

WATER PERMIT NO. 7182-3

Name of Applicant: **AgFirst Farmers Cooperative**

Address: **PO Box 127, Brookings SD 57006**

Phone: **605 692-6216**

Amount of Water Claimed: **10 AF (0.35 cfs)**

Total Acres: **NA**

Source of Water Supply: **groundwater (one well)**

Water to be used for: **commercial**

County: **Brookings**

Type of Waste Disposal System:

Location: **½ SE of Aurora**

PRIORITY Date Received: **1-8-10**

Application/License Fee: **\$300**

Corrected Application Received: **1-28-10**

Period of Annual Use: **Jan 1 – Dec 31**

Remarks:

Diversion Point: **SW ¼ NE ¼ Sec 2-T109N-R49W**

Land to be Irrigated: **NA**

Depth of Well: **60 feet**

Well Driller: **Geotek Engineering & Testing**

Remarks:

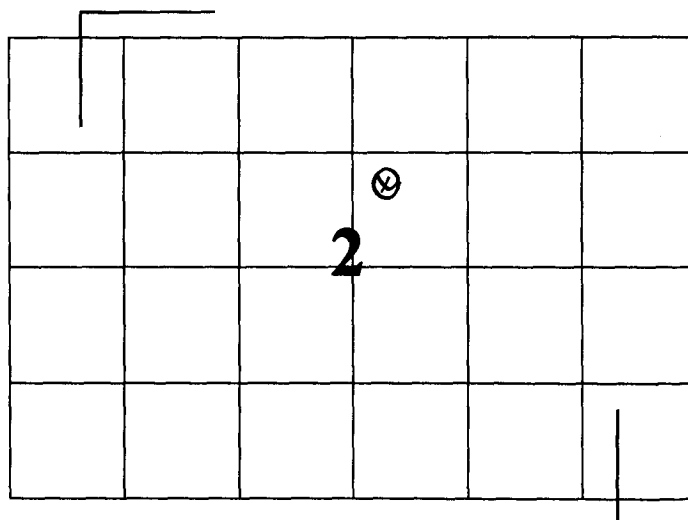
Type of Map: **plat**

Prepared by: **Mike J Lapka, RLS**

Reviewed and the Number Assigned on: **1-28-10**

By: **Karen Schlaak**

Notice of Hearing - date to intervene: _____



SD Form - 1585 V3
FORM 2: Application for uses other than irrigation
(type or print)

Mail to: Water Rights Program Joe Foss Building 523 E. Capitol Pierre, SD 57501-3181 (605) 773-3352	No. <u>7182-3</u>	(office use only) Hydrologic Unit <u>10170202</u>
	Basin <u>Sioux River</u>	
	Newspaper <u>Brookings Register PO Box 177</u>	
	<u>605-692-6271</u>	<u>57006</u>

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JAN - 8 2010
WATER RIGHTS
PROGRAM

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

Check use(s) of water:

- | | | | |
|---|--|--|--|
| ☐ Municipal | ☐ Suburban Housing | ☐ Recreational | ☐ Institutional |
| ☐ Rural Water System | ☒ Commercial | ☐ Fish & Wildlife | ☐ Geothermal Heat |
| ☐ Domestic (over 18 gpm) | ☐ Industrial | ☐ Other | |

Type of Application: ☒ New ☐ Vested Right (Use predates Mar 2, 1955) ☐ Future Use Reservation
(check one) ☐ Place to Beneficial Use Water Reserved by Future Use Permit No. _____
☐ Amendment/Correction to Permit No. _____

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

- Name of Applicant AgFirst Farmers Cooperative Phone (605) 692-6216
(check one) ☒ Owner ☐ Tenant/lessee
Mailing Address PO Box 127 Brookings State SD 57006
(Street, RR, or Box and City) (Zip Code)
- Amount of water claimed 0.35 *CFS or 160 **GPM 10 annually ***AF
(*Cubic Feet per Second) (**Gallons per Minute) (**Acre Feet - storage capacity of dam/dugout or annual use if applicable)
- Source of water supply well
- Location of point of diversion (example - 3 wells in SW1/4 NE1/4 section 12-T104N-R53W) County Brookings
1 well in N1/2 S1/2 NE1/4 section 2-T109N-R49W (SW1/4 NE1/4)
- County or counties where water will be used Brookings
- Annual period during which water is to be used 1/1-12/31 (all year) Jan 1 - Dec 31
- Give a description of the project. When available include any preliminary engineering report or other reports or information that will help explain the project. (Attach sheet if more space is needed)

STATE OF SOUTH DAKOTA)
County of Brookings) SS

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

I, AgFirst Farmers Cooperative, 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 [Signature] AgFirst Farmers Corp

Subscribed and sworn to before me this 5th day of January 20 10

[Signature]

Notary Public signature

**SOUTH DAKOTA
WATER PERMIT NO. 7182-3**

Date of first receipt of application January 8, 2010.

Date of return to applicant for corrections, amendments or changes January 11, 2010.

Date of receipt of corrected application January 28, 2010.

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 7182-3 to AgFirst Farmers Cooperative, PO Box 127, Brookings SD 57006 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. 7182-3 appropriates 0.35 cubic feet of water per second (10 acre-feet annually) from one well to be completed into the Big Sioux:Aurora Aquifer (approximately 60 feet deep) located in SW ¼ NE ¼ Section 2-T109N-R49W.
2. The water appropriated shall be used for the purpose of commercial use and may not exceed the amount of water needed for beneficial use.
3. The water is to be used during the following described annual period: January 1 – December 31.
4. The date of approval of Permit No. 7182-3 is April 5, 2010.
5. The date from which applicant may claim right is January 8, 2010.
6. One-fifth of the construction is to be completed on or before October 5, 2012.
7. All construction is to be completed on or before April 5, 2015.
8. Water is to be put to beneficial use on or before April 5, 2019.
9. 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 Permit No. 7182-3 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. 7182-3 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.

WATER MANAGEMENT BOARD

By: Garland Erbele

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

APR 20 2010

date



(type or print in ink)

1. Well Information - Proposed Construction

- a) Drill Hole Diameter 8" Depth 60'
- b) Casing Type PVC Diameter 8" Thickness Schedule 40
- c) Screen Type Stainless Diameter 8" Thickness 3/16
- d) Gravel Pack _____ Length of Gravel Pack _____
- e) Depth to Top of Water Bearing Material _____
- f) Depth to Water (ground surface to water level) _____ 16feet
- g) Distance to nearest existing domestic well:
- On applicants property None On property owned by others _____

2. Wastewater Disposal System Information

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

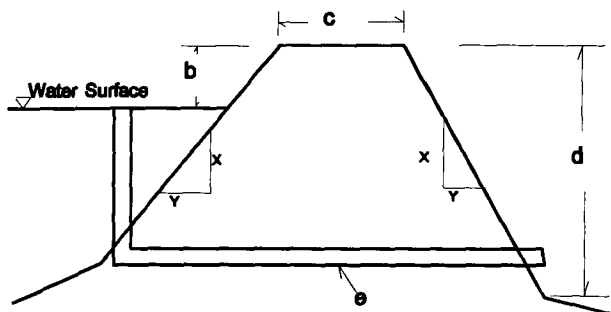
3. Dugout Information

- 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 _____
Upstream _____
Downstream _____
- h) Surface Area of Impoundment _____
- i) Storage _____ Acre Feet
- j) Drainage Area Above Dam _____ Acres

N 1/4 Corner of
S2 T109N R49W

1794.0' N 15°42'44"W

Quarter Line
N 2°26'30"W

Proposed Well

Proposed Rail Siding

DM&E Mainline

Septic Tank &
Drain Field

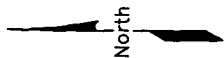
477th. Ave.

Property Line

Property Line

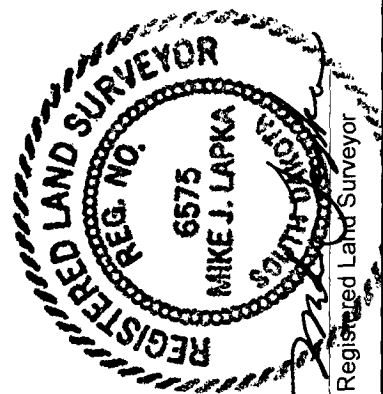
Property Line

Property Line



Scale: 1"=300'

○ Monument Recovered



Registered Land Surveyor

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JAN 28 2010

WATER RIGHTS
PROGRAM



RECEIPT

WATER RIGHTS PROGRAM

South Dakota Department of Environment and Natural Resources

Date 1/28, 20 10

RECEIVED OF Ag First Farmer's Cooperative PO Box 127 Brookings SD 57006

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

Fee for Application for Permit No. <u>7182-3</u> to Appropriate Water, to construct and to put water to beneficial use	100	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>7182-3</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	300 00

No. 04422

By

Leland Erbe
Chief Engineer

SITE AND SUBSURFACE CONDITIONS

Site Location and Description

The project site is located southwest of the intersection of 214th Street and 477th Avenue, approximately ½ mile southeast of Aurora, South Dakota. The site is currently in agricultural use as a corn field. The topography of the site is relatively flat. The boring locations were staked in the field by Civil Design, Inc. The existing ground surface elevations at the boring locations were also furnished by Civil Design, Inc.

