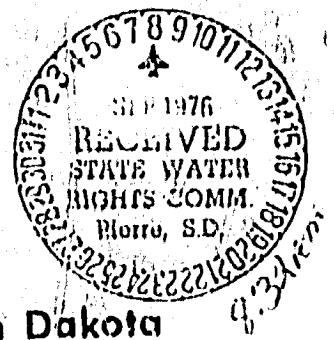


Water Right Number 3031-3

1. Considered 10-21, 1976
2. Name of Applicant Carroll J. Pade
3. Post Office Address Chelaca
4. Amount of water claimed 4.0
5. Source of water supply 140' deep well
6. Water to be used for irrigation
Acres to be irrigated 290
7. Water to be diverted and used in Apache County
about 6 1/2 Miles 2 1/2 of Maricopa
8. Proof of Publication Received 10-21-76
Not received _____
9. Application _____
10. Remarks: _____

Map No. 2355-3 Water Division No. 3 JAMES RIVER District
(Blanks to be filled by the Engineer for the W. R. C.)



APPLICATION FOR PERMIT

To Appropriate Water within the State of South Dakota

(NOTE: Draw a line through items not applicable)

1. Name of Applicant Aaron J. Bade
Postoffice Address RR #1, Chelsea, State South Dakota 57431
If a corporation show date and place of incorporation _____
2. Method of accomplishing work (contract, employment of others, or by direct labor) Direct Labor
3. Name of diversion work Aaron J. Bade, Unit #1
4. Amount of water claimed (cubic feet per second) 4.12
5. Source of water supply Ground Water
6. Location of point of diversion A POINT IN THE NW 1/4 SECTION 17,
T 120N, R 65W
County Spink
7. Annual period or periods during which water is to be used March - November
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 290

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.
NE 1/4 of 17-120-65	90		
SE 1/4 of 17-120-65	80		
SW 1/4 of 16-120-65	120		

Attach sheet if more space is needed

10. Time required to complete construction of water supply system 5 years. Additional time required to complete application of water to the proposed beneficial use 2 years.
11. Choice of newspaper for Notice of Intent to Appropriate Water publication Redfield-Presso, Redfield, South Dakota
AMERICAN NEWS, ABERDEEN
12. Principal Features of the Proposed Water Supply System:

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

Pump Bowl

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

Main Line

C. Works proposed to apply water to beneficial use.

Center Pivot

Estimated Total Cost \$ _____

Attachments: 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 Spink) ss.

I, Aaron J. Bade 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 Aaron J. BadeSubscribed and sworn to before me this 7 day of September, 1976

Notary Public (or other qualified officer)

Com. 11.6.76

WATER RIGHT APPLICATION APPROVAL

The Water Rights Commission hereby approves Water Right Application No. 3031-3

AARON J. BADE
(Applicant)

CHELSEA
(Post Office Address)

SOUTH DAKOTA 57431 With the following modifications:
(State)

The irrigation well approved under this Permit will be located near domestic wells and other 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 existing domestic wells or in irrigation wells having prior water rights.

Date of first receipt of application SEPTEMBER 8, 19 76
Date of return to applicant for correction, amendments or changes required _____, 19 ____
Date of receipt of corrected application OCTOBER 4, 19 76
Approved NOVEMBER 18, 19 76, Recorded in Book 16 Page 185

WATER RIGHT PERMIT NO. 3031-3

The Water Rights Commission hereby grants and issues this Water Right Permit No. 3031-3 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 SEPTEMBER 8, 19 76
2. The equivalent of at least one-fifth of the work above specified is to be completed on or before MAY 18, 19 79
3. The whole of said work is to be completed on or before NOVEMBER 18, 19 81
4. The limit of time from proof of beneficial use of water appropriated in accordance herewith is NOVEMBER 18, 19 83
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 4.0 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 NOVEMBER 18, 19 83; said water to be used during the following described annual period: MARCH - NOVEMBER

Witness my hand this 20TH day of DECEMBER, 19 76

WATER RIGHTS COMMISSION

By: John Hatch
Chief Engineer, Executive Officer

Certificate of Construction Issued _____, 19 ____

Water License Issued _____, 19 ____

HURON DRILLING INC. DRILLERS LOG

PAGE NO. 1

Aaron J. Bade
JOB NAME

SE# of 17-120-65
LOCATION

3/2/76
DATE

10)
RIG NO.

