorded in Book 17 Page 212

WATER RIGHT PERMIT NO. 3494.3

The Water Rights Commission hereby grants and issues this Water Right Permit No. 3494.3 authorizing the construction of the water use system and the putting of water to beneficial use as stated in the Application and as modified in the Water Right Application approval, subject, however, to the following limitations and conditions:

1. The date from which applicant may claim right is DECEMBER 27, 19 76
2. The equivalent of at least one-fifth of the work above specified is to be completed on or before AUGUST 24, 19 77
3. The whole of said work is to be completed on or before FEBRUARY 24, 19 78
4. The limit of time from proof of beneficial use of water appropriated in accordance herewith is FEBRUARY 24, 19 79
5. The water appropriated shall be used for the purpose of IRRIGATION

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 2.0 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 the irrigation purposes said appropriation must be limited to not more than 3 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 for irrigation on or before FEBRUARY 24, 19 79; said water to be used during the following described annual period: APRIL - SEPTEMBER

Witness my hand this 14TH day of APRIL, 19 77

WATER RIGHTS COMMISSION

By:

John Hatch
Chief Engineer, Executive Officer

Certificate of Construction Issued _____, 19 _____

Water License Issued _____, 19 _____

ORDER NO. _____

TO _____

DATE 1 / 12 / 12

ADDRESS _____

Willard Willman

SHIP TO _____

Westbury Springs

ADDRESS _____

SALES TAX _____

SHIP VIA _____

QUANTITY _____

TERMS _____

F.O.B. _____

*0 - 20 - yellow-clay
20 - 40 yellow-sand clay
40 - 50 Gravel
50 - 55 Clay
55 - 70 good Gravel*

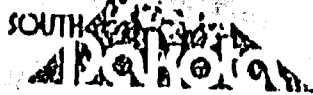
70 ft 200 pr ft

*70
2
140.00*

PURCHASED BY _____

3494-

3596-3



Department of Natural Resource Development

WATER RIGHTS COMMISSION
Joe Foss Building, Pierre, South Dakota 57501
Phone 605/773-3151

June 21, 1979

Willman Brothers
Wessington Springs, SD 57382

Gentlemen:

SDCL 46-1-14 authorizes the Water Rights Commission to issue amended permits recognizing the date of priority of the original application if certain conditions are met.

At the May 24, 1979 Commission Meeting, the Commission reviewed the amended Permits that had been issued with the later priority, and granted the earlier priority date to such amended permits.

By this action, the priority date for your Permit No. 3996-3 was established as December 27, 1976 instead of June 10, 1977 as now shows on your copy of the Permit.

If you have questions regarding this action, feel free to contact this office.

Very truly yours,

JOHN HATCH, Chief Engineer
Water Rights Commission

JH/gy



October 4, 1976

Mr. Willard Willman
Willman Brothers
Wassington Springs, SD 57382

Dear Mr. Willman:

Your water sample (Lab. No. 76-1438) has been analyzed and the results are reported on the accompanying sheet, which is your copy to keep.

I am also enclosing a copy of A&S pamphlet #13 for your use. The quality of your water for irrigation use is plotted approximately by means of the red cross in the chart on the outside back cover.

Your water, as indicated by this analysis, is satisfactory for use on the soils you indicate will be irrigated. If a salt problem or a water table problem should develop, contact extension personnel for assistance.

The WI-1, soils information, and a copy of the water analysis are being forwarded to the State Conservation Commission for their action.