Subsurface Conditions

Nine (9) test borings were performed at the site from July 13 through July 22, 2009. The subsurface conditions encountered at the test boring locations are illustrated by means of the boring logs included in Appendix A. We wish to point out that the subsurface conditions at other times and locations at the site may differ from those found at our test boring locations. If different conditions are encountered during construction, it is necessary that you contact us so that our recommendations can be reviewed.

The subsurface conditions encountered at the boring locations consists of ½ to 2 ½ feet of topsoil materials at the surface overlying a layer of lean clay (fine alluvium) soils and sand (coarse alluvium) soils. Sandy lean clay (glacial till) soils were encountered beneath the sand at borings #1, #2 and #8.

The consistency of the lean clay (fine alluvium) soils was soft to firm. The consistency of the sandy lean clay (glacial till) soils was stiff to very stiff. The relative density of the sand soils varied from loose to very dense. The consistency and density of the soils are indicated by the standard penetration resistance ("N") values as shown on the boring logs.

Water Levels

Measurements to record the groundwater levels were made at the boring locations. The time and level of the groundwater readings are recorded on the boring logs. Groundwater was measured at an approximate depth of 16 feet at the borings.

It is our opinion that the water levels indicated on the boring logs are a relatively accurate indication of the subsurface groundwater level at the time the measurements were made due to the permeable characteristics of the sand soils encountered. Long term water level monitoring was not included in our scope of work.

Subsurface groundwater levels should be expected to fluctuate seasonally and yearly from the groundwater readings recorded at the borings. Fluctuations occur due to varying seasonal and yearly rainfall amounts and snowmelt, as well as other factors. It is possible that the subsurface groundwater levels during or after construction could be significantly different than the time the borings were performed.

ENGINEERING REVIEW AND RECOMMENDATIONS

Project Design Data

We understand that the project will consist of constructing a new fertilizer plant for AgFirst Farmers Cooperative located near Aurora, South Dakota. The proposed structure will have slab-on-grade construction with approximate dimensions of 120 feet by 340 feet. The proposed facility will be composed of a dry fertilizer storage area, a chemical warehouse, four (4) 14-foot diameter tanks and unloading pits. The proposed facility will likely be supported by a reinforced concrete foundation.

The above information/assumptions are important factors in our review and recommendations. If there are any corrections or additions to the above-mentioned data, it is necessary that you contact us so that we can review our recommendations with regards to the revised plans.

Discussion

Typically, spread footings or a mat foundation are the most cost effective type of foundation system. It is our opinion a spread footing or a mat foundation system can be used for support of the proposed building after the recommended site preparation has been performed.

Site Preparation

Excavation

The test borings indicate $\frac{1}{2}$ to $2\frac{1}{2}$ feet of topsoil materials were encountered at the boring locations. It is our opinion that the topsoil materials are not considered suitable for support of the proposed structure. In addition, the lean clay (fine alluvium) soils have lower strength characteristics and are not suitable for support of the proposed building.

We recommend site preparation for the foundations and floor areas of the proposed building consists of removing the topsoil materials and lean clay (fine alluvium) soils in order to expose the sand (coarse alluvium) soils. After the unsuitable soils have been removed from the footprint of the structure, we recommend placing compacted structural fill needed to attain the design grades. Please refer to Table 1 shown below that summarizes the anticipated minimum excavation depths to remove unsuitable soils encountered at the boring locations. The depths of the excavation will likely vary between the boring locations.

Table 1. Estimated Excavation Depths

Boring Number	Surface Elevation, ft	Anticipated Excavation Depth, ft	Approximate Excavation Elevation, ft
1	1627.9	2	1625.9
2	1628.1	2	1626.1
3	1627.9	3.5	1624.4
4	1628.2	2	1626.2
5	1627.7	2	1625.7
6	1628.3	2	1626.3
7	1627.6	2	1625.6
8	1628.2	3.5	1624.7
9	1627.5	3.5	1624.0

Where structural fill will be required below foundations, the bottom of the excavation should be laterally oversized one foot beyond the edges of the footing for each vertical foot of structural fill required below the footing (1 horizontal : 1 vertical).

We recommend compacting the sand (coarse alluvium) soils exposed in the bottom of the overexcavation with a heavy self-propelled vibratory compactor prior to placement of the structural fill or foundations.

Filling

Structural fill placed in dry excavations for support of the proposed structure should consist of pit-run or processed sand or gravel having a maximum particle size of 3 inch with less than 15 percent by weight passing the #200 sieve. The on-site sand (coarse alluvium) soils could be used for structural fill.

Any structural fill placed in excavations with water or having saturated soils in the bottoms should consist of a medium to coarse grained, free-draining sand with less than 40 percent by weight passing the #40 sieve and less than 5 percent by weight passing the #200 sieve. The initial lift of this material should be placed to a height of approximately 2 feet above the water surface or saturated soils prior to compaction to lessen the risk of disturbing the natural soils.

The fill and backfill materials should be placed and uniformly compacted in thin lifts, using vibratory compactors sized for the individual tasks. For heavy, self-propelled compactors, the fill should be placed in loose lifts of 12 inches or less. For hand-operated compactors, the fill should be placed in loose lifts of 6 inches or less. Table 2 presents a summary of the recommended compaction criteria for the various areas that will likely require fill or backfill. The percentages shown are expressed as minimums of standard Proctor density (ASTM:D698).

Table 2. Recommended Compaction Requirements

Structure	Minimum Compaction, percent
Below Footings and Floor Slabs	98
Exterior Pavements	97
Exterior Foundation and Retaining Wall Backfill	95
Landscape Areas	90

Foundations

Once the site has been prepared as previously recommended in section Site Preparation, the proposed structure can be supported by a spread footing or a mat foundation system. It is our opinion the foundations can be designed using a net allowable soil bearing pressure of 4,000 pounds per square foot (psf) if the site has been prepared according to our recommendations in section Site Preparation. The net allowable soil bearing pressure is based on the soil conditions encountered at the test borings, the results of the field and laboratory tests, recommended compaction levels and past experience with similar soil conditions.

We recommend all footings be placed at a sufficient depth for frost protection. The perimeter footings for heated buildings should be placed such that the bottom of the footing is a minimum of 4 feet below finished exterior grade. Interior footings in heated buildings can be placed beneath the floor slab. Footings for unheated areas and canopies, or footings that are not protected from frost during freezing temperatures, should be placed at a minimum depth of 5 feet below the lowest adjacent grade.

It is our opinion the recommended bearing pressure should provide a minimum safety factor of 3.0 against shear or base failure. Total settlement of the structure should be less than 2 inches and differential tilting at the base of the foundation should be less than 1 inch. Unknown soil conditions at the site that are different from those depicted at the boring locations could increase the amount of expected settlement.

Floor Slabs

We recommend placing a layer of free-draining sand fill directly beneath the floor slabs in order to provide a working surface for the placement of concrete and to serve as a capillary barrier. This free-draining granular fill should have less than 40 percent by weight passing the #40 sieve and less than 5 percent by weight passing the #200 sieve. We recommend placing a minimum of 6 inches of free-draining sand fill beneath on-grade floor slabs. We recommend below-grade floor slabs be placed on a minimum of 12 inches of the free-draining sand fill.

It is our opinion that the floor slabs can be designed using a soil modulus of subgrade reaction (k value) of 200 psi/inch for a sand subgrade.

Below-Grade/Retaining Wall Backfill – Water Control

Drainage

We recommend a perimeter backfill drainage system be provided for the exterior side of below-grade walls and retaining walls to collect and remove water and to prevent hydrostatic pressure on the walls. The drainage system should consist of slotted or perforated drainage pipes located at the bottom of the backfill trench, at an elevation lower than the below-grade floor elevation. In addition, drainage pipes should be placed beneath the below-grade floor slab with a maximum spacing of 25 feet between pipes. The drainage pipes should be surrounded by a properly graded rock filter that is wrapped in a geotextile filter fabric to minimize clogging. The drainage pipes should be connected to a suitable means of discharge.