Leland Klug
FOREMAN

[illegible]

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

D. Well Information or Estimates

(1) Drill Hole, Diameter _____, Depth _____

(2) Casing, Type _____ Diameter _____ Thickness _____
(wood, concrete, steel, etc)

(3) Perforated Screen.

Type _____, Diameter _____, Length _____

(4) Gravel Pack, Thickness _____, Length of gravel pack _____

E. Dugout Information or Estimates

(1) Surface dimensions _____, Depth _____

F. Fill out for Either a Well or a Dugout. *Log will be furnished by driller

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

Character of Water bearing materials _____

Depth to top of water bearing material _____

Depth to bottom of water bearing material _____

Thickness of water bearing material _____

Depth to water (ground surface to water level) _____

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

On same owner's property 70 rds. On property owned by others 70 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.

Arant J. Balle
Signature of Applicant

ATION
SION
W1 #1

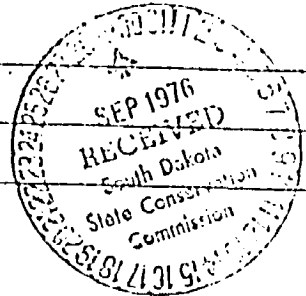
STATE CONSERVATION COMMISSION
SUPPORTING INFORMATION
FOR APPROPRIATION OF GROUND WATER IN ACCORDANCE
WITH SDCL 46-6-3 AS AMENDED
(THIS FORM REQUIRED FOR PROPOSED GROUND WATER IRRIGATION ONLY)



NAME Aaron J. Bade

ADDRESS RR #1, Chelsea, South Dakota 57431

COUNTY Spink



LEGAL DESCRIPTION

1. WELL LOCATION NW Corner of the SE $\frac{1}{4}$ of 17-120-65
2. LOCATION OF AREA TO BE IRRIGATED NE $\frac{1}{4}$ of 17-120-65, SE $\frac{1}{4}$ of 17-120-65, SW $\frac{1}{4}$ of 16-120-65

TYPE OF IRRIGATION

3. GRAVITY _____ TOWLINE _____ CENTER PIVOT X GUN _____
4. CROPS TO BE IRRIGATED Corn, Alfalfa, Small Grain

WATER QUALITY

5. SAMPLE NUMBER 76-1292
6. SALINITY (EC X 10⁶) 786 (moderately high)
7. SODIUM (SAR) 0.21 low
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 Spink 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.

Aaron J. Bade
APPLICANT'S SIGNATURE

SUBSCRIBED AND SWORN BEFORE ME THIS
DAY OF Sept 1976

[Signature]
(TITLE OR SEAL)

Approval does not imply that this project can be carried out successfully in all circumstances. Individual management will to a large degree determine the relative success.

[Signature]
APPROVED/DISAPPROVED

(SOILS INFORMATION ON REVERSE SIDE)

September 24, 1976



Mr. Aaron J. Bade
R.R. #1
Chelsea, SD 57431

Dear Mr. Bade:

Your water sample (Lab. No. 76-1292) 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 AES 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

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

Submitted by: Aaron Bade
Address: Chelsea, SD 57431

Date Rec'd September 7, 1976
Sample No. 76-1292
Identification Well-
SE4, Sec. 17, T. 120N, R. 65W

WATER ANALYSIS

Calcium (Ca)	105	ppm*	5.25	me/l**
Magnesium (Mg)	40	ppm	3.28	me/l
Sodium (Na)	10	ppm	0.44	me/l
Potassium (K)	52	ppm	1.35	me/l
Sulfate (SO ₄)	33	ppm	0.69	me/l
Nitrate (as N)		ppm		me/l
Chloride (Cl)	25	ppm	0.70	me/l
Bicarbonate (HCO ₃)	515	ppm	8.44	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)	422	ppm (as CaCO ₃)		
Alkalinity (Phenolphthalein)	0	ppm (as CaCO ₃)		
Electrical Conductivity	786	micromhos per cm at 25° C.		
Sodium Adsorption Ratio	0.21			
Sodium	4.26	% of cations		
Residual sodium carbonate	0.00	me/l		
pH	7.42			
Others:				