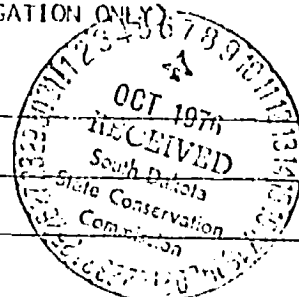
Sincerely yours,

L. O. Fine

L. O. Fine
Water Quality Lab

LOF:ckb
Enclosures
cc: State Conservation Commission

STATE CONSERVATION COMMISSION
SUPPORTING INFORMATION
FOR APPROPRIATION OF GROUND WATER IN ACCORDANCE
WITH SDCL 46-6-3 AS AMENDED
(THIS FORM REQUIRED FOR PROPOSED GROUND WATER IRRIGATION ONLY)



NAME Willman Brothers
ADDRESS Wessington Springs, South Dakota 57382
COUNTY Jerauld

LEGAL DESCRIPTION

1. WELL LOCATION Center of SE $\frac{1}{4}$ 17-107-67
2. LOCATION OF AREA TO BE IRRIGATED SE $\frac{1}{4}$ 17-107-67

TYPE OF IRRIGATION

3. GRAVITY _____ TOWLINE _____ CENTER PIVOT x GUN _____
4. CROPS TO BE IRRIGATED Corn Alfalfa

WATER QUALITY

5. SAMPLE NUMBER 76-1438
6. SALINITY (EC X 10⁶) 917 (Good - high)
7. SODIUM (SAR) 0.79 (Good)
8. RESIDUAL SODIUM CARBONATE (meq/l.) 0

I do hereby certify that a chemical analysis of the ground water representative of that used to irrigate shall be acquired from South Dakota State University and: the soils information has been acquired from Jerauld County Conservation District, County Extension office or Soil Conservation Service. and: that the legal description for the location of the well and land to be irrigated is true and correct.

[Signature]
APPLICANT'S SIGNATURE

SUBSCRIBED AND SWORN BEFORE ME THIS
26 DAY OF Oct 19 76.

[Signature]
(TITLE OR SEAL)

[Signature] (SOILS DISTRICT)

MAP



SE $\frac{1}{4}$ 17-107-67

NARRATIVE

SYMBOL

NAME

INTAKE FAMILY

14A
1-1

Enet loam and silt loam
1% slope

1.0

DESCRIPTION:

Moderately deep, well drained soils of loam and silt loam and moderately permeable subsoil of loam, clay loam or silty clay loam underlain by sand and gravel between 20 and 40 inches.

25A
20-1

Betts loam and stony loam

Not suited

REPORT OF ANALYSIS
Water Quality Laboratory
Water Resources Research Institute
South Dakota State University
Brookings, South Dakota 57006

Submitted by: Willman Prothors
 Address: Wessington Springs, SD
57382

Date Rec'd September 22, 1976
 Sample No. 76-1438
 Identification Well-
SE 1/4, Sec. 17, T 107N, R 67W

WATER ANALYSIS

Calcium (Ca)	130	ppm*	6.50	me/l**
Magnesium (Mg)	30	ppm	2.46	me/l
Sodium (Na)	36	ppm	1.57	me/l
Potassium (K)	10	ppm	0.26	me/l
Sulfate (SO ₄)	200	ppm	4.16	me/l
Nitrate (as N)		ppm		me/l
Chloride (Cl)	8	ppm	0.22	me/l
Bicarbonate (HCO ₃)	376	ppm	6.16	me/l
Carbonate (CO ₃)		ppm		me/l
Iron (Fe)		ppm		me/l
Fluoride (F)		ppm		me/l
Hardness (EDTA as CaCO ₃)		ppm		g.p.g.***
Alkalinity (Methyl Orange)	308	ppm (as CaCO ₃)		
Alkalinity (Phenolphthalein)	0	ppm (as CaCO ₃)		
Electrical Conductivity	919	micromhos per cm at 25° C.		
Sodium Adsorption Ratio	0.74			
Sodium	14.55	% of cations		
Residual sodium carbonate	0.00	me/l		
pH	7.25			

