

WATER PERMIT NO. 7461-3

Name of Applicant: Glenn Bosse

Address: 48100 County Rd 1B, Jefferson SD 57038

Phone: 605 966-5794

Amount of Water Claimed: 1.10 add'l

Total Acres: 32 add'l

Source of Water Supply: groundwater (one well)

Water to be used for: irrigation

County: Union

Type of Waste Disposal System:

Location: 1 mile northwest of Jefferson

PRIORITY

Date Received: 9-26-12

Application/License Fee: \$ 700

Corrected Application Received:

Period of Annual Use: June 1 – Aug 31

Remarks:

Diversion Point: SW 1/4 SW 1/4 Sec 12-T90N-
R49W

Land to be Irrigated: SW 1/4 Sec 12-T90N-R49W

Depth of Well: 120 feet deep

Well Driller:

Remarks:

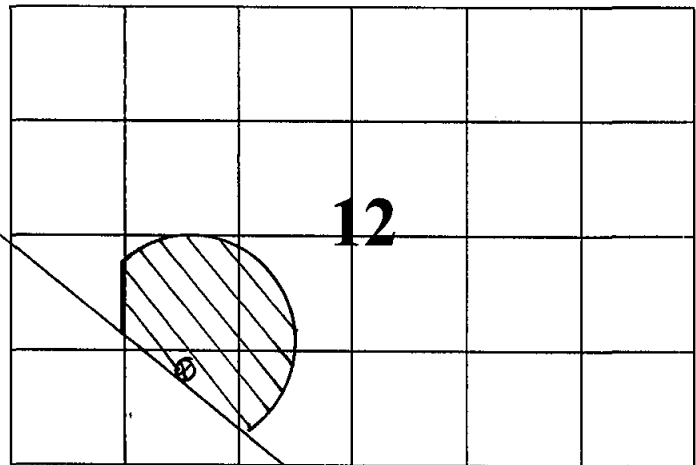
Type of Map: aerial

Prepared by:

Reviewed and the Number Assigned on: 10-16-12

By: Karen Schlaak

Notice of Hearing - date to intervene: _____



RECEIVED

SEP 26 2012

WATER RIGHTS
PROGRAM

Mail to: PMB 2020 DENR - Water Rights 523 E Capitol Ave Pierre, SD 57501-3182 ph. (605) 773-3352	No. <u>7461-3</u> (office use only) Hydrologic Unit <u>10170203</u>
	Basin <u>Sioux River</u> <u>605-356-2632</u>
	Newspaper <u>Leader-Courier Box 310 Elk Point</u> <u>57025</u>
	<u>Press & Dakotan</u> <u>Yankton 319 Walnut 57078</u> <u>- 605-665-7811</u>

Application For Permit To Appropriate Water For Irrigation

Type of Application: ☒ New ☐ Vested Right ☐ Amendment/Correction to Permit No. _____
(Use predates Mar 2, 1955)

Description of amendment/correction: (i.e. change diversion point(s), add diversion point(s), change use, etc.)

1. Name of Applicant Glenn Bosse Phone 605-966-5794
(check one) ☐ Owner ☐ Tenant/lessee
Mailing Address 48100 County Road 1B Jefferson SD 57038
11000 ddr cfo (Address) (City) (State) (Zip Code)
2. Amount of water claimed 1.78 *CFS or 800 **GPM ***AF Total Acreage 80 32000 ddr
(*Cubic Feet per Second) (**Gallons per Minute) (***) Acre Feet - storage capacity of dam/dugout or annual use if applicable)
3. Source of water supply SAND & GRAVEL
4. Location of point of diversion (example - 3 wells in SW 1/4 NE 1/4 section 12-T104N-R53W) County Union
- SW 1/4 SW 1/4 Sec 12 - T90N - R49W
5. County or counties where water will be used Union
6. Annual period during which water is to be used June 1 - Aug. 31
7. List below each forty acre division, or lot, or fraction thereof and show number of acres to be irrigated in each.
(Attach sheet if more space is needed)

Land Description	Acres	Land Description	Acres
<u>SW 1/4 Sec 12 - T90N - R49W</u>	<u>80</u>		

8. Give a description of the project. (Attach sheet if more space is needed)

applicant is requesting a greater diversion rate than
statutory limit.

STATE OF SOUTH DAKOTA)
County of UNION) SS

Attachments: Attach Form 2A if diversion is from a well or dugout, or if storage of water is proposed. Also, attach map and any other technical information. (see instructions)

I, GLENN BOSSE, 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.

Applicant's signature Glenn BosseSubscribed and sworn to before me this 13th day of Sept. 2012

PATRICIA L. KJOSE

NOTARY PUBLIC
SOUTH DAKOTAMy Commission Expires 10/8/2015Notary Public signature Patricia L. KJose

**SOUTH DAKOTA
WATER PERMIT NO. 7461-3**

Date of first receipt of application September 26, 2012.

Date of return to applicant for corrections, amendments or changes September 27, 2012.

Date of receipt of corrected application October 12, 2012.

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 7461-3 to Glenn Bosse, 48100 County Road 1B, Jefferson SD 57038 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. 7461-3 authorizes an additional 1.10 cubic feet of water per second (cfs) and irrigation of 32 additional acres to what is currently authorized by Water Right No. 3249B-3. Water Right No. 3249B-3 authorizes 0.68 cfs from one well located in the SW 1/4 NW 1/4 Section 12 to irrigate 48 acres located in the N 1/2 SW 1/4 Section 12; all in T90N-R49W. This permit authorizes transferring the existing diversion authority (0.68 cfs) authorized by Water Right No. 3249B-3 and an additional 1.10 cfs from one new well to be completed into the Missouri:Elk Point Aquifer (120 feet deep) located in SW 1/4 SW 1/4 Section 12 for irrigation of 32 additional acres located in the S 1/2 SW 1/4 Section 12; all in T90N-49W. This permit and Water Right No. 3249B-3 authorize a total diversion rate of 1.78 cfs for irrigation of 80 acres.
2. The amount of the appropriation may not exceed 2 acre feet annually for each acre of land to which water is actually and beneficially applied for irrigation. The water is to be used during the following described annual period: June 1 – August 31.
3. The date from which applicant may claim right is September 26, 2012.
4. The date of approval of Permit No. 7461-3 is January 22, 2013.
5. One-fifth of the construction is to be completed on or before July 22, 2015.
6. All construction is to be completed on or before January 22, 2018.
7. Water is to be put to beneficial use on or before January 22, 2022.
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. 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.
2. The well authorized by Permit No. 7461-3 shall be constructed by a licensed well driller and construction of the well and installation of the pump shall comply with Water Management Board Well Construction Rules, Chapter 74:02:04 with the well casing pressure grouted (bottom to top) pursuant to Section 74:02:04:28.

(continued)

Water Permit No. 7461-3

Glenn Bosse

Page 2

3. Pursuant to SDCL 46-5-6 which allows a greater diversion rate if the method of irrigation, time constraints, or type of soils so requires, Water Right No. 3249B-3 and Water Permit No. 7461-3 authorizes a maximum diversion rate of 1.78 cfs for the irrigation of 80 acres with an annual volume not to exceed 2 acre feet of water per acre per year.
4. This Permit is approved subject to the irrigation water use questionnaire being submitted each year.