Backfilling

We recommend a damp/water proofing material be applied to the below-grade walls prior to backfilling. The backfill materials placed against below-grade and retaining walls exert lateral forces on the walls. In order to minimize these lateral forces and to optimize drainage, we recommend using free-draining sand for backfill. We recommend the free-draining sand contain no more than 5 percent by weight passing the #200 sieve, which would consist of (SP) soils. The zone of sand backfill should extend a minimum of 2 feet outside the bottom of the wall and then extend upward and outward at a slope no steeper than 1:1 (horizontal to vertical). We recommend capping the sand backfill section with 1 to 2 feet of clayey soil in areas that will not have asphalt or concrete surfacing to minimize infiltration of surface waters. The sand backfill soils should be placed and compacted according to our previous recommendations in the section entitled Site Preparation – Filling. The foundation walls should be braced prior to backfilling in order to reduce the risk of damaging the walls.

Lateral Pressures

We recommend the below-grade walls be designed to resist at-rest lateral earth pressures. An ultimate lateral earth pressure equivalent to that generated by a fluid having a total unit weight of 50 pcf could be used for the sand backfill. Retaining walls that are allowed to rotate or deflect can be designed to resist active lateral earth pressures. An ultimate fluid pressure of 35 pcf can be used for the active case. Lateral pressures will be significantly higher if the walls are backfilled with soils other than the free-draining sand, or if they are not drained and become saturated.

Exterior Foundation Backfill

We recommend either granular soils or non-organic clay soils having a liquid limit less than 45 be used as exterior foundation backfill for slab-on-grade structures. If granular soils are used for backfill in areas that will not have asphalt or concrete surfacing, we recommend capping the sand with 1 to 2 feet of clayey soil to minimize infiltration of surface waters. The exterior foundation backfill soils should be placed and compacted according to our previous recommendations in the section entitled Site Preparation - Filling. The foundation walls should be braced prior to backfilling or they should be backfilled evenly on both sides to reduce the risk of damaging the walls.

Site Drainage

Proper site drainage should be provided during and after construction. General site grading should direct all surface waters away from the excavations. Any water that accumulates in the excavations should be removed as soon as possible.

It is important that a positive slope be provided away from the structure for proper drainage. Finished grades should be sloped away from the structure with a minimum slope of 1 inch per foot starting at the foundation and extending to at least 10 feet beyond the excavation line. If pavement will be placed immediately next to the structure, a slope of at least $\frac{1}{4}$ inch per foot

away from the foundation should be used for the pavement, if possible. The joint between the pavement and the foundation should be properly sealed and maintained.

CONSTRUCTION CONSIDERATIONS

Groundwater and Surface Water

Water may enter the excavations due to subsurface water, precipitation or surface run off. Where clay soils are encountered, it will likely be possible to remove and control water entering the excavation using normal sump pumping techniques. However, where sand soils are encountered, more extensive dewatering techniques will likely be required depending upon the subsurface water levels present during construction and the required excavation depths. Any water that accumulates in the bottom of the excavation should be immediately removed and surface drainage away from the excavation should be provided during construction.

Disturbance of Soils

The soils encountered at the boring locations are susceptible to disturbance and can experience strength loss caused by construction traffic and/or additional moisture. Precautions will be required during earthwork activities in order to reduce the risk of soil disturbance. The excavation should be performed with a track-driven excavator (backhoe) having a smooth cutting edge on the bucket to minimize soil disturbance. We recommend compacting the sand (coarse alluvium) soils exposed in the bottom of the overexcavation with a heavy self-propelled vibratory compactor prior to placement of the structural fill or foundations.

Cold Weather Precautions

If site preparation and construction is anticipated during cold weather, we recommend all foundations, slabs and other improvements that may be affected by frost movements be insulated from frost penetration during freezing temperatures. If filling is performed during freezing temperatures, all frozen soils, snow and ice should be removed from the areas to be filled prior to placing the new fill. The new fill should not be allowed to freeze during transit, placement and compaction. Concrete should not be placed on frozen subgrades. Frost should not be allowed to

penetrate below the footings. If floor slab subgrades freeze, we recommend the frozen soils be removed and replaced, or completely thawed, prior to placement of the floor slab. The subgrade soils will likely require reworking and recompacting due to the loss of density caused by the freeze/thaw process.

Excavation Sideslopes

All excavations must comply with the requirements of OSHA 29 CFR, Part 1926, Subpart P, "Excavations and Trenches". This document states that the excavation safety is the responsibility of the contractor. Reference to this OSHA requirement should be included in the project specifications.

Observations and Testing

This report was prepared using a limited amount of information for the project and a number of assumptions were necessary to help us develop our conclusions and recommendations. It is recommended that our firm be retained to review the geotechnical aspects of the final design plans and specifications to check that our recommendations have been properly incorporated into the design documents.

The recommendations submitted in this report have been made based on the subsurface conditions encountered at the test boring locations. It is possible that there are subsurface conditions at the site that are different from those represented by the borings. As a result, on-site observation during construction is considered integral to the successful implementation of the recommendations. We believe that qualified field personnel need to be on-site at the following times to observe the site conditions and effectiveness of the construction.

Excavation

We recommend that a geotechnical engineer or geotechnical engineering technician working under the direct supervision of a geotechnical engineer observe all excavations for foundations, slabs and pavements. These observations are recommended to determine if the exposed soils are similar to those encountered at the boring locations, if unsuitable soils have been adequately

removed and if the exposed soils are suitable for support of the proposed construction. These observations should be performed prior to placement of fill or foundations.

Testing

After the subgrade is observed by a geotechnical engineer/technician and approved, we recommend a representative number of compaction tests be taken during the placement of the structural fill and backfill placed below foundations, slabs and pavements, beside foundation walls and behind retaining walls. The tests should be performed to determine if the required compaction has been achieved. As a general guideline, we recommend at least one test be taken for every 2,000 square feet of structural fill placed in building and paved areas, at least one test for every 75 to 100 feet in trench fill, and for every 2-foot thickness of fill or backfill placed. The actual number of tests should be left to the discretion of the geotechnical engineer. Samples of proposed fill and backfill materials should be submitted to our laboratory for testing to determine their compliance with our recommendations and project specifications.

SUBSURFACE EXPLORATION PROCEDURES

Test Borings

Nine (9) standard penetration test (SPT) borings were drilled from July 13 through July 22, 2009 with a truck rig equipped with hollow-stem auger. Soil sampling was performed in accordance with the procedures described in ASTM:D1586. Using this procedure, a 2-inch O.D. split barrel sampler is driven into the soil by a 140-pound weight falling 30 inches. After an initial set of 6 inches, the number of blows required to drive the sampler an additional 12 inches is known as the penetration resistance, or "N" value. The "N" value is an index of the relative density of cohesionless soils and the consistency of cohesive soils. In addition, thin walled tube samples were obtained according to ASTM:D1587, where indicated by the appropriate symbol on the boring logs.

The borings were backfilled with on-site materials and some settlement of these materials can be expected to occur. Final closure of the holes is the responsibility of the client or property owner.

The soil samples collected from the boring locations will be retained in our office for a period of one month after the date of this report and will then be discarded unless we are notified otherwise.

Soil Classification

As the samples were obtained in the field, they were visually and manually classified by the crew chief according to ASTM:D2488. Representative portions of all samples were then sealed and returned to the laboratory for further examination and for verification of the field classification. In addition, selected samples were then submitted to a program of laboratory tests. Where laboratory classification tests (sieve analysis and Atterberg limits) have been performed, classifications according to ASTM:D2487 are possible. Logs of the borings indicating the depth and identification of the various strata, the "N" value, the laboratory test data, water level information and pertinent information regarding the method of maintaining and advancing the drill holes are also attached in Appendix A. Charts illustrating the soil classification procedures, the descriptive terminology and the symbols used on the boring logs are also attached in Appendix A.

Water Level Measurements

Measurements for groundwater levels were made at the boring locations both at the time they were completed and just before being backfilled. The groundwater level measurements are shown on the bottom of the boring logs. It is our opinion that the water levels indicated on the boring logs are a relatively accurate indication of the subsurface groundwater level at the time the measurements were made due to the permeable characteristics of the sand soils encountered. A long period of time is generally required for subsurface water to stabilize in the soils encountered at the boring locations. Long term water level monitoring was not included in our scope of work.