*ppm=parts per million

**me/l=millequivalents per liter

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

COMMENTS: Total cations 10.32 me/l
Total anions 9.83 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. 76-1292

Amount Enclosed \$

Signed

No. 2031-3

PROOF OF PUBLICATION

STATE OF SOUTH DAKOTA)
) ss.
County Brown)

I, Dianne Brenden hereby

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

Water was taken from the Aberdeen American 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 Aberdeen

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

October 12, 1976

October 19, 1976

Dianne Brinder
(Signature)

Principal Clerk
(Title)

October 19, 1976
(Date Signed)

NOTICE

INTENT TO APPROPRIATE WATER
Notice is hereby given that Aaron J. Bade whose post office address is Cheyenne, South Dakota, has made an application in accordance with the provisions of the water law of South Dakota for a permit to appropriate for beneficial use 40 cubic feet of water per second of time from ground water through the Bade No. 1, the point of diversion of which is to be located in the NW 1/4, SE 1/4 of Section 17, T. 120 N., Range 55 W., Saline River basin, 120th Meridian, for the purpose of using the same for providing irrigation on portions of the following described land: E 1/2, section 17; SW 1/4, Section 16, T. 120 N., R. 55 W.

This application No. 3031-3 will be considered by the Water Rights Commission at their office at Pierre upon the 21st day of October, 1976, at 1:00 P.M. All interested persons may appear and be heard.

WATER RIGHTS COMMISSION
By: Burton F. Jones
Water Rights Specialist.



No. 3031-3

Publish first publication, on or before October 12, 19 76

NOTICE
INTENT TO APPROPRIATE WATER

Pierre, South Dakota 57501

October 5, 19 76

Notice is hereby given that Aaron J. Bade

whose post office address is Chelsea, 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

4.0 cubic feet of water per second of time from the ground water through the

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

NW 1/4 SE 1/4

of Section 17, Twp. 120N, Range 65W. Said water to be used for the purpose of providing irrigation on the following described land:

E 1/2, Section 17; SW 1/4, Section 15, T120N, R65W

This application No. 3031-3 will be considered by the Water Rights Commission at their office at Pierre upon the 21st day of October, 19 76, at 1:00 P.M. All interested persons may appear and be heard.

WATER RIGHTS COMMISSION

By:

BURTON F. JONES
Water Rights Specialist

BFA: r.
cc:

Aaron J. Bade, Chelsea, S. D. 57431



Department of Natural Resource Development

WATER RIGHTS COMMISSION

Joe Foss Building, Pierre, South Dakota 57501

Phone 605/224-3151

November 10, 1976

Larry Krause
Mansfield, S.D. 57460

Lyle Bierman
Mansfield, S.D. 57460

Re: 2867-3
2870-3
2964-3
3031-3 ✓

Robert Berchard
Mansfield, S.D. 57460

Aaron Bade
Rt. 1
Chelsea, S.D. 57431

Gentlemen:

Deferred Water Right Applications No. 2867-3, No. 2870-3, No. 2964-3 and No. 3031-3 will be reconsidered by the Water Rights Commission during their November 16, 17 and 18, 1976 meeting, at 9:00 a.m. November 18, 1976. A copy of the "Report on Water Rights Applications into Middle James Aquifer, Southwest Brown County and Northwest Spink County" is enclosed for your information. Any comments concerning these applications can be presented at this hearing.

The Commission will be meeting in the Marvin Hughitt Hotel Ballroom, Huron. Applications No. 3130-3, Otto Krause; No. 3171-3, Jerald J. & Dennis L. Kamen; and No. 3187-3, Boekelheide Farms will also be considered at 9:00 a.m., November 18, 1976 rather than the advertised 10:00 a.m. November 17, 1976 time. Please advise, if you have any questions concerning the hearings.

Very truly yours,

John Hatch, Chief Engineer
Water Rights Commission

JH/cb

cc: Otto Krause
Jerald J. & Dennis Kamen
Boekelheide Farms
Arnold Ristau
Marvin Ristau

Enclosures

REPORT ON
WATER RIGHTS APPLICATIONS INTO MIDDLE JAMES AQUIFER, SOUTHWEST
BROWN COUNTY AND NORTHWEST SPINK COUNTY
NOVEMBER 8, 1976

The Water Rights Commission has considered five Water Rights Applications for the Middle James Aquifer in southwest Brown County and northwest Spink County. The applications were considered at either the September 29-30, 1976 or October 21-22, 1976 Commission Meetings. Three additional applications are advertised for the November 17-18, 1976 meeting. An investigation was conducted in the area October 25, 1976.