WATER MANAGEMENT BOARD

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

FEB 19 2013

date



Supplemental Information

(type or print in ink)

1. Well Information - Proposed Construction

- a) Drill Hole Diameter 17" Depth 120'
- b) Casing Type PVC Diameter 12" Thickness SCH. 40
- c) Screen Type PVC Diameter 12" Thickness SCH. 40
- d) Gravel Pack Pea gravel Length of Gravel Pack 60'
- e) Depth to Top of Water Bearing Material 65'
- f) Depth to Water (ground surface to water level) 20'
- g) Distance to nearest existing domestic well:
- On applicant's property 300 ft. On property owned by others 1/4 mile

2. Wastewater Disposal System Information

- a) Type of System (i.e. septic tank, drain field) _____
- b) System Capacity (gallons) _____ Year Constructed _____
- c) Connected to the City of _____ Sanitary System

3. Dugout Information

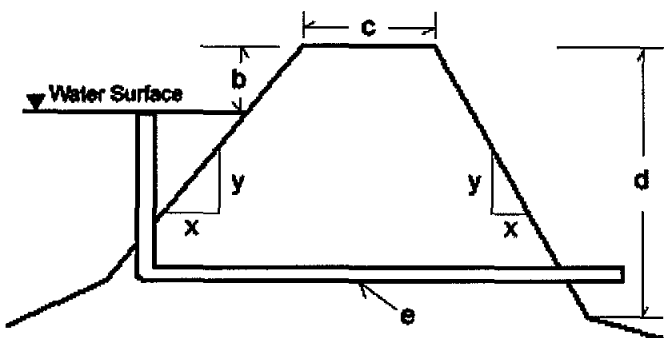
- a) Surface Dimensions _____ Depth _____
- b) Depth to water (ground surface to water level) _____

4. Water Storage Dams

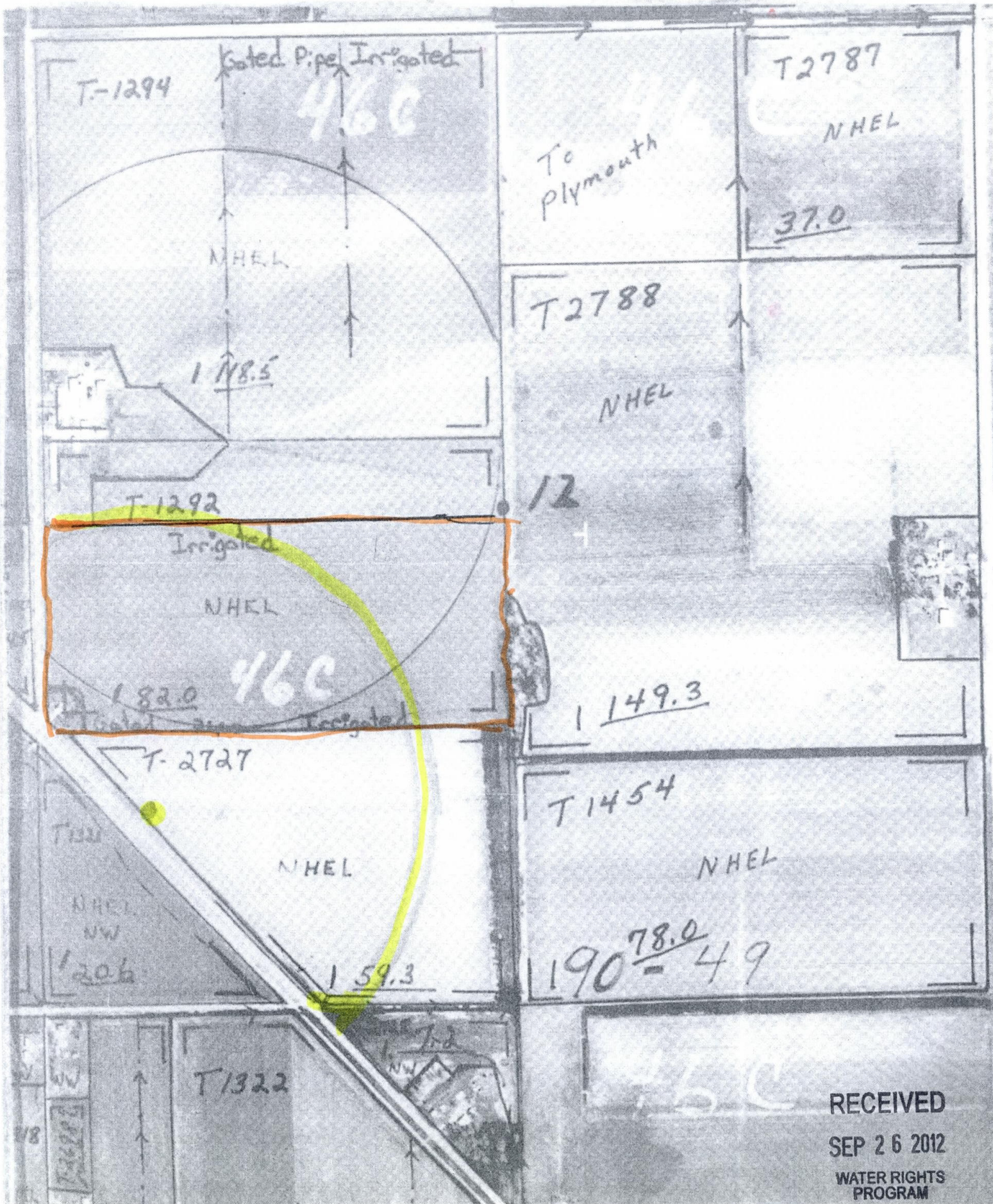
If the proposed water use system contains one or more storage dams, please furnish the information requested below for each dam. The locations of the dams need to be shown on the map submitted with the application.

- 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 (e.g. 3 to 1 is a typical slope)
Upstream _____
Downstream _____
- h) Surface Area of Impoundment _____
- i) Storage _____ Acre Feet
- j) Drainage Area Above Dam _____ Acres



MAP NOT TO SCALE
THIS IS NOT AN OFFICIAL WETLAND MAP.



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SEP 26 2012
WATER RIGHTS
PROGRAM

MARINA INN
Conference Center

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SEP 26 2012
WATER RIGHTS
PROGRAM

to whom it may concern,
the property in orange has
changed ownership. the old
plot to north will not
be covering it any more

Gene Bue

"The Only Thing We Overlook Is The River"

Fourth & B Streets Box 218 South Sioux City, Nebraska 68776
800-798-7980 402-494-4000
www.marina-inn.com

RECEIPT

WATER RIGHTS PROGRAM

South Dakota Department of Environment and Natural Resources

Date 9/26, 20 12

RECEIVED OF Glenn Bosse 48100 County Rd 1B Jefferson SD 57038

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

Fee for Application for Permit No. <u>74601-3</u> to Appropriate Water, to construct and to put water to beneficial use	500	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>74601-3</u>	200	00
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	700 00

No. 05590

By

[Signature]
Chief Engineer



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
denr.sd.gov

September 27, 2012

No. 3249-3

Glenn Bosse
48100 County Rd 1B
Jefferson SD 57038

Dear Mr. Bosse:

Enclosed is a partially completed "Notice of Transfer" form for use in filing a partial ownership change on Water Right No. 3249-3. The water right is currently listed in the name of Dean Bosse.

The transfer form should be checked over for accuracy and signed by the new owner. Upon completion, return the form to our office with a required filing fee of \$50.00. A postage prepaid envelope is enclosed.