Subsurface groundwater levels should be expected to fluctuate seasonally and yearly from the groundwater readings recorded at the borings. Fluctuations occur due to varying seasonal and yearly rainfall amounts and snowmelt, as well as other factors. It is possible that the subsurface



**GEOTEK ENGINEERING
& TESTING SERVICES, INC.**
909 E. 50th Street North
Sioux Falls, SD 57104
605-335-5512 Fax 605-335-0773

GEOTECHNICAL TEST BORING LOG

GEOTEK # **09-615**

BORING NO. **1 (1 of 1)**

PROJECT **Proposed Fertilizer Plant, AgFirst Farmers Cooperative, Near Aurora, SD**

DEPTH in FEET	DESCRIPTION OF MATERIAL	GEOLOGIC ORIGIN	N	WL	SAMPLE		LABORATORY TESTS				
					NO.	TYPE	WC	D	LL	PL	QU
	↓ SURFACE ELEVATION <u>1627.9 ft</u>										
2	LEAN CLAY: black, moist, (CL)	TOPSOIL			1	HSA					
			19		2	SPT					
			40		3	SPT					
			20		4	SPT					
			18		5	SPT					
			26		6	SPT					
			23		7	SPT					
19½											
	SANDY LEAN CLAY: a little gravel, brown, moist, stiff to very stiff, (CL)	GLACIAL TILL	15		8	SPT					
			18		9	SPT					
			22		10	SPT					
31	Bottom of borehole at 31 feet.										

WATER LEVEL MEASUREMENTS

START 7-13-09 COMPLETE 7-13-09 3:49 pm

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	WATER LEVEL	METHOD
7-13-09	3:50 pm	31	--	16	16	3.25" ID Hollow Stem Auger
--	--	--	--	--	--	
--	--	--	--	--	--	
--	--	--	--	--	--	
						CREW CHIEF Gordy Hawkey



**GEOTEK ENGINEERING
& TESTING SERVICES, INC.**
 909 E. 50th Street North
 Sioux Falls, SD 57104
 605-335-5512 Fax 605-335-0773

GEOTECHNICAL TEST BORING LOG

GEOTEK # 09-615

BORING NO. 2 (1 of 1)

PROJECT Proposed Fertilizer Plant, AgFirst Farmers Cooperative, Near Aurora, SD

DEPTH in FEET	DESCRIPTION OF MATERIAL	GEOLOGIC ORIGIN	N	WL	SAMPLE		LABORATORY TESTS					
					NO.	TYPE	WC	D	LL	PL	QU	
	↙ SURFACE ELEVATION 1628.1 ft											
2	LEAN CLAY: black, moist, (CL)	TOPSOIL			1	HSA						
	SAND: a little gravel, fine to medium grained, brown, moist, dense to very dense, (SP)	COARSE ALLUVIUM	16		2	X SPT						
			37		3	X SPT						
			23		4	X SPT						
			19		5	X SPT						
			21		6	X SPT						
			20		7	X SPT						
19½												
21	SANDY LEAN CLAY: a little gravel, brown, moist, stiff, (CL)	GLACIAL TILL	14		8	X SPT						
	Bottom of borehole at 21 feet.											
WATER LEVEL MEASUREMENTS				START	7-13-09	COMPLETE	7-13-09 2:44 pm					
DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	WATER LEVEL	METHOD						
7-13-09	2:44 pm	21	--	16	16	3.25" ID Hollow Stem Auger						
--	--	--	--	--	--							
--	--	--	--	--	--							
--	--	--	--	--	--	CREW CHIEF Gordy Hawkey						

GEOTECHNICAL TEST BORING 09-615.GPJ GEOTEKENG.GDT 7/29/09



**GEOTEK ENGINEERING
& TESTING SERVICES, INC.**
909 E. 50th Street North
Sioux Falls, SD 57104
605-335-5512 Fax 605-335-0773

GEOTECHNICAL TEST BORING LOG

GEOTEK # 09-615

BORING NO. 3 (1 of 1)

PROJECT Proposed Fertilizer Plant, AgFirst Farmers Cooperative, Near Aurora, SD

DEPTH in FEET	DESCRIPTION OF MATERIAL	GEOLOGIC ORIGIN	N	WL	SAMPLE		LABORATORY TESTS				
					NO.	TYPE	WC	D	LL	PL	QU
	↓ SURFACE ELEVATION <u>1627.9 ft</u>										
	<u>LEAN CLAY</u> : black, moist, (CL)	TOPSOIL			1	HSA					
2½											
3½	<u>LEAN CLAY</u> : brown, moist, firm, (CL)	FINE ALLUVIUM	6		2	SPT					
	<u>SAND</u> : with gravel, medium to coarse grained, brown, moist, very dense, (SP)	COARSE ALLUVIUM	43		3	SPT					
7											
	<u>SAND</u> : a little gravel, fine to medium grained, brown, moist to waterbearing, medium dense to very dense, (SP)	COARSE ALLUVIUM	24		4	SPT					
			14		5	SPT					
			19		6	SPT					
			31		7	SPT					
				▼							
21			19		8	SPT					
	Bottom of borehole at 21 feet.										

WATER LEVEL MEASUREMENTS

START 7-13-09 COMPLETE 7-13-09 4:46 pm

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	WATER LEVEL	METHOD
7-13-09	4:46 pm	21	--	16	▼ 16	3.25" ID Hollow Stem Auger
--	--	--	--	--	--	
--	--	--	--	--	--	
--	--	--	--	--	--	
						CREW CHIEF Gordy Hawkey

GEOTECHNICAL TEST BORING LOG

GEOTEK # 09-615

BORING NO. 4 (1 of 1)

PROJECT Proposed Fertilizer Plant, AgFirst Farmers Cooperative, Near Aurora, SD

[illegible]

WATER LEVEL MEASUREMENTS						START	7-20-09	COMPLETE	7-20-09 2:50 pm
DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	WATER LEVEL	METHOD 3.25" ID Hollow Stem Auger			
7-20-09	2:50 pm	21	--	16	 16				
--	--	--	--	--	--				
--	--	--	--	--	--				
--	--	--	--	--	--	CREW CHIEF Roy Hanson			

GEOTECHNICAL TEST BORING 09-615.GPJ GEOTEKENG.GDT 7/29/09



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GEOTECHNICAL TEST BORING LOG

GEOTEK # 09-615

BORING NO. 5 (1 of 1)

PROJECT Proposed Fertilizer Plant, AgFirst Farmers Cooperative, Near Aurora, SD

DEPTH in FEET	DESCRIPTION OF MATERIAL	GEOLOGIC ORIGIN	N	WL	SAMPLE		LABORATORY TESTS					
					NO.	TYPE	WC	D	LL	PL	QU	
	↓ SURFACE ELEVATION <u>1627.7 ft</u>											
2	<u>LEAN CLAY</u> : black, moist, (CL)	TOPSOIL			1	HSA						
	<u>SAND</u> : a little gravel, medium grained, brown, moist to waterbearing, medium dense to dense, a lens of clay below 13' (SP)	COARSE ALLUVIUM	9		2	SPT						
			30		3	SPT						
			24		4	SPT						
			19		5	SPT						
			12		6	SPT						
			22		7	SPT						
			16		8	SPT						
21	Bottom of borehole at 21 feet.											
WATER LEVEL MEASUREMENTS					START <u>7-20-09</u> COMPLETE <u>7-20-09 10:35 am</u>							
DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	WATER LEVEL	METHOD 3.25" ID Hollow Stem Auger						
7-20-09	10:35 am	21	--	16	16							
--	--	--	--	--	--							
--	--	--	--	--	--							
--	--	--	--	--	--	CREW CHIEF Roy Hanson						

GEOTECHNICAL TEST BORING 09-615.GPJ GEOTEKENG.GDT 7/29/09



**GEOTEK ENGINEERING
& TESTING SERVICES, INC.**
909 E. 50th Street North
Sioux Falls, SD 57104
605-335-5512 Fax 605-335-0773

GEOTECHNICAL TEST BORING LOG

GEOTEK # 09-615

BORING NO. 6 (1 of 1)

PROJECT Proposed Fertilizer Plant, AgFirst Farmers Cooperative, Near Aurora, SD

DEPTH in FEET	DESCRIPTION OF MATERIAL ↓ SURFACE ELEVATION <u>1628.3 ft</u>	GEOLOGIC ORIGIN	N	WL	SAMPLE		LABORATORY TESTS				
					NO.	TYPE	WC	D	LL	PL	QU
2	LEAN CLAY: brown, moist, 6" of topsoil at the surface (CL)	FINE ALLUVIUM			1	HSA					
4	SAND: fine grained, brown, moist, loose, (SP)	COARSE ALLUVIUM	6		2	X SPT					
	SAND: a little gravel, medium grained, brown, moist, very dense to dense, (SP)	COARSE ALLUVIUM	37		3	X SPT					
			23		4	X SPT					
9½	SAND: a trace of gravel, medium grained, brown, moist, medium dense, (SP)	COARSE ALLUVIUM	15		5	X SPT					
12	SAND: fine grained, brown, moist, medium dense, a lens of clay below 12' (SP)	COARSE ALLUVIUM	15		6	X SPT					
14	SAND: a trace of gravel, fine to medium grained, brown, moist to waterbearing, dense, (SP)	COARSE ALLUVIUM	24		7	X SPT					
19	SAND: a little gravel, medium grained, brown, waterbearing, dense, (SP)	COARSE ALLUVIUM	23		8	X SPT					
21	Bottom of borehole at 21 feet.										