Applications

The following table lists the area Water Right Applications in the Middle James Aquifer. The actual project locations are shown on the Attachment.

<u>Number</u>	<u>Name</u>	<u>Priority Date</u>	<u>CFs</u>	<u>Acres</u>	<u>Well Depth</u>	<u>Status</u>
2394-3	Mylon Jeschke	7-21-76	2.20	160	140'	App. 9-29-76
2867-3	Larry Krause	7-27-76	9.07	635	151' & 165	App. 4.0 cfs Deferred 9-29-76 5.07 cfs
2870-3	Robert Borchard	8-10-76	2.28	240	108'	Deferred 9-29-76
2964-3	Lyle Bierman	8-26-76	2.30	280	138'	Deferred 9-29-76
3031-3	Aaron Bade	9-8-76	4.00	290	140'	Deferred 10-21-76
3130-3	Otto Krause	10-27-76	6.6	464	2-170'	Advertised for November meeting
3171-3	Jerald J. & Dennis L. Kamen	10-21-76	4.2	295	200'	Advertised for November meeting
3187-3	Boekelheide Farms	10-25-76	4.0	290	160'	Advertised for November meeting

Geology of the Area

Bulletin 25, "Geology and Water Resources of Brown County, South Dakota Part II, Water Resources", dated 1976 describes three major aquifers in

Brown County - the Elm, the Middle James and Deep James Aquifers.

The Elm Aquifer, a shallow aquifer, underlies about 390 square miles in Brown County and is under water table conditions in some areas and artesian conditions in others. In the western part of the Elm, it is under artesian conditions. There are about 1,200,000 acre feet of water in the Elm Aquifer. Water movement is from the northwest to the southeast. The natural discharge from the aquifer is into the Elm River, Foot Creek, into the atmosphere by evapotranspiration, through recharge to the Middle James Aquifer and by eastward flow into the Lacustrine deposits underlying the Lake Dakota Plain.

The Middle James Aquifer underlies about 530 square miles in Brown County. Water in the aquifer is under artesian conditions and moves in general from the west to the east. The Middle James in Brown County contains about 1,400,000 acre feet of water in storage.

Recharge is from percolation of snowmelt and precipitation through overlying lake silt, outwash and till. The largest recharge is from the Elm Aquifer where it is in contact with the Middle James. Water levels in the Middle James Aquifer rise in the spring and early summer when recharge from precipitation and snowmelt is greater than discharge. Natural discharge is by percolation into the Deep James Aquifer and by eastward flow into the Lake Dakota sediments and into till.

The Middle James Aquifer extends south into Spink County; however, since the County study has not been started in Spink County, only limited information is available beyond the County line. In Marshall County, the Middle James Aquifer and the Deep James Aquifer merge to become a single aquifer, the James Aquifer. In Marshall County, the James Aquifer underlies about 220 square miles of area and contains about 1,500,000 acre feet of water. The James Aquifer also extends into North Dakota and Day County.

Persons Contacted

Mr. and Mrs. Arnold Ristau, Lyle Bierman and Robert Borchard were contacted the day of the investigation.

Discussion

Mr. and Mrs. Ristau had indicated concern at the September 29 meeting that shallow domestic wells in the Elm Aquifer and dugouts would be affected by pumping from the deeper Middle James Aquifer.

There are only three known existing domestic wells into the Middle James Aquifer in this area. One owned by Mr. Borchard, the other by Mr. Bierman and the third by Mr. Howard Nelson. Three additional domestic wells were reported as planned for the Middle James Aquifer. Water development from the Middle James Aquifer in this area is unique in that the three

existing domestic wells have all been drilled since 1972 following the discovery of the Middle James Aquifer by the Geological Survey. Consequently, all wells are adequate wells or required to be. An adequate well in the Middle James artesian aquifer is defined as a well in which the pump intake is placed or is capable of being placed, at least 20 feet below the top of the Middle James artesian aquifer formation, aquifer depth permitting. Other domestic wells in the area are into the shallow Elm Aquifer or else were drilled down to the deeper Dakota formation.