Once this form is returned, Water Right No. 3249-3 will be split and reissued. Your portion will be 48 acres and 0.68 cubic feet of water per second (305 gallons per minute) with a December 3, 1976 priority date. The new application will be for an additional 32 acres and 1.10 cfs (495 gallons per minute). The existing split water right and the new application will combine for a total of 80 acres and 800 gallons per minute.

If you have any questions, please contact me.

Sincerely,

Karen Schlaak

Karen Schlaak
Water Rights Program
605 773-3352
email: karen.schlaak@state.sd.us

enclosure

NOTICE OF TRANSFER OF OWNERSHIP

RECEIVED

OCT 12 2012

WATER RIGHTS
PROGRAM

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

No. 3249-3

Date: 10-10-12

I/We request that Water Right/Permit No. 3249-3

formerly owned by: Dean Bosse

be transferred to: (name & address) Glenn Bosse, 48100 County Rd 1B, Jefferson SD 57038

Telephone No. 605 966-5794

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

48 acres - N 1/2 SW 1/4 Section 12-T90N-R49W

I NOW OWN THE WHOLE 68 ACRES IN THE
NORTHERN PORTION OF SW 1/4 OF SEC 12

I/We understand that the validity of Water Right/Permit No. 3249-3 has not been determined by this transfer action. If I/We have any questions on validity, I/We understand that only the Water Management Board has the authority to determine if a water permit/right is valid (see note).

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

A fee of Fifty Dollars (\$50.00) is required to cover the filing fees as required under SDCL 46-2-13. This form must be signed by the new owner.

I/We GLENN BOSSE, the new owner, certify that the above information is true and correct.


(Signed by new owner)

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

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



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182

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**RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 7461-3, Glenn Bosse**

Pursuant to SDCL 46-2A-2, the following is the recommendation of the Chief Engineer, Water Rights Program, Department of Environment and Natural Resources concerning Water Permit Application No. 7461-3, Glenn Bosse, 48100 County Road 1B, Jefferson SD 57038.

The Chief Engineer is recommending APPROVAL of Application No. 7461-3 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) it is in the public interest with the following qualifications:

1. 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.
2. The well authorized by Permit No. 7461-3 shall be constructed by a licensed well driller and construction of the well and installation of the pump shall comply with Water Management Board Well Construction Rules, Chapter 74:02:04 with the well casing pressure grouted (bottom to top) pursuant to Section 74:02:04:28.
3. Pursuant to SDCL 46-5-6 which allows a greater diversion rate if the method of irrigation, time constraints, or type of soils so requires, Water Right No. 3249B-3 and Water Permit No. 7461-3 authorizes a maximum diversion rate of 1.78 cfs for the irrigation of 80 acres with an annual volume not to exceed 2 acre feet of water per acre per year.
4. This Permit is approved subject to the irrigation water use questionnaire being submitted each year.

See report on application for additional information.

Garland Erbele, Chief Engineer
December 27, 2012

REPORT ON WATER PERMIT APPLICATION NO.7461-3

Glenn Bosse
January 2, 2013

Water Permit Application No. 7461-3, Glen Bosse, proposes to appropriate an additional 64 acre-feet of water at a diversion rate of 1.10 cubic feet of water per second (cfs) and to irrigate 32 additional acres to what is currently authorized by Water Right No. 3249B-3. Water Right No. 3249B-3 authorizes 0.68 cfs from one well located in the SW 1/4 NW 1/4 Section 12 to irrigate 48 acres located in the N 1/2 SW 1/4 Section 12; all in T90N-R49W. This application proposes to transfer the existing diversion authority (0.68 cfs) authorized by Water Right No. 3249B-3 and appropriate an additional 1.10 cfs from one new well to be completed into the Missouri:Elk Point Aquifer (120 feet deep) located in SW 1/4 SW 1/4 Section 12 for irrigation of 32 additional acres located in the S 1/2 SW 1/4 Section 12; all in T90N-49W. This application, if approved, and Water Right No. 3249B-3 will authorize a total diversion rate of 1.78 cfs for irrigation of 80 acres. The applicant is requesting a diversion rate greater than the statutory limit of 1 cfs per 70 acres.

OVERVIEW OF THE PROPOSED PROJECT

Water Right No. 3249-3, priority date December 3, 1976 was approved by the Water Rights Commission, a predecessor to the Water Management Board, in January of 1977 for irrigation of 160 acres with a diversion rate 2.2 cfs from a single 104 foot deep well constructed into the Missouri:Elk Point aquifer. The project was inspected and licensed in 1979 for 1.85 cfs and 130 acres.

In September of 2012, the Water Rights Program was informed of a change of ownership for a portion of the irrigated acreage. No. 3249-3 was subsequently divided into Nos. 3249A-3, 1.17 cfs for irrigation of 82 acres, and 3229B-3, 0.68 cfs for irrigation of 48 acres. This application is for a new diversion point, and increase in the diversion rate and an increase in the number of irrigated acres for irrigation authorized by No. 3249B-3.

AQUIFER: Elk Point management unit of the Missouri aquifer (M: EP)

GEOLOGY AND AQUIFER CHARACTERISTICS:

The proposed well site is located in southern Union County between the Missouri and Big Sioux Rivers. The Missouri: Elk Point is an alluvium mantled outwash consisting of clay and silt with sand and gravel that could be under artesian conditions in the area of the proposed well sites (Jenson, 2000; Water Rights, 2012c). The Missouri: Elk Point aquifer extends from the Missouri River to the Big Sioux River over the southern third of Union County and extends into Clay and Yankton counties. The outwash is overlain by alluvium over much of Union County and in general overlies the Dakota aquifer. Hedges and others, (1982) estimated the Missouri: Elk Point aquifer underlies 99,600 acres of Union County and contains 1,494,600 acre-feet of recoverable water in storage in the county. Niehus, (1994) estimated the aquifer underlies 180 square miles (115,200 acres) of Union County and contained 1.5 million acre-feet of water in storage in the county. The maximum thickness of the aquifer in Union County is estimated to be 146 feet and the average thickness is estimated to be 84 feet (Niehus, 1994). A test hole drilled by the DENR-

Geological Survey located approximately one-half mile northwest of the well site proposed by this application identifies the aquifer from 64-144 feet below land surface ("Lithologic Logs Database"). The Missouri: Elk Point aquifer is under confined conditions in this area and the static water level of a well at the proposed site is expected to be 10-21 feet below.

Well completion reports were not submitted with this application; however, sufficient information is available from area water rights/permits and well completion reports to evaluate the aquifer at the proposed well sites. In this area, aquifer materials range from 50 to 120 feet below ground surface, and the static water level ranges from 14 to 21 feet below ground surface (Water Rights, 2012b; Water Rights, 2012c).

SDCL 46-2A-9

Pursuant to SDCL 46-2A-9, a permit to appropriate water may be issued only if there is a reasonable probability that there is unappropriated water available for the applicant's proposed use, that the proposed diversion can be developed without unlawful impairment of existing rights and that the proposed use is a beneficial use and in the public interest. This report will address the availability of unappropriated water and existing rights from the aquifer and pertinent to this application.

WATER AVAILABILITY:

This application proposes to appropriate 64 ac-ft/yr from the Missouri: Elk Point aquifer. If this application is approved, the actual water use will likely be less than the appropriation. The probability of unappropriated water available from an aquifer can be evaluated by considering SDCL 46-6-3.1, which requires "No application to appropriate groundwater may be approved if, according to the best information reasonably available, it is probable 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."