WATER LEVEL MEASUREMENTS

START 7-20-09 COMPLETE 7-20-09 4:45 pm

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	WATER LEVEL	METHOD
7-20-09	4:50 pm	21	--	16	16	3.25" ID Hollow Stem Auger
--	--	--	--	--	--	
--	--	--	--	--	--	
--	--	--	--	--	--	
CREW CHIEF Roy Hanson						

GEOTECHNICAL TEST BORING 09-615.GPJ GEOTEKENG.GDT 7/29/09



**GEOTEK ENGINEERING
& TESTING SERVICES, INC.**
909 E. 50th Street North
Sioux Falls, SD 57104
605-335-5512 Fax 605-335-0773

GEOTECHNICAL TEST BORING LOG

GEOTEK # <u>09-615</u>						BORING NO. <u>7 (1 of 1)</u>					
PROJECT <u>Proposed Fertilizer Plant, AgFirst Farmers Cooperative, Near Aurora, SD</u>											
DEPTH in FEET	DESCRIPTION OF MATERIAL	GEOLOGIC ORIGIN	N	WL	SAMPLE		LABORATORY TESTS				
					NO.	TYPE	WC	D	LL	PL	QU
	↓ SURFACE ELEVATION <u>1627.6 ft</u>										
2	<u>LEAN CLAY</u> : brown, moist, 6" of topsoil at the surface (CL)	FINE ALLUVIUM			1	HSA					
	<u>SAND</u> : a little gravel, medium grained, brown, moist, dense to very dense, (SP)	COARSE ALLUVIUM	16		2	SPT					
			40		3	SPT					
			26		4	SPT					
			15		5	SPT					
12	<u>SAND</u> : a trace of gravel, medium grained, brown, moist to waterbearing, medium dense to dense, (SP)	COARSE ALLUVIUM	12		6	SPT					
			20		7	SPT					
19	<u>SAND</u> : a little gravel, medium grained, brown, waterbearing, dense, (SP)	COARSE ALLUVIUM	21		8	SPT					
21	Bottom of borehole at 21 feet.										
WATER LEVEL MEASUREMENTS						START <u>7-20-09</u> COMPLETE <u>7-20-09 3:55 pm</u>					
DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	WATER LEVEL	METHOD <u>3.25" ID Hollow Stem Auger</u>					
7-20-09	3:55 pm	21	--	16	16						
--	--	--	--	--	--						
--	--	--	--	--	--						
--	--	--	--	--	--	CREW CHIEF <u>Roy Hanson</u>					

GEOTECHNICAL TEST BORING 09-615.GPJ GEOTEKENG.GDT 7/29/09



GEOTEK ENGINEERING
& TESTING SERVICES, INC.
909 E. 50th Street North
Sioux Falls, SD 57104
605-335-5512 Fax 605-335-0773

GEOTECHNICAL TEST BORING LOG

GEOTEK # 09-615						BORING NO. 8 (1 of 2)					
PROJECT Proposed Fertilizer Plant, AgFirst Farmers Cooperative, Near Aurora, SD											
DEPTH in FEET	DESCRIPTION OF MATERIAL	GEOLOGIC ORIGIN	N	WL	SAMPLE		LABORATORY TESTS				
					NO.	TYPE	WC	D	LL	PL	QU
	<u>SURFACE ELEVATION 1628.2 ft</u>										
	<u>LEAN CLAY</u> : black, moist, (CL)	TOPSOIL			1	HSA					
2	<u>LEAN CLAY</u> : brown, moist, soft, (CL)	FINE ALLUVIUM	3		2	SPT					
3 1/2	<u>SAND</u> : a little gravel, medium grained, brown, moist, very dense to dense, (SP)	COARSE ALLUVIUM	40		3	SPT					
			19		4	SPT					
			14		5	SPT					
12	<u>SAND</u> : a trace of gravel, fine to medium grained, brown, moist to waterbearing, medium dense to dense, (SP)	COARSE ALLUVIUM	15		6	SPT					
			21		7	SPT					
19	<u>SAND</u> : a little gravel, medium grained, brown, waterbearing, very dense to dense, (SP)	COARSE ALLUVIUM	31		8	SPT					
			35		9	SPT					
			17		10	SPT					
31	(Text begins on next page)										
WATER LEVEL MEASUREMENTS						START 7-22-09 COMPLETE 7-22-09 1:00 pm					
DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	WATER LEVEL	METHOD					
7-22-09	1:00 pm	61	--	--	NMR	Rotary Mud Drilling					
--	--	--	--	--	--						
--	--	--	--	--	--						
--	--	--	--	--	--	CREW CHIEF Roy Hanson					

GEOTECHNICAL TEST BORING 09-615.GPJ GEOTEKENG.GDT 7/29/09



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605-335-5512 Fax 605-335-0773

GEOTECHNICAL TEST BORING LOG

GEOTEK # 09-615

BORING NO. 8 (2 of 2)

PROJECT Proposed Fertilizer Plant, AgFirst Farmers Cooperative, Near Aurora, SD

DEPTH in FEET	DESCRIPTION OF MATERIAL	GEOLOGIC ORIGIN	N	WL	SAMPLE		LABORATORY TESTS				
					NO.	TYPE	WC	D	LL	PL	QU
	↓ SURFACE ELEVATION <u>1628.2 ft</u>										
	SANDY LEAN CLAY: a little gravel, brown, stiff to very stiff, (CL) (Continued from previous page)	GLACIAL TILL	14		11	X SPT					
			21		12	X SPT					
			21		13	X SPT					
			18		14	X SPT					
54	SANDY LEAN CLAY: a little gravel, brown and dark brown, very stiff, (CL)	GLACIAL TILL	25		15	X SPT					
61			25		16	X SPT					
	Bottom of borehole at 61 feet.										

WATER LEVEL MEASUREMENTS

START 7-22-09 COMPLETE 7-22-09 1:00 pm

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	WATER LEVEL	METHOD
7-22-09	1:00 pm	61	--	--	NMR	Rotary Mud Drilling
--	--	--	--	--	--	
--	--	--	--	--	--	
--	--	--	--	--	--	
						CREW CHIEF Roy Hanson

GEOTECHNICAL TEST BORING 09-615.GPJ GEOTEKENG.GDT 7/29/09



GEOTEK # 09-615

BORING NO. 9 (1 of 1)

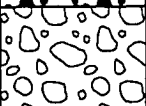
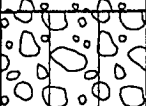
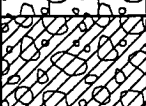
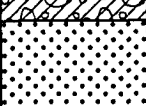
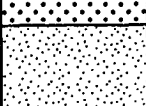
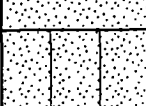
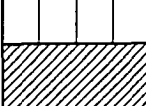
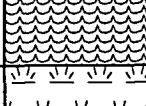
[illegible]

START	7-20-09	COMPLETE	7-20-09 5:45 pm
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[illegible]

GEOTECHNICAL TEST BORING 09-615.GPJ GEOTEKENG.GDT 7/29/09

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50			ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

BORING LOG SYMBOLS AND DESCRIPTIVE TERMINOLOGY

SYMBOLS FOR DRILLING AND SAMPLING

<u>Symbol</u>	<u>Definition</u>
Bag	Bag sample
CS	Continuous split-spoon sampling
DM	Drilling mud
FA	Flight auger; number indicates outside diameter in inches
HA	Hand auger; number indicates outside diameter in inches
HSA	Hollow stem auger; number indicates inside diameter in inches
LS	Liner sample; number indicates outside diameter of liner sample
N	Standard penetration resistance (N-value) in blows per foot
NMR	No water level measurement recorded, primarily due to presence of drilling fluid
NSR	No sample retrieved; classification is based on action of drilling equipment and/or material noted in drilling fluid or on sampling bit
SH	Shelby tube sample; 3-inch outside diameter
SPT	Standard penetration test (N-value) using standard split-spoon sampler
SS	Split-spoon sample; 2-inch outside diameter unless otherwise noted
WL	Water level directly measured in boring
▼	Water level symbol