Since development of the Middle James Aquifer is relatively new, we do not have the situation experienced in many other artesian aquifers in the State with inadequate wells. The Commission staff has not located any older inadequate domestic wells in the Middle James Aquifer.

At the October Meeting, the possibility of conducting a pump test using Mr. Borchard's irrigation well was discussed. However, upon investigation, it was determined that such a pump test with available domestic wells used as observation wells would be of little value. Since the existing or planned domestic wells are required to be adequate, the domestic wells would continue to supply water even though the artesian head may fluctuate due to the irrigation pumping. The U. S. Geological Survey has observation wells in the area which can be used to monitor water levels. One observation well on the Brown and Spink County line, in the southwest corner of Section 34-T121N-R65W can be checked for draw down. The water level at the time of the investigation was 26.5 feet. This observation well will be used to monitor irrigation pumping effects. Mr. Marvin Ristau, who also protested the granting of the Krause application at the September meeting, indicated he was concerned that since the Middle James receives part of its recharge from the Elm Aquifer that pumping from the Middle James would tend to lower the water levels of the Elm Aquifer. The Elm Aquifer will also be monitored for any effects of irrigation pumping from the Middle James. The total amount of water that would be withdrawn by all applications in a 90 day continuous pumping season each year would be 6184 acre feet. Although the extent of the Middle James in Spink County is not known, there is a large amount of water stored in the Middle James Aquifer just in Brown County.

Since the known domestic wells into the James Aquifer are new since 1972 and required to be adequate wells, the staff believes there should be no reason that all pending applications should not be granted, including the deferred portion of the Krause application.

The staff believes that additional permits can be granted in the future; however, until there is more irrigation pumping experience from the aquifer, the staff is recommending for at least one year that future irrigation wells be spaced at least one mile from existing irrigation wells. The Middle James Aquifer is an untapped and rather extensive water resource.

Recommendations

Based upon the Brown County study, there is unappropriated water available and the commission staff recommends that all pending applications No. 2867-3, 2870-3, 2964-3, 3031-3, 3130-3, 3171-3 and 3187-3 be approved with the following qualification:

The irrigation well approved under this Permit will be located near domestic wells and other 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 existing domestic wells or in irrigation wells having prior water rights.

John Hatch
Chief Engineer

Recommendations

Based upon the Brown County study, there is unappropriated water available and the commission staff recommends that all pending applications No. 2867-3, 2870-3, 2964-3, 3031-3, 3130-3, 3171-3 and 3187-3 be approved with the following qualification:

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John Hatch
Chief Engineer

Attachment							
24	19	20	21	22	28	24	19
25	30	29	28	27	26	25	30
36	31	32	33	34	35	36	31
1	6	5	4	3	2	1	6
12	7		9	10	11	1P	7
13	14	17	16	15	14	18	18
24	10	20	21	22	28	24	10
25	30	29	28	27	26	25	30
36	31	32	33	34	35	36	31
R66W	Brown County Spink County				R65W	R64W	
1	6	5	4	3	2	1	6
12	7	8	9	10	11	12	7
13	14	15	16	17	18	19	18
24	10	20	21	22	28	24	10
25	30	29	28	27	26	25	30
36	31	32	33	34	35	36	31
1	6	5	4	3	2	1	6
12	7	8	9	10	11	12	7
13	14	15	16	17	18	19	18
24	10	20	21	22	28	24	10
25	30	29	28	27	26	25	30
36	31	32	33	34	35	36	31