HYDROLOGIC BUDGET:

Recharge:

Recharge to the Missouri: Elk Point aquifer in Union County is through infiltration of precipitation in areas where the aquifer is at or near land surface and from groundwater inflow from the adjacent Lower Vermillion-Missouri and Big Sioux aquifers and ground water flow from Clay County. Chemical analyses indicate that there is a hydraulic connection between the Dakota aquifer and the Missouri: Elk Point aquifer (Niehus, 1994) and the Dakota aquifer is also a source of recharge. Some recharge to the aquifer occurs from the Missouri River when the stage of the river is higher than the groundwater level. Based on an analysis of observation well data, average annual recharge to the Missouri aquifer is estimated to be 3.8 inches per year (Hedges and others, 1985). Average annual recharge for Union County would be approximately 36,480 acre-feet/yr.

Discharge:

Discharge from the Missouri: Elk Point aquifer occurs due to evapotranspiration in areas where the aquifer is near land surface, outflow to the Missouri and Big Sioux Rivers during periods of low flow, and well withdrawals from domestic use and permitted uses. Currently there are a

total of 295 water rights/permits appropriating water from the Missouri: Elk Point aquifer in Union County (Water Rights, 2012b).

From the Missouri: Elk Point aquifer in Union County, water rights/permits for non-irrigation use that are limited only by the authorized diversion rate of the water rights/permits which currently total of 12.902 cfs. The amount of water than can be expected to be withdrawn by the non-irrigation use water rights/permits at the current appropriation amount can be estimated by assuming: 1) water rights/permits limited by an annual volume will pump the entire volume appropriated annually, and 2) water rights/permits limited only by diversion rate will pump at the maximum permitted diversion rate 60 percent of the time. At the current appropriation amount, the total annual withdrawal from the Missouri: Elk Point aquifer in Union County by non-irrigation use is expected to total less than 4,860 ac-ft/yr (Water Rights, 2012b).

Figure 1 shows the Missouri: Elk Point aquifer's historic irrigation data for Union County. The development of this aquifer has been increasing over the last decade. The annual withdrawal due to irrigation use fluctuates greatly, which seems to be more dependent on yearly climatic conditions than on the increase in amount of appropriation. The average pumpage reported equals 10,801 ac-ft/yr. The maximum pumpage reported was in 1988 for 22,195 ac-ft/yr (Water Rights, 1979-2012).

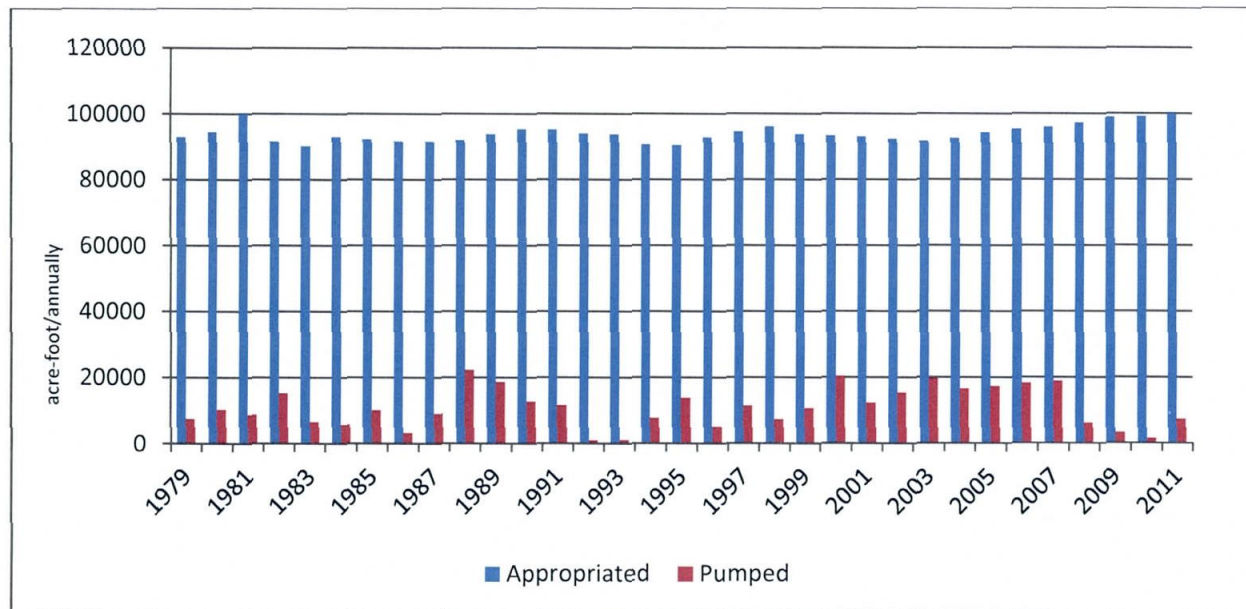


Figure 1: Historic irrigation water appropriation and reported use from the Missouri: Elk Point aquifer in Union County (Water Rights, 1979-2011)

In addition, there are many completion reports on file with the SD DENR-Water Rights Program in Union County for domestic wells that appear to be completed into the Missouri: Elk Point aquifer (Water Rights, 2012c). The annual withdrawal due to domestic use is not significant to the hydrologic budget of the aquifer.

OBSERVATION WELL DATA:

Administrative Rule of South Dakota Section 74:02:05:07 requires that “the Water Management Board shall rely upon the record of observation well measurements to determine that the quantity of water withdrawn annually from the aquifer does not exceed the estimated average annual recharge of the aquifer.”

The DENR-Water Rights Program monitors five observation wells completed into the Missouri: Elk Point aquifer in Clay County. The nearest of these wells, UN-87D and UN-87E, are located approximately a 3/4 of a mile east and 3/4 of a mile north of the proposed well site respectively, respectively. UN-87D and UN-87E are under artesian conditions (Water Rights, 2012a). The area of the proposed well sites will likely be under artesian conditions (Water Rights, 2012b; Water Rights, 2012c). Hydrographs of these observation wells and linear trend lines are shown in Figures 2 and 3.