SYMBOLS FOR LABORATORY TESTS

<u>Symbol</u>	<u>Definition</u>
WC	Water content, percent of dry weight; ASTM:D2216
D	Dry density, pounds per cubic foot
LL	Liquid limit; ASTM:D4318
PL	Plastic limit; ASTM:D4318
QU	Unconfined compressive strength, pounds per square foot; ASTM:D2166

DENSITY/CONSISTENCY TERMINOLOGY

<u>Density</u>		<u>Consistency</u>
<u>Term</u>	<u>N-Value</u>	<u>Term</u>
Very Loose	0-4	Soft
Loose	5-8	Firm
Medium Dense	9-15	Stiff
Dense	16-30	Very Stiff
Very Dense	Over 30	Hard

PARTICLE SIZES

<u>Term</u>	<u>Particle Size</u>
Boulder	Over 12"
Cobble	3" – 12"
Gravel	#4 – 3"
Coarse Sand	#10 – #4
Medium Sand	#40 – #10
Fine Sand	#200 – #40
Silt and Clay	passes #200 sieve

DESCRIPTIVE TERMINOLOGY

<u>Term</u>	<u>Definition</u>
Dry	Absence of moisture, powdery
Frozen	Frozen soil
Moist	Damp, below saturation
Waterbearing	Pervious soil below water
Wet	Saturated, above liquid limit
Lamination	Up to ½" thick stratum
Layer	½" to 6" thick stratum
Lens	½" to 6" discontinuous stratum

GRAVEL PERCENTAGES

<u>Term</u>	<u>Range</u>
A trace of gravel	2-4%
A little gravel	5-15%
With gravel	16-50%



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

January 11, 2010

AgFirst Farmers Cooperative
PO Box 127
Brookings SD 57006

Dear Sir:

Thank you for submitting the *Application for a Permit to Appropriate Water* for commercial use. In order to complete the application, the following is required.

- A map (aerial photo) showing the proposed location of the well in relation to a government section corner or quarter corner by direction and distance is required. The map must be signed by one of the following: Registered Land Surveyor, Registered Professional Engineer or by any other government employee who normally prepares maps as a part of his assigned duties (i.e. local NRCS office).
- On the supplemental Information sheet (Form 2A), please complete the Well Information – Proposed Construction. What is the proposed depth of this well?
- The amount of water claimed on the application is 2.3 gallons per minute. For your information, the standard for the amount of water claimed is based on the peak pump rate. Please change the amount of water claimed if necessary.
- The application/license fee will be \$300.00. This is the fee for any application requesting 45 gallons per minute or less.

If you have any questions, please contact me.

Sincerely,

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

enclosure

Schlaak, Karen

From: Gronlund, Eric**Sent:** Tuesday, January 26, 2010 9:43 AM**To:** Schlaak, Karen**Subject:** Ag First

Dustin with Ag First called. I believe we sent back their application for a fertilizer plant. One of the issues was the 2.3 gpm requested appropriation. Dustin said this was the average water use based on a year. I said we needed the peak diversion capability from the well. He indicated that the well driller stated the pump would be rated at 160 gpm. I told him that calculating the 2.3 gpm average over the years results in approx. 4 acre feet of water. I told him to be on the high side to include 10 acre feet and the annual volume. This would result in the water being below the 45 gpm minimum fee so the \$300 fee should be correct.

Eric Gronlund**Water Rights Program, DENR****Phone:** (605) 773-3352**Fax:** (605) 773-4068**Email:** eric.gronlund@state.sd.us**Web:** www.denr.sd.gov



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

**RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 7182-3, AgFirst Farmers Cooperative**

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. 7182-3, AgFirst Farmers Cooperative.

The Chief Engineer is recommending APPROVAL of Application No. 7182-3 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 Permit No. 7182-3 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. 7182-3 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.

See report on application for additional information.

Garland Erbele, Chief Engineer
March 11, 2010

**Report on Water Permit Application No. 7182-3
for AgFirst Farmers Cooperative
February 9, 2010**

Application No. 7182-3 proposes to appropriate 160 gallons per minute (0.35 cfs) from one well completed into the Big Sioux Aurora aquifer approximately 60 feet deep located in the SW ¼ NE ¼ of Section 2-T109N-R48W for industrial use at a proposed fertilizer plant in Brookings County. The annual period during which water will be used is January 1 through December 31.

AQUIFER: Big Sioux Aurora

This report will address the availability of unappropriated water from the Aurora management unit of the Big Sioux aquifer.

WATER AVAILABILITY

Aquifer Characteristics:

The Big Sioux Aurora aquifer is a surficial outwash (sand and gravel) that is under water table conditions in the area of this application. The aquifer underlies 39,300 acres and contains an estimated 165,060 acre-feet of recoverable water in storage in Brookings County (Hedges, 1982). The Big Sioux aquifer (in Brookings and Kingsbury Counties) underlies 540 square miles and contains an estimated 2.0 million acre-feet of water in storage (Hamilton, 1989). The aquifer blends into the Big Sioux Brookings to the west. Ground water movement is generally from northeast to southwest in the area of this application (Hamilton, 1989).

The test-boring information submitted with the application indicates topsoil material at the surface (typically ½ to 2 ½ feet thick), overlaying various alluvium materials ranging from fine (lean clays) to coarse (sand) soils. Glacial till was encountered in three of the nine boreholes at approximately 20-30 feet below land surface. The static water level was typically sixteen feet below land surface.

Observation Well Data:

The Water Rights Program monitors two observation wells, BG-57F, located one and a half miles north-west, and BG-77I located less than two miles north-east of this application location. Water levels for these wells show good response to climatic conditions, that is, rising water levels during wet years (recharge) and gradually declining water levels during dry years due to natural discharge and to pumping. The water level record indicates that the aquifer is capable of sustaining additional withdrawals (Water Rights, 2010). Hydrographs for these observation wells are included with this report.

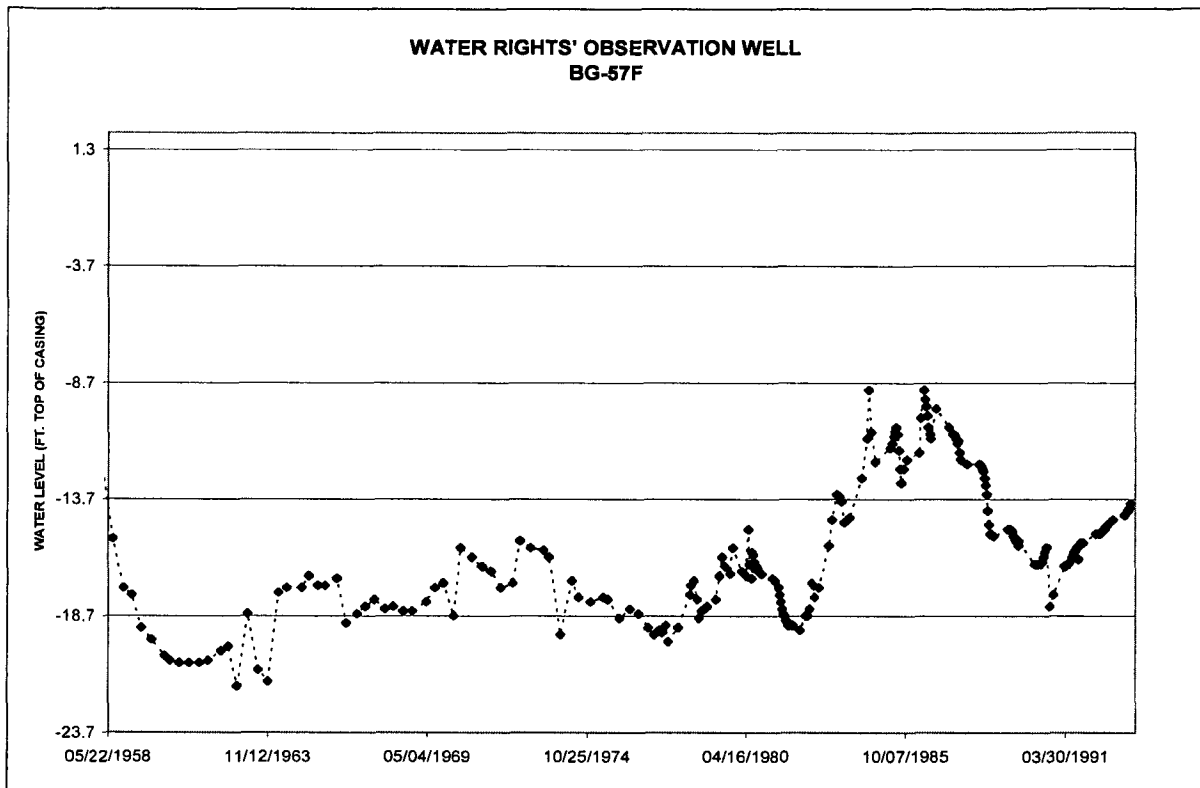


Figure 1. Hydrograph for Water Rights Observation Well BG-57F, completed into the Big Sioux Aurora Aquifer within two miles of 7182-3