*ppm=parts per million

**me/l=milliequivalent per liter

***g.p.g.=grains per gallon

COMMENTS: Total cations 10.79 me/l
 Total anions 10.54 me/l

By: Shirley Litten

Service Performed

Amount Due

Irrigation analysis

\$8.00 PAID

Make checks payable to: Water Quality Laboratory

Cut along dotted line and return the lower portion with payment

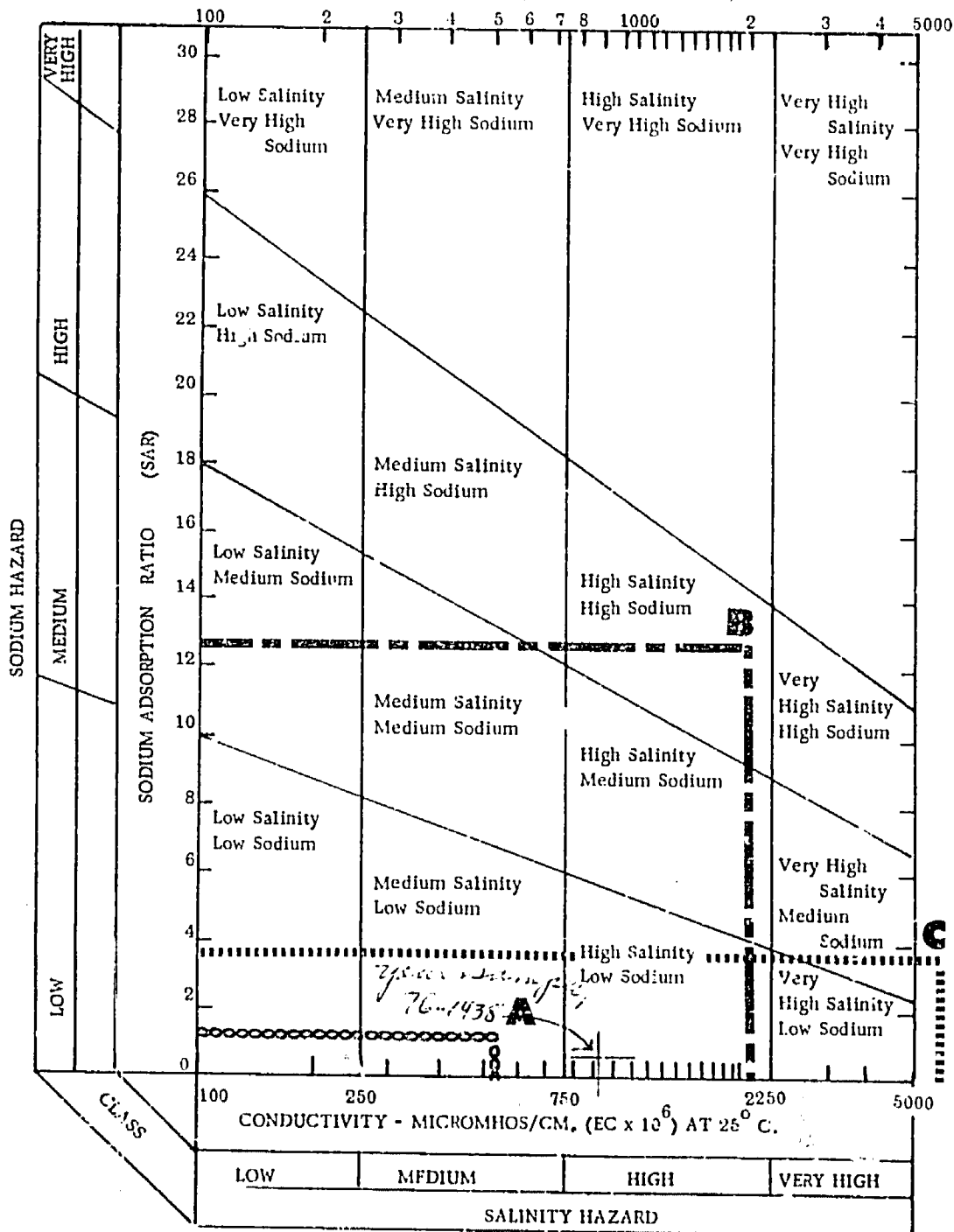
Sample No. 76-1438

Amount Enclosed

Signed

Figure 1. Classification of Irrigation Waters*

(Note: Examples from Table 1 on page 4 are shown in blue.)