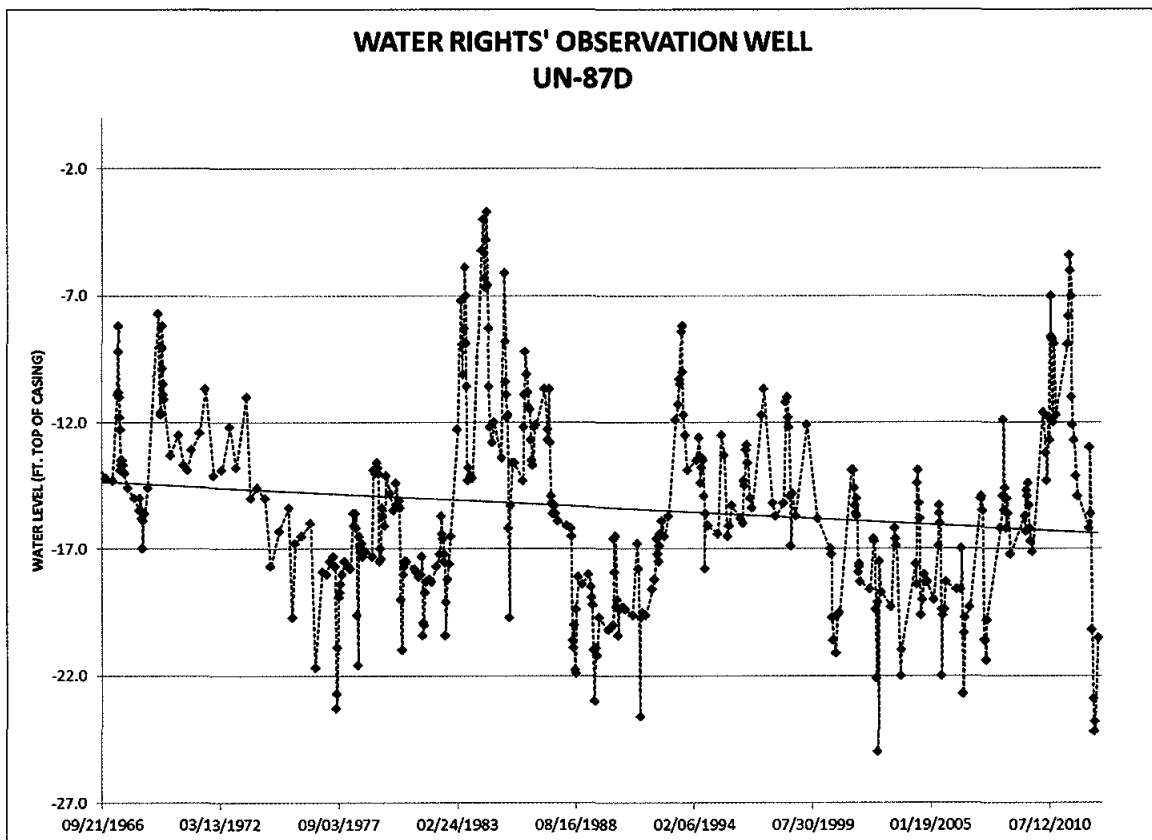


Figure 2: Hydrograph for DENR-Water Rights' observation well UN-87D (Water Rights, 2012a)

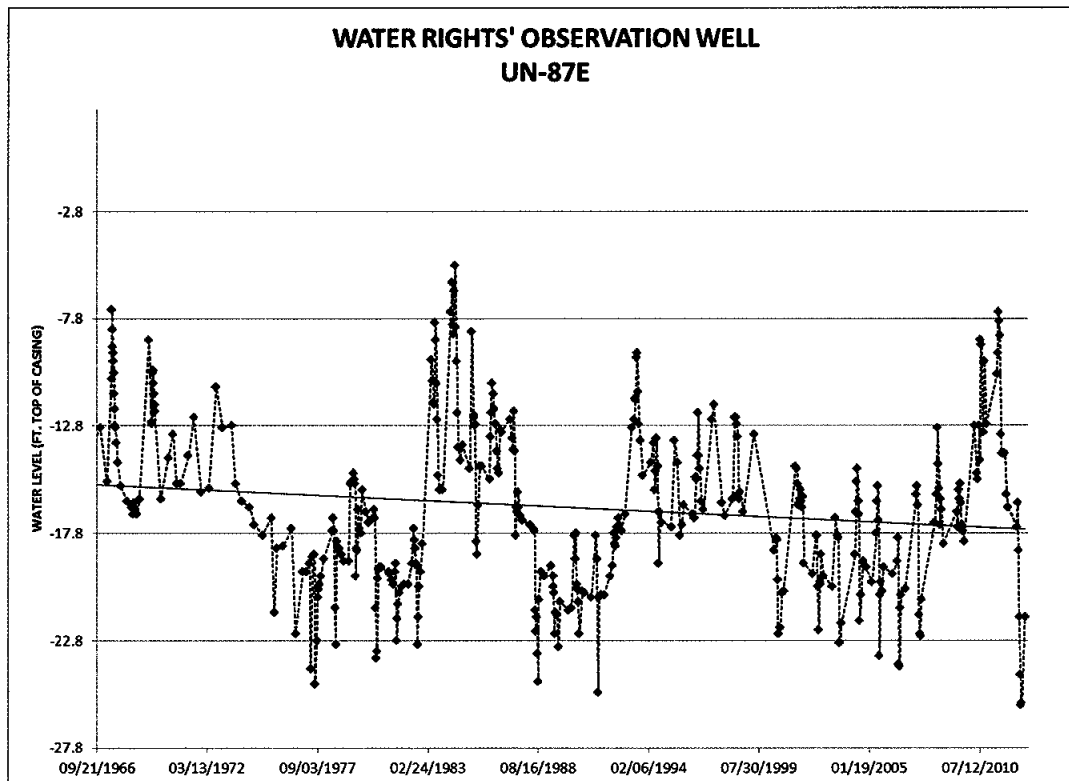


Figure 3: Hydrograph for DENR-Water Rights' observation well UN-87E (Water Rights, 2012a)

Although some drawdown may occur in the Missouri Elk Point aquifer, SDCL 46-6-6.1 does not protect artesian head pressure as a means of delivery and the Water Management Board has recognized that to place water to maximum beneficial use a certain amount of drawdown may occur. In order to balance interests between irrigation use and delivery of water by artesian pressure the Water Management Board has defined an "adversely impacted domestic well" in ARSD 74:02:04:20(7) as:

"a well in which the pump intake was set at least 20 feet below the top of the aquifer at the time of construction or, if the aquifer is less than 20 feet thick, is as near to the bottom of the aquifer as is practical and the water level of the aquifer has declined to a level that the pump will no longer deliver sufficient water for the well owner's need"

The observation well data documents cyclic conditions of water levels, recharging during wet years and declining during dry years. Water levels may also be influenced by the aquifer's connection to the Missouri River. For example, high flows in the Missouri River during the summer of 2011 and the current drought conditions are evident in the hydrograph of observation well UN-87D, which is located approximately one mile from the Missouri River. The hydrographs also show the effects of nearby pumping on the aquifer. Observation well data indicates that temporal well withdrawal is masked by climatic conditions. The average annual recharge in Union County of 36,480 ac-ft/yr greatly exceeds the annual average withdrawal of

16,000 ac-ft/yr. Therefore, recharge to and natural discharge from the Missouri: Elk Point aquifer greatly exceeds well withdrawal.

The hydrograph of the observation wells UN-87D shows a slight decline of the Missouri: Elk Point aquifer's water table, as indicated by the trend line. This gradual decline has been attributed to entrenching the Missouri River (Goodman, 2007) or controlling the flow of the Missouri River by the Gavins Point Dam, which no longer allows inundating of the floodplain (Stephens, 1967). Regardless of cause, the declining water table levels demonstrate the hydraulic connection between the aquifer and the Missouri River. Pumping from the aquifer will induce recharge supplied by the Missouri River or capture discharge before outflowing to the river (Stephens, 1967).

EXISTING WATER RIGHTS:

There are 295 water rights/permits appropriating water from the Missouri: Elk Point aquifer in Union County. There are eight water rights/permits and two domestic wells within one mile of the proposed well site, which are shown in Table 1. (Water Rights, 2012b; Water Rights, 2012c).