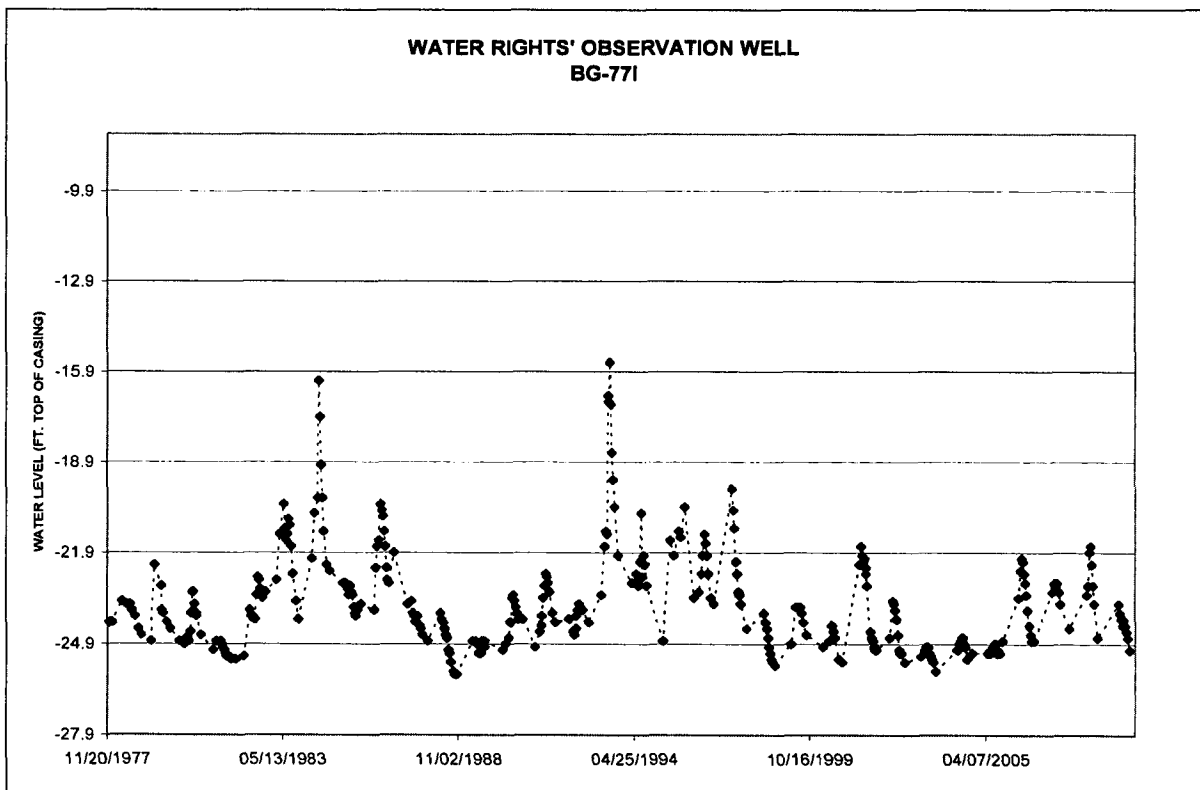


Figure 2. Hydrograph for Water Rights Observation Well BG-77I, completed into the Big Sioux Aurora Aquifer within two miles of 7182-3

In general, the hydrographs show that over the period of record, withdrawals have not exceeded recharge.

Review of Existing Water Permits/Rights/Water Use:

Records of irrigation use from the Aurora management unit of the Big Sioux Aquifer date back to 1980. In 2008, there were 48 permits appropriating 18,135 acre-feet. Pumpage for the same year was reported at 4,773 acre-feet for the management unit.

There are fifteen existing water permits/rights located within two miles of this application, two are within a mile of this location. Water levels do fluctuate as a result of area pumping but this does not affect the availability of water from the aquifer.

Recharge:

The Big Sioux aquifer is recharged from several sources. Recharge to the Big Sioux aquifer occurs through infiltration of precipitation and by slow seepage through till, lake deposits, and underlying aquifers (Hamilton, 1989). Recharge has been estimated to be about 6.57 inches per year for the water table portions of the Big Sioux aquifer in Brookings County (Koch, 1980).

Conclusions:

1. Water is available from the Big Sioux Aurora aquifer.
2. The aquifer appears to be under water table conditions at this location. Drawdown will result from pumping. Interference is not expected to be a problem.
3. If the well covered by this Permit depletes the domestic supplies or interferes with prior water rights, restrictions or other arrangements may be required to protect these water supplies.
4. This well must be constructed in accordance with SD Well Construction Standards.



Hayes Haas
Natural Resources Engineer

Bibliography:

Hamilton, L.J., Water Resources of Brookings and Kingsbury Counties, South Dakota, Water Resources Investigations Report 88-4185, USGS, Huron, SD 57350

Hedges, L.S. et al, 1982, Evaluation of Ground-Water Resources Eastern South Dakota and Upper Big Sioux River, South Dakota and Iowa, for the U.S. Army Corps of Engineers, SD DENR, SDGS, Vermillion, SD 57069

Koch, N.C., 1980, Appraisal of the Water Resources of the Big Sioux Aquifer, Brookings, Deuel, and Hamlin Counties, South Dakota, Water-Resources Investigation Report 80-100, USGS, Huron, SD, 57350

Water Rights, 2010, Unpublished Observation Well Records for Brookings County, SD DENR, Division of Water Rights, Pierre, SD, 57501

Affidavit of Publication

State of South Dakota

Exhibit "A"

OK

SS

County of Brookings

Katy VanMaanen of said county, first duly sworn, on oath, says: That she is the office clerk of THE BROOKINGS REGISTER, a daily newspaper, printed and published in the City of Brookings, in said County of Brookings, and State of South Dakota; that she has full and personal knowledge of the facts herein stated; that said newspaper is a legal newspaper and has a bona fide circulation of at least two hundred copies of each issue daily; that said newspaper has been published within the said County of Brookings and State of South Dakota, for more than one year prior to the first publication of Exhibit "A," hereto attached and herein mentioned, and was and is printed that the

RECEIVED

APR - 9 2010

WATER RIGHTS PROGRAM

Legal 658, 2x, 3/19/26
NOTICE OF APPLICATION NO. 7182-3 to Appropriate Water
Notice is given that AgFirst Farmers Cooperative, PO Box 127, Brookings SD 57006 has filed an application for a water permit to appropriate 0.35 cubic feet of water per second (10 acre-feet annually) from one well to be completed into the Big Sioux/Aurora Aquifer (approximately 60 feet deep) located in SW NE Section 2-T109N-R49W for commercial use.
Pursuant to SDCL 46-

2A-2, the Chief Engineer recommends APPROVAL of Application No. 7182-3 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 April 5, 2010.

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 twice at the total approximate cost of \$ 42.53.

Legal #658 "App of Notice"

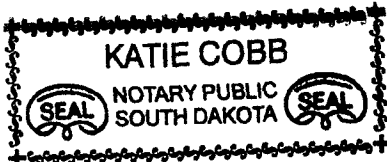
a printed copy of which, taken from the paper in which the same was published, is hereto attached marked Exhibit said newspaper for _____ 2 times, to-wit:

March 16, 2010

March 26, 2010

said Exhibit "A" inures to the sole benefit for the publishers of 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 person whomsoever; that the fees charged for the publication thereof are:

Forty two dollars and fifty three cents \$42.53



Katy VanMaanen

Subscribed and sworn to before me this

26th

day of

March

2010

Katie Cobb

Notary Public in and for the County of Brookings, South Dakota.

My Commission expires July 14, 2015



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

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

March 12, 2010

Brookings Register
PO Box 177
Brookings SD 57006

ATTENTION: Legal Public Notice

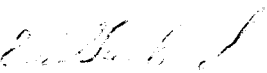
Enclosed is a Notice on Application No. 7182-3 to Appropriate Water to be published twice. Please publish the first notice on March 19, 2010 with the second publication 7 days later. The text of the notice can be e-mailed to your paper by contacting Karen Schlaak at (605) 773-3352.

The applicant must verify to you that the notice is to be published, before you make the first publication. **Please BILL the APPLICANT for the cost of publication.** The APPLICANT is AgFirst Farmers Cooperative, PO Box 127, Brookings SD 57006 (Ph # 605-692-6216).