Electrical Conductivity

A 522; P 2, 900; C 1, 700

Sodium Adsorption Ratio

A 1.1; B 1.2; C 0.7

*Adapted From Agricultural Handbook 60, USDA

the water and the greater the chance of toxic effect on plant roots. Salinity may be derived from soil parent material, seepage water, or irrigation water. Salt in mature soils generally reflects poor internal drainage and may indicate a fluctuating or high water table.

Alkali

The term "alkali" is widely used to indicate salt content, and there is much confusion as a result. In accurate use, however, "alkali" should denote only the relative content of the sodium ion in the clay complex, and therefore the physical behavior of the clay should be reflected by the alkali situation. The alkali factor of soils is generally reported and used over the United States and many other parts of the world as "the exchangeable sodium percentage." This means the fraction of the clay's capacity to hold cations in exchangeable form which is occupied by sodium. Even as a water softener holds exchangeable sodium to trade for the calcium and magnesium of the hard water which enters it, and to release a sodium water which we call "soft," so also does the soil have a great reservoir of exchangeable calcium and magnesium or calcium and magnesium and sodium. When the sodium ion becomes more than 15% of the exchangeable cations present in the soil reservoir, we classify the soil as an "alkali" soil.

The following table gives the classification of salt affected soils and the limits of salts and sodium which are presently regarded as the boundaries of each class.

Soil Classification	Salinity: Electrical Conductivity Saturation Extr.	Alkali: % Exchangeable Sodium in Colloid Complex
Normal	less than 4 m mhos per cm	less than 15
Saline	greater than 4	less than 15
Alkali	less than 4	greater than 15
Saline-Alkali	greater than 4	greater than 15

Note that a normal soil has less than 4 m mhos/cm of electrical conductivity in the water extract and less than 15% exchangeable sodium in the clay complex. A saline, or salty, soil has an increased electrical conductivity but still less than 15% exchangeable sodium in the colloid complex. The alkali soil, on the other hand, will have a lower electrical conductivity, or salt content, but more than 15% exchangeable sodium in the clay complex. The saline-alkali soil is both salty and high in sodium in the clay, having greater conductivity than 4 and greater than 15% exchangeable sodium.

Specific Toxic Factors

Occasionally there will be a specific toxic factor in a soil, as in some of the soils of the Imperial

Valley in California containing large quantities of boron. Boron is essential to plant life in small quantities, but poisonous in quantities above 3-4 parts per million. In South Dakota soils, it is relatively uncommon to find more than 2 p.p.m. of boron; consequently, we have no boron problem. However, there may be other elements (for example manganese and selenium) soluble in toxic quantities in certain soils.

Interpretation And The Important Decision

The interpretation of the results and the decision must be more than simply following results of analyses to a point in a diagram and deciding whether or not a water has a high, medium or low sodium hazard, and a high, medium, or low salt hazard, and whether a soil is presently normal, saline, alkali, or saline-alkali. An intelligent decision must be based on the knowledge of these mechanical factors plus the interpretation of the effect of the kind of agriculture that will be undertaken, the nature of the soil and its parent material, the substratum and its facility for moving water, or the all-important question of internal drainage, the amount of natural precipitation received and the period of the year in which it comes, and many other physical and somewhat intangible factors.

It is very difficult to put all of these into one package and set up guidelines for various soil textures. The person making the recommendation should also see the land on the farm, observe the nature of the soil and subsoil, and visit extensively with the farmer expecting to irrigate.

Where the water is good, or excellent, and soils are friable, open and well-drained internally, there is seldom any question. But when electrical conductivity of the water gets in the vicinity of 2,500-3,500; when pumping costs are such that the tendency to irrigate in large enough quantities to cause periodic leaching will be minimized, or when the subsoil internal drainage is poor or questionable, the decision is not so easy. In addition to these factors, the possibility of variation in water quality from time to time must not be overlooked. This, of course, is much greater when surface waters are being pumped or diverted than when ground waters are being used exclusively.