Table 1: Water rights/permits and domestic wells completed into the Missouri: Elk Point aquifer within two miles of the proposed well sites (Water Rights, 2012b; Water Rights, 2012c)

PERMIT NO	LAST NAME	STATUS	USE	CFS
1567-3	WARREN MITCHELL	LC	IRR	3.000
2401-3	PAUL VONDRAK	LC	IRR	2.000
2402-3	PAUL VONDRAK	LC	IRR	1.070
3127-3	GEORGIA HONOMICHL	LC	IRR	2.580
3249A-3	DEAN BOSSE	LC	IRR	1.170
3249B-3	GLENN BOSSE	LC	IRR	0.680
3520-3	OLIVER MONTAGNE	LC	IRR	1.900
54-3	DALE BOSSE	LC	IRR	1.800
7218-3	MIKE & BRAD CHICOINE	PE	IRR	2.010

Well interference has not been a problem with the aquifer. The assurance of reasonable domestic use provided by SDCL 46-6-6.1 and ARSD 74:02:04:20(7) ensures not only that interference will not be adverse to domestic well users but also in existing appropriative rights. Depending on the characteristics of the Missouri: Elk Point aquifer at the well site, some of the existing well owners may need to lower their pumps to accommodate lower water levels. When considering SDCL 46-6-6.1 and ARSD 74:02:04:20(7), well interference from this proposed increase in diversion rate is not likely to be significant and there is a reasonable probability that any interference will not be adverse. At the distances involved between the proposed well sites and wells of existing water rights/permits and domestic users; interference is not expected to be a concern.

If approved the total acreage for this project would be 80 acres at a diversion rate of 1.78 cfs. The proposed diversion rate would exceed the statutory limit of 1 cfs per 70 irrigated acres.

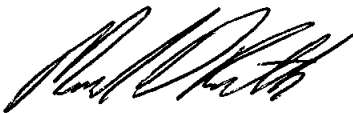
SDCL 46-5-6

Pursuant to SDCL 46-2A-9, the amount allowed may not be in excess of the rate of one cubic foot of water per second for each seventy acres. The Water Management Board may allow a greater diversion, in volume or rate or both, if the method of irrigation, any time constraints on diversion of water, or the type of soil so requires.

The applicant proposes to utilize a center pivot irrigation system; however the system will only make half a turn yet still require the larger diversion rate to operate efficiently. The request for a greater diversion rate should be allowed.

CONCLUSIONS:

1. The application proposes to appropriate an additional 64 ac-ft/yr for irrigation currently authorize by Water Right No 3249B-3.
2. The method of irrigation warrants a deviation from the 1 cfs per 70 irrigated acres requirement and the request for a larger diversion rate should be allowed.
3. There is a reasonable probability that unappropriated water is available from the Missouri: Elk Point aquifer to supply the proposed appropriation.
4. There is a reasonable probability that this proposed well will not cause interference in existing nearby wells.



Mark D. Rath
SD DENR-Water Rights Program

Approved by



Ken Buhler
SD DENR-Water Rights Program

REFERENCES:

Goodman, J.A. 2007. Report on Water Permit Application No. 6869-3 for Lewis and Clark RWS: SD DENR-Water Rights Program, Joe Foss Bldg., Pierre, SD.

Hedges, L.S., Burch, S.L., Iles, D.L., Barari, R.A., and Schoon, R.A. 1982. Evaluation of Ground-Water Resources Eastern South Dakota and Upper Big Sioux River, South Dakota and Iowa, Task 1: Bedrock Topography and Distribution, Task 2: Extent of

Aquifers, Task 3: Ground-Water Storage, Task 4: Computerized Data Base, Final Report.
U.S. Army Corps of Engineers Contract DACW 45-80-C-0185.

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Jensen, A.R. 2000. Aquifer Materials Map 1. South Dakota DENR-Geological Survey, Vermillion, SD.

Niehus, C.A. 1994. Water Resources of Lincoln and Union Counties, South Dakota. U.S. Geological Survey. Water-Resources Investigations Report 93-4195. Rapid City, South Dakota.

Stephens, J.C. 1967. Geology and Hydrology of Clay County South Dakota. Part II: Water Resources, SD DENR- Geological Survey Bulletin 19,62p.

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Water Rights. 2012a. Observation Well Files, SD DENR-Water Rights Program, Joe Foss Bldg., Pierre, SD.

Water Rights. 2012b. Water Right/Permit Files, SD DENR-Water Rights Program, Joe Foss Bldg., Pierre, SD.

Water Rights. 2012c. Water Well Completion Reports, SD DENR-Water Rights Program, Joe Foss Bldg., Pierre, SD.

AFFIDAVIT OF PUBLICATION

RECEIVED

State of South Dakota)

:ss

JAN 14 2013

County of Union)

WATER RIGHTS
PROGRAM

Kelly Kruithoff,

an employee of the Leader-Courier, deposes and says that

The Leader-Courier

is a legal weekly newspaper of a general circulation, printed and published in Elk Point, County of Union, State of South Dakota, and has been such legal newspaper during the time hereinafter mentioned, and that affiant is and was during all the time hereinafter mentioned in charge of the advertising department thereof, and has personal knowledge of all the facts stated in this affidavit: and that the notice and advertisement headed:

Notice of Application No. 7461-3

a printed copy of which is hereunto attached and made a part hereof, was printed and published in the said newspaper at least once in

each week for 1 successive weeks; that said newspaper at the time of the first publication of said notice hereinafter stated, had, and still has, a bona fide circulation of over two hundred paid copies weekly, and had been published in the said County of Union for more than one year immediately prior to the date of the said publication of said notice, and that said newspaper during said times, was, and is, printed in part in an office maintained at said city of Elk Point, the said place of publication; that the first publication of said notice in said newspaper was

on Thursday, the 10 day of January, 2013

and that the succeeding publications were

on Thursday, the _____ day of _____, _____

on Thursday, the _____ day of _____, _____

on Thursday, the _____ day of _____, _____

that the fees for the printing and publishing of said notice and advertisement in said newspaper as aforesaid were

\$ 34.22, that the full amount of the fee charged insures to the benefit of the publisher of the said newspaper, that no agreement or understanding for the division thereof has been made with any other person and that no part thereof has been agreed to be paid to any other person whomsoever.

Kelly Kruithoff
Subscribed and sworn to before me

this 10 day of January, 2013

My commission expires 6-21-17

SUSAN ODSON
NOTARY PUBLIC
SOUTH DAKOTA

Notary Public

NOTICE OF APPLICATION NO. 7461-3 TO APPROPRIATE WATER AND TO AMEND WATER RIGHT NO. 3249B-3

Notice is given that Glenn Bosse, 48100 County Road 1B, Jefferson SD 57038 has filed an application for a water permit to appropriate an additional 1.10 cubic feet of water per second (cfs) and to irrigate 32 additional acres to what is currently authorized by Water Right No. 3249B-3. Water Right No. 3249B-3 authorizes 0.68 cfs from one well located in the SW 1/4 NW 1/4 Section 12 to irrigate 48 acres located in the N 1/2 SW 1/4 Section 12; all in T90N-R49W. This application proposes to transfer the existing diversion authority (0.68 cfs) authorized by Water Right No. 3249B-3 and appropriate an additional 1.10 cfs from one new well to be completed into the Missouri/Elk Point Aquifer (120 feet deep) located in SW 1/4 SW 1/4 Section 12 for irrigation of 32 additional acres located in the S 1/2 SW 1/4 Section 12; all in T90N-49W. This application, if approved, and Water Right No. 3249B-3 will authorize a total diversion rate of 1.78 cfs for irrigation of 80 acres. The applicant is requesting a diversion rate greater than the statutory limit of 1 cfs per 70 acres.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 7461-3 and amending of Water Right No. 3249B-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. In accordance with SDCL 46-2A-23, the Chief Engineer will act on this application, as recommended, unless a petition is filed opposing the application or the applicant files a petition contesting the Chief Engineer's recommendation. If a petition opposing the application or contesting the recommendation is filed, then a hearing will be scheduled and the Water Management Board will consider this application. Notice of the hearing will be given to the applicant and any person filing a petition.