T 123 N

T 121 N

T 120 N

3171-3
Jocelyn
30
Amen

Hand rd
Helen
1' diameter 120' deep well

Arnold
Kistner

0 2130-3
Otto Kistner

1' diameter
120' deep well

0 Robert Borchert

2270-3
Larry
Kistner
2261-3

Brown County
Spink County

Observation Well

2371-3
Myron Jeschke

2964-3
0 Eld
Bickman

4' diameter
20' deep well

Arven
Bode
2021-3

3117-3
Jocelyn
Kistner

HURON DRILLING INC.
WELL LOCATION MAP

NAME Aaron J. Bade

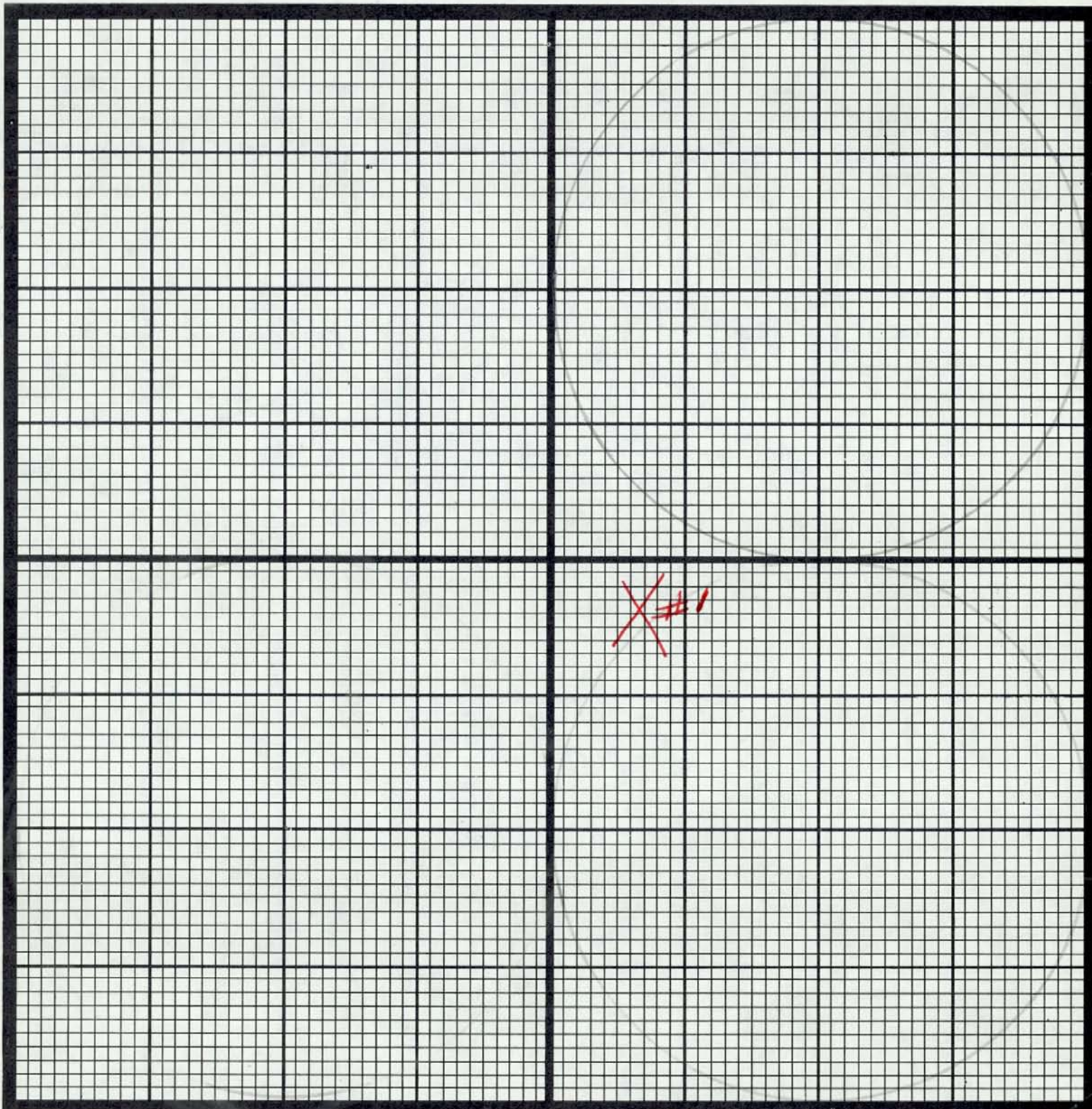
DATE September 7 19 76

WELL NO. #1

SE

QUARTER, SECTION 17

TWP. 120 RANGE 65 IN Spink COUNTY



X — PROPOSED LOCATION

Prepared By

Dick Fadgen

Dick Fadgen

Beadle County Extension Agent