The possibility of long time or permanent damage to land by injudicious use of low quality waters on questionable soils should not be overlooked by any potential irrigator in South Dakota. The decision to irrigate should be made with full knowledge of all of the quality factors of water and soil which can be learned and with a good judgment evaluation of the many factors involved besides the soil and the water itself.

REPORT OF ANALYSIS
Water Quality Laboratory
Water Resources Research Institute
South Dakota State University
Brookings, South Dakota 57006

Submitted by: Willman Brothers
Address: Wessington Springs, SD
57392

Date Rec'd: September 22, 1976
Sample No.: 76-1438
Identification: Well-
SE1, Sec. 17, T 107N, R 67W

WATER ANALYSIS

Calcium (Ca)	130	ppm*	6.50	me/l**
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Sodium (Na)	36	ppm	1.57	me/l
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Bicarbonate (HCO ₃)	376	ppm	6.16	me/l
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Iron (Fe)		ppm		me/l
Fluoride (F)		ppm		me/l
Hardness (EDTA as CaCO ₃)		ppm		g.p.g.***
Alkalinity (Methyl Orange)	308	ppm (as CaCO ₃)		
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Residual sodium carbonate	0.00	me/l		
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Others:

*ppm=parts per million

**me/l=millequivalents per liter

***g.p.g.=grains per gallon

COMMENTS: Total cations 10.79 me/l
Total anions 10.54 me/l

By: Shirley Mittan

Service Performed

Amount Due

Irrigation analysis

\$8.00 PAID

Make checks payable to: Water Quality Laboratory

Cut along dotted line and return the lower portion with payment

Sample No. 76-1438

Amount Enclosed \$ 8.00

Signed [Signature]

Form 2A Wells, Dugouts or Water Storage Dams (Supplement to form 2)

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

D. Well Information or Estimates

- (1) Drill Hole, Diameter 30, Depth 11
- (2) Casing, Type steel (wood, concrete, steel, etc.), Diameter 17, Thickness 1/2
- (3) Perforated Screen.
- Type 17, Diameter 17, Length 11
- (4) Gravel Pack, Thickness 11, Length of gravel pack 11

E. Dugout Information or Estimates.

- (1) Surface dimensions 11, Depth 11

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

- (1) Water Bearing Materials. (Please attach a copy to test well log if available.)

Character of Water bearing materials cracked ground

Depth to top of water bearing material 35 ft

Depth to bottom of water bearing material 45 ft

Thickness of water bearing material cracked ground

Depth to water (ground surface to water level) 50 ft

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

On same owner's property 1 1/4 miles rds. On property owned by others 1 1/4 miles 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, maximum water depth, surface area and storage capacity of each storage dam. The location of each water storage dam should be shown on the water right map.

Willard C. C. C. C. C.
Signature of Applicant

No. 3494-3

Publish first publication, on or before February 10, 1977

**NOTICE
INTENT TO APPROPRIATE WATER**

Pierre, South Dakota 57501

February 1, 1977

Notice is hereby given that Willman Brothers

whose post office address is Wessington Springs, South Dakota, has made an application in accordance with the provisions of the water laws of South Dakota for a permit to appropriate for beneficial use

2.0 cubic feet of water per second of time from ~~the~~ ground water through the

Willman Brothers # 1, the point of diversion of which is to be located in the

center of Sec

of Section 17, Twp. 107N, Range 57W. Said water to be used for the purpose of providing irrigation on ^{portions of} the following described land:

SE $\frac{1}{4}$, Section 17, T107N, R67W

This application No. 3494-3 will be considered by the Water Rights Commission at their office at Pierre upon the 23 day of February, 1977, at 10:00 A.M. All interested persons may appear and be heard.