Any person interested in opposing or supporting this application or recommendation must file a written petition with BOTH the applicant and Chief Engineer. The applicant must file a petition if contesting the Chief Engineer's recommendation. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E Capitol, Pierre SD 57501 (605 773-3352)" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by January 22, 2013.

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 the application, and the signature and mailing address of the petitioner or the petitioner's legal counsel, if legal counsel is obtained. Contact Eric Gronlund at the above Water Rights Program address to request copies of information pertaining to this application. Steven M. Pirner, Secretary, Department of Environment and Natural Resources. Publish January 10, 2013. Published once at the total approximate cost of \$34.22 2-3-92

RECEIVED
JAN 14 2013
WATER RIGHTS
PROGRAM

AFFIDAVIT OF PUBLICATION

YANKTON DAILY PRESS AND DAKOTAN

Department of Environment and Natural Resources
PMB 2020
Joe Foss Building
523 East Capitol
Pierre, SD 57501-3182

STATE OF SOUTH DAKOTA
COUNTY OF YANKTON

KELLY HERTZ BEING FIRST DULY SWORN ON OATH DEPOSES
AND SAYS THAT HE IS THE MANAGING EDITOR OF, YANKTON
MEDIA INC, A CORPORATION, THE PRINTER AND THE PUBLISHER OF THE
YANKTON DAILY PRESS AND DAKOTAN, A LEGAL DAILY NEWSPAPER
PUBLISHED AND CIRCULATED IN THE CITY OF YANKTON, SAID COUNTY
AND STATE, AND ONE OF THE OFFICIAL NEWSPAPERS OF THE SAID
COUNTY OF FACTS STATED IN THIS AFFIDAVIT; THAT THE ANNEXED
Notice of Application No. 7461-3

TAKEN FROM THE PAPER, IN WHICH IT WAS LAST PUBLISHED IN THE
NEWSPAPER ON THE 10th DAY OF January 2013
THAT THE FULL AMOUNT OF THE FEE CHARGED FOR THE PUBLICATION
OF SAID NOTICE TO WIT \$33.77 ENSURES TO THE
BENEFITS OF THE PUBLISHER OF SAID NEWSPAPER AND THAT NO
AGREEMENT AND UNDERSTANDING FOR THE DIVISION THEREOF HAS
BEEN MADE WITH ANY OTHER PERSON, AND THAT NO PART THEREOF
HAS BEEN AGREED TO BE PAID TO ANY PERSON WHOMSOEVER.

PUBLISHED ON: 1/10/2013

FILED ON: 1/10/2013

SUBSCRIBED AND SWORN TO BEFORE ME THIS 10th DAY OF

NOTARY PUBLIC, SOUTH DAKOTA

MY COMMISSION EXPIRES

8/19/2015

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 the application, and the signature and mailing address of the petitioner or the petitioner's legal counsel, if legal counsel is obtained. Contact Eric Gronlund at the above Water Rights Program address to request copies of information pertaining to this application. Steven M. Pirner, Secretary, Department of Environment and Natural Resources.

Published once at the total approximate cost of \$33.77.

1+10
NOTICE OF APPLICATION
NO. 7461-3 to Appropriate Water
And to Amend Water Right No.
3249B-3

Notice is given that Glenn Bosse, 48100 County Road 1B, Jefferson SD 57038 has filed an application for a water permit to appropriate an additional 1.10 cubic feet of water per second (cfs) and to irrigate 32 additional acres to what is currently authorized by Water Right No. 3249B-3. Water Right No. 3249B-3 authorizes 0.68 cfs from one well located in the SW 1/4 NW 1/4 Section 12 to irrigate 48 acres located in the N 1/2 SW 1/4 Section 12; all in T90N-R49W. This application proposes to transfer the existing diversion authority (0.68 cfs) authorized by Water Right No. 3249B-3 and appropriate an additional 1.10 cfs from one new well to be completed into the Missouri Elk Point Aquifer (120 feet deep) located in SW 1/4 SW 1/4 Section 12 for irrigation of 32 additional acres located in the S 1/2 SW 1/4 Section 12; all in T90N-49W. This application, if approved, and Water Right No. 3249B-3 will authorize a total diversion rate of 1.78 cfs for irrigation of 80 acres. The applicant is requesting a diversion rate greater than the statutory limit of 1 cfs per 70 acres.

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Any person interested in opposing or supporting this application or recommendation must file a written petition with BOTH the applicant and Chief Engineer. The applicant must file a petition if contesting the Chief Engineer's recommendation. The Chief Engineer's address is, "Water Rights Program, Foss Building, 523 E Capitol, Pierre, SD 57501-3182, 773-3352" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by January 22, 2013.



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182

denr.sd.gov

January 3, 2013

Leader Courier
PO Box 310
Elk Point SD 57025

ATTENTION: Legal Public Notice

Enclosed is a Notice on Application No. 7461-3 to Appropriate Water. Please publish the notice once on January 10, 2013. The text of the notice can be e-mailed to your paper by contacting Karen Schlaak at (605) 773-3352.

The applicant must verify to you that the notice is to be published and arrange for payment. **Please BILL the APPLICANT for the cost of publication.** The APPLICANT is Glenn Bosse, 48100 Co Rd 1B, Jefferson SD 57038 (Ph # 605-966-5794).

Please send the Water Rights Program an affidavit or the enclosed Proof of Publication form immediately.

The applicant pays the cost of publication, but the Water Rights Program records require an affidavit or Proof of Publication. Delays in receiving the affidavit can be costly to the applicant.

Sincerely,

Eric Gronlund
Natural Resources Engineer
605 773-3352

enclosures



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182

denr.sd.gov

January 3, 2013

Press & Dakotan
319 Walnut
Yankton SD 57078

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Sincerely,

Eric Gronlund
Natural Resources Engineer
605 773-3352

enclosures



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182

denr.sd.gov

**NOTE: TO BE SURE OF PUBLICATION ON
THE CORRECT DATE, CONTACT
THE NEWSPAPER(S) RIGHT AWAY.**

January 3, 2013

Glenn Bosse
48100 Co Rd 1B
Jefferson SD 57038

Dear Mr. Bosse:

Water Permit Application No. 7461-3 for irrigation use has been examined and found to comply with the South Dakota Water Laws and applicable rules. A notice has been sent to the Leader Courier printed at Elk Point SD (Ph # 605-356-2632) and the Press & Dakotan printed at Yankton SD (Ph # 605-665-7811). You will need to contact the newspaper(s) and authorize publication of this notice. For your information, a copy of the notice, the recommendation of the Chief Engineer and report on the application are enclosed. 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(s) to authorize publication of your Notice and to arrange for payment. Early contact with the paper(s) can eliminate delays. Upon receiving authorization from you, the publisher has been instructed to publish your notice. The newspaper has also been instructed to send us the Proof of Publication. We must receive Proof of Publication before action can be taken on the application.

Sincerely,


Eric Gronlund

Natural Resources Engineer
(605) 773-3352

enclosures

NOTE: If you plan to contest any part of the Chief Engineer's recommendation, you must file a petition pursuant to the procedures outlined in the attached notice of hearing. The Water Management Board will then consider your concerns during a hearing on the application.

Instruction to Newspaper - Publish the Notice on January 10, 2013. The applicant is responsible for payment. The text of the notice can be e-mailed to your paper by contacting Karen Schlaak at (605) 773-3352 or email: Karen.schlaak@state.sd.us.

NOTICE OF APPLICATION NO. 7461-3 to Appropriate Water
And to Amend Water Right No. 3249B-3

Notice is given that Glenn Bosse, 48100 County Road 1B, Jefferson SD 57038 has filed an application for a water permit to appropriate an additional 1.10 cubic feet of water per second (cfs) and to irrigate 32 additional acres to what is currently authorized by Water Right No. 3249B-3. Water Right No. 3249B-3 authorizes 0.68 cfs from one well located in the SW 1/4 NW 1/4 Section 12 to irrigate 48 acres located in the N 1/2 SW 1/4 Section 12; all in T90N-R49W. This application proposes to transfer the existing diversion authority (0.68 cfs) authorized by Water Right No. 3249B-3 and appropriate an additional 1.10 cfs from one new well to be completed into the Missouri:Elk Point Aquifer (120 feet deep) located in SW 1/4 SW 1/4 Section 12 for irrigation of 32 additional acres located in the S 1/2 SW 1/4 Section 12; all in T90N-49W. This application, if approved, and Water Right No. 3249B-3 will authorize a total diversion rate of 1.78 cfs for irrigation of 80 acres. The applicant is requesting a diversion rate greater than the statutory limit of 1 cfs per 70 acres.

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Published once at the total approximate cost of _____.



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

PMB 2020
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denr.sd.gov

FEB 19 2013

Glenn Bosse
48100 Co Rd 1B
Jefferson SD 57038

Dear Mr. Bosse:

Enclosed is Water Permit No. 7461-3 authorizing construction of your water diversion system and beneficial use of the water, not exceeding the limits as specified in the Water Permit.

Form 10, *Notice of Completion of Works and Application of Water to Beneficial Use*, is enclosed. Please return this completed form after you have finished the system and have put the water to beneficial use. An investigation can then be scheduled so the water license may be issued, thus completing the acquisition of a water right.

An informational sheet *Common Water Right Questions?* is also enclosed. This sheet is intended to answer some of the questions associated with obtaining and keeping a water right.

Sincerely,

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

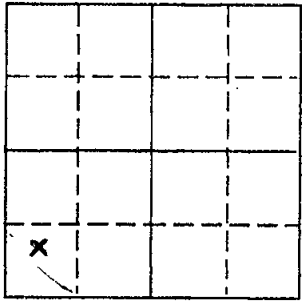
enclosures

12" New well Permit #

7461-3

WATER WELL COMPLETION REPORT

11-02

Location <u>SW 1/4 SW 1/4</u> Sec <u>12</u> Twp <u>91N</u> Rg <u>48</u> County <u>UNION</u> Please mark well location with an "X"  Well completion Date <u>8-6-13</u> Distance from nearest potential pollution source (Septic tank, abandoned well, feed lot, etc.) ? <u>N/A</u> ft from <u>N/A</u> (identify source)		Well Owner: <u>GLENN BOSSE</u> Business Name: _____ Address1: <u>48100 COUNTY Rd 1B</u> Address2: _____ City, State, Zip: <u>JEFFERSON, S.D. 57039</u> WELL LOG: <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">FORMATION</th> <th colspan="2">DEPTH</th> </tr> <tr> <th>FROM</th> <th>TO</th> </tr> </thead> <tbody> <tr> <td>Topsoil - clay & gumbo</td> <td>0</td> <td>4</td> </tr> <tr> <td>Clay - thin sand layers</td> <td>4</td> <td>47</td> </tr> <tr> <td>SAND - Fine blue</td> <td>47</td> <td>55</td> </tr> <tr> <td>SAND/gravel - Red/yellow to lg med</td> <td>55</td> <td>95</td> </tr> <tr> <td>COAL layer</td> <td>95</td> <td>98</td> </tr> <tr> <td>GRAVEL - COARSE</td> <td>98</td> <td>124</td> </tr> <tr> <td>Cobble/Rocks</td> <td>124</td> <td>133</td> </tr> </tbody> </table>		FORMATION	DEPTH		FROM	TO	Topsoil - clay & gumbo	0	4	Clay - thin sand layers	4	47	SAND - Fine blue	47	55	SAND/gravel - Red/yellow to lg med	55	95	COAL layer	95	98	GRAVEL - COARSE	98	124	Cobble/Rocks	124	133
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PROPOSED USE: ☐ Domestic/Stock ☐ Municipal ☐ Business ☐ Test Holes ☒ Irrigation ☐ Industrial ☐ Institutional ☐ Monitoring well		STATIC WATER LEVEL <u>18</u> FEET If flowing: closed in pressure _____ PSI GPM flow _____ through <u>N/A</u> Inch pipe Controlled by ☐ Valve ☐ Reducers ☐ Other _____ Reduced flow rate _____ GPM Can well be completely shut in? _____																											
METHOD OF DRILLING: <u>REVERSE Rotary</u>		WELL TEST DATA: ☐ Pumped Describe: <u>Test pumped by others</u> ☐ Bailed ☐ Other _____																											
CASING DATA: ☐ Steel ☒ Plastic ☐ Other If other describe _____ <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>PIPEWEIGHT</th> <th>DIAMETER</th> <th>FROM</th> <th>TO</th> <th>HOLE DIAMETER</th> </tr> </thead> <tbody> <tr> <td>Sch 40 LB/FT</td> <td>12 IN</td> <td>0 FT</td> <td>73 FT</td> <td>28 IN</td> </tr> <tr> <td>LB/FT</td> <td>IN</td> <td>FT</td> <td>FT</td> <td>IN</td> </tr> <tr> <td>LB/FT</td> <td>IN</td> <td>FT</td> <td>FT</td> <td>IN</td> </tr> </tbody> </table>		PIPEWEIGHT	DIAMETER	FROM	TO	HOLE DIAMETER	Sch 40 LB/FT	12 IN	0 FT	73 FT	28 IN	LB/FT	IN	FT	FT	IN	LB/FT	IN	FT	FT	IN	Pumping Level Below Land Surface _____ Ft. After _____ Hrs. pumped _____ GPM _____ Ft. After _____ Hrs. pumped _____ GPM If pump installed, pump rate: _____ GPM							
PIPEWEIGHT	DIAMETER	FROM	TO	HOLE DIAMETER																									
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LB/FT	IN	FT	FT	IN																									
GROUTING DATA: Grout Type <u>Bentonite</u> No. of Sacks _____ Grout Weight <u>58</u> Lb/gal From <u>4</u> Ft To _____ Ft Describe grouting procedure <u>pressure grouted</u>		SCREEN: ☒ Perforated pipe ☐ Manufactured Diameter <u>12</u> Inches Length <u>60</u> Feet Material <u>PVC</u> Slot Size <u>080</u> Set From <u>73</u> Feet to <u>133</u> Feet Other information _____																											
WAS A PACKER OR SEAL USED? ☐ Yes ☒ No If so, what material? _____ Describe packer(s) and location _____		REMARKS RECEIVED JAN 29 2014 WATER RIGHTS PROGRAM																											
DISINFECTION: Was well disinfected upon completion? ☒ Yes, How? <u>HTH Chlorine tabs</u> ☐ No, Why Not? _____ Lab sample sent to for water quality analysis _____ <u>IRREG. well</u>		This well was drilled under license # <u>763</u> And this report is true and accurate. Drilling firm: <u>Salmon Well Co.</u> Signature of License Representative: <u>[Signature]</u> Signature of Well Owner or Equitable Property Holder: _____ Date: _____																											

Please return White Copy to DENR Water Rights

523 E. Capitol Ave., Pierre SD 57501