WATER RIGHTS COMMISSION

By:

**BURTON F. JONLS
Water Rights Specialist**

BFJ/lw

cc: Willman Brothers, Wessington Springs, SD 57382

No. 3494-3

PROOF OF PUBLICATION

STATE OF SOUTH DAKOTA)
County Jerauld) ss.

I, A. L. Webb hereby

certify that the annexed printed copy of Notice of Intent to Appropriate

Water was taken from the Herrington Springs Independent

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 Herrington Springs

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

9 February 1977

16 February 1977

A. L. Webb
(Signature)

publisher
(Title)

16 Feb 77
(Date Signed)

NOTICE
INTENT TO
APPROPRIATE WATER

Pierre, S.D. 57501

February 1, 1977

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propriate for beneficial use
2.0 cubic feet of water per
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water through the Willman
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diversion of which is to be
located in the Center of SE $\frac{1}{4}$
of Section 17, Twp. 107N,
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tions of the following de-
scribed land:

SE $\frac{1}{4}$, Section 17, T107N,
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This application No. 3494-3
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their office at Pierre upon the
23rd day of February, 1977,
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persons may appear and be
heard. —Water Rights Com-
mission. By: —Burton F.
Jones, Water Rights Special-
ist. c-20-21



SOUTH DAKOTA
Department of
Water & Natural Resources

Joe Foss Building Water Rights Division
Pierre, South Dakota 57501

(605) 773-3352

November 2, 1982

Willard Wollman
Wessington Springs,
South Dakota 57362

Dear Mr. Wollman:

Enclosed herewith are, Water License No. 3996-3 and Certificate of Construction.

Water License No. 3996-3 is the final water right document completing your process of obtaining a water right.

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

Very truly yours,



JOHN HATCH, Chief Engineer
Water Rights Division

JH: ks

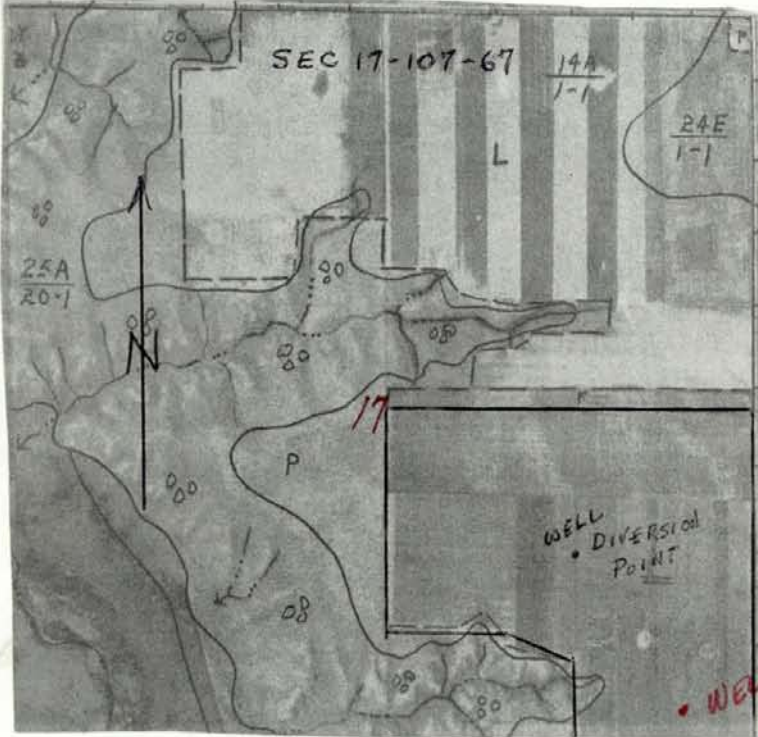
enclosures

NOTE: The applicable portions of Permit No. 3494-3 have been incorporated into this Water License No. 3996-3.

NOT TO SCALE



Willman Brothers
Wessington Springs, S.D.



Am LN 3996-3
Map No 2774-3 Am NE3494-3

by Lawrence E Carson

Lawrence E. Carson

Jerauld County Extension Agent
Wessington Springs, SD 57382