Please send the Water Rights Program the first publication immediately. The publication is checked for accuracy so any corrections can be made in the second publication. You may use the form below or fax a copy of the first publication. Any fax should be sent to the attention of Karen Schlaak at (605) 773-4068. Publication errors can invalidate the public notice.

After the second publication, **please send us an affidavit or use the enclosed Proof of Publication form.** 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

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

No. 7182-3

TO: Eric Gronlund
Water Rights Program
Joe Foss Building
Pierre SD 57501-3181

Date _____

We are in receipt of your letter of March 12, 2010 enclosing Notice to Appropriate Water by Application No. 7182-3 which was first published in our issue of _____. ENCLOSED IS A COPY OF THIS FIRST PUBLICATION.

Name

Newspaper



**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 DATES, CONTACT
THE NEWSPAPER RIGHT AWAY.

March 12, 2010

AgFirst Farmers Cooperative
PO Box 127
Brookings SD 57006

Dear Sir:

Water Permit Application No. 7182-3 for commercial use has been examined and found to comply with the South Dakota Water Laws and applicable rules. A notice has been sent to the Publisher of the Brookings Register printed at Brookings SD (Ph # 605-692-6271). You will need to contact the newspaper 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 to authorize publication of your Notice and to arrange for payment. Early contact with the paper can eliminate delays. Upon receiving authorization, the publisher has been instructed to publish your notice once each week for two consecutive weeks. 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
eric.gronlund@state.sd.us

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 first Notice on March 19, 2010 with the second publication 7 days later. 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. 7182-3 to Appropriate Water

Notice is given that AgFirst Farmers Cooperative, PO Box 127, Brookings SD 57006 has filed an application for a water permit to appropriate 0.35 cubic feet of water per second (10 acre-feet annually) from one well to be completed into the Big Sioux:Aurora Aquifer (approximately 60 feet deep) located in SW ¼ NE ¼ Section 2-T109N-R49W for commercial use.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 7182-3 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 April 5, 2010.

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 twice at the total approximate cost of_____.



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

APR 20 2010

AgFirst Farmers Cooperative
PO Box 127
Brookings SD 57006

Dear Sir:

Enclosed is Water Permit No. 7182-3 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

SOUTH DAKOTA WATER WELL COMPLETION REPORT

7182-3

Location SW 1/4 NW 1/4 Sec 2 Twp 109-N Rg 49-W

County

Brookings

North

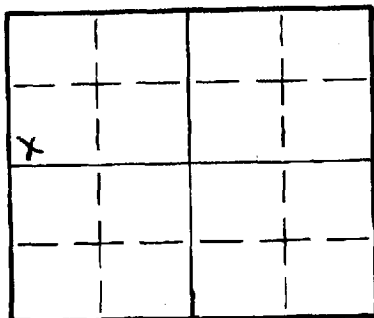
Please mark well location with an "X"

W

E

Well Completion Date

7-2-10



Well Owner:

Business Name: Ag 1st Farmers Co-op

Address: 204 1st St. So.

Brookings, S.D. 57006

WELL LOG:

DEPTH

FORMATION

FROM

TO

Topsoil

0

1

Red Gravel

1

13

fine Gravel

13

28

LOCATION:

Distance from nearest potential pollution source (septic tank, abandoned well,

feed lot, etc.) 3/4 mile ft. from Caly Lagoon (identify source).

PROPOSED USE:

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

METHOD OF DRILLING:

Bucket-Raise Casing

CASING DATA:

- ☒ Steel ☐ Plastic ☐ Other

If other describe

PIPEWEIGHT	DIAMETER	FROM	TO	HOLE DIAMETER
<u>50 LB/FT</u>	<u>12 IN</u>	<u>4 FT</u>	<u>24 FT</u>	<u>20 IN</u>
<u>LB/FT</u>	<u>IN</u>	<u>FT</u>	<u>FT</u>	<u>IN</u>
<u>LB/FT</u>	<u>IN</u>	<u>FT</u>	<u>FT</u>	<u>IN</u>

GROUTING DATA

Grout Type	No. of Sacks	Grout Weight	From	To
<u>Best Grout</u>		<u>lb./gal</u>	<u>3 ft</u>	<u>13 ft</u>
		<u>lb./gal</u>	<u>ft</u>	<u>ft</u>

Describe grouting procedure

SCREEN: ☐ Perforated pipe ☒ Manufactured

Diameter 12 IN Length 4 FEET

Material Stainless Steel

Slot Size 100 Set From 24 Feet to 28 Feet

Other information

WAS A PACKER OR SEAL USED? ☐ YES ☒ NO

If so, what material?

Describe packer(s) and location?

DISINFECTION: Was well disinfected upon completion?

☒ YES, How: chlorine

☐ NO, Why Not?

Laboratory sent to for water quality analysis

park

STATIC WATER LEVEL 13'6" Feet

If flowing: closed in pressure _____ PSI

GPM flow _____ through _____ inch pipe

Controlled by ☐ Valve ☐ Reducers ☐ Other _____

Reduced Flowrate _____ GPM

Can well be completely shut in? _____

WELL TEST DATA:

☒ Pumped Describe: _____

☐ Bailed _____

☐ Other _____

Pumping Level Below Land Surface

19'6" ft. After 2 Hrs. pumped 150 GPM

_____ ft. After _____ Hrs. pumped _____ GPM

If pump installed, pump rate _____ GPM

REMARKS

This well was drilled under license # 111

And this report is true and accurate.

Drilling firm Lacey Well Drilling Co.

Signature of License Representative:

Thomas J. Lacey

Signature of Well Owner or Equitable Property Holder:

Date: _____

Permit No. 7182-3
Sioux River - Water District

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

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

I have this day, September 14, 2011, made a thorough examination of the water use system constructed AgFirst Farmer Cooperative, PO Box 127, Brookings SD 57006 holder of Permit No. 7182-3, bearing the priority of January 8, 2010 authorizing the diversion of 0.35 cu. ft. per second from the Big Sioux:Aurora Aquifer for commercial purposes, in Brookings County.

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

A. Works used to divert the water:

One well is in place equipped with a 5 hp submersible pump

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

Well head is located a few hundred feet southwest of the plant.

C. Works used to apply water to beneficial use:

Water used for various purposes at fertilizer plant

The system is in the following condition excellent. The point of diversion (well) is located specifically Well - Lat 44.27835 Lon -96.67558 --- approx. 1350' South and 2100' west of NE corner Section 2, T109N, R49W (SW ¼ NE 1/4) The works are capable of diverting a total of 0.35 cfs from a well which is to be used for commercial use. Water has been put to beneficial use to the maximum extent and the license should be issued for 0.35 cfs based on the capacity of the one well.

Applicable permit qualifications have been complied with: **Yes**

Exceptions to compliance are: none Date Report Completed: January 10, 2011



Eric Gronlund
Natural Resources Engineer
DENR, Water Rights Program

FIELD INVESTIGATION REPORT FOR PERMIT NO. 7182-3

DATE OF INVESTIGATION:	September 14, 2011
NAME & ADDRESS OF PERMIT HOLDER	AgFirst Farmers Cooperative PO Box 127 Brookings SD 57006
NAME & ADDRESS OF INVESTIGATION CONTACT/ RELATIONSHIP TO PERMIT HOLDER, IF APPLICABLE	Met with Alan
DIVERSION POINT LEGAL LOCATIONS	<u>Well - Lat 44.27835 Lon -96.67558 --- approx. 1350' South and 2100' west of NE corner Section 2, T109N, R49W (SW ¼ NE 1/4)</u>

WELL INFORMATION:

- 1) Well Drilling Firm: **Lacey Well Drilling**
- 2) No. of Wells **1**
- 3) Depth(s) **28**
- 4) Well log is available **Yes**
- 5) Comment:

Casing:

- 1) Diameter **12** inches
- 2) Length **24** feet
- 3) Type **steel**

Screen:

- 1) Type **stainless steel**
- 2) Length **4** feet
- 3) Static water level **13.5 feet**

Pump: - Submersible

- 1) Make **Mid America**
- 2) Model **6 CLC - 1 stage**
- 3) Size
- 4) Capacity **0.35** cfs

**NOTICE OF COMPLETION OF WORKS AND
APPLICATION OF WATER TO BENEFICIAL USE**

MAIL TO: PMB 2020
DENR - Water Rights Program
523 E Capitol Ave
Pierre, SD 57501-3182
ph. (605) 773-3352

Date Sept 14 2011

FROM: Ag First Farmers Cooperative
(name)

(address)

(city)

(state)

(zip)

(phone)

I have completed the construction of the water use system and I have put the water to beneficial use to the maximum extent it is going to be used.

Water Permit No. 7182-3 states that the water use system is to be constructed by
4/5/2015, and water is to be put to beneficial use by 4/15/19
(date) (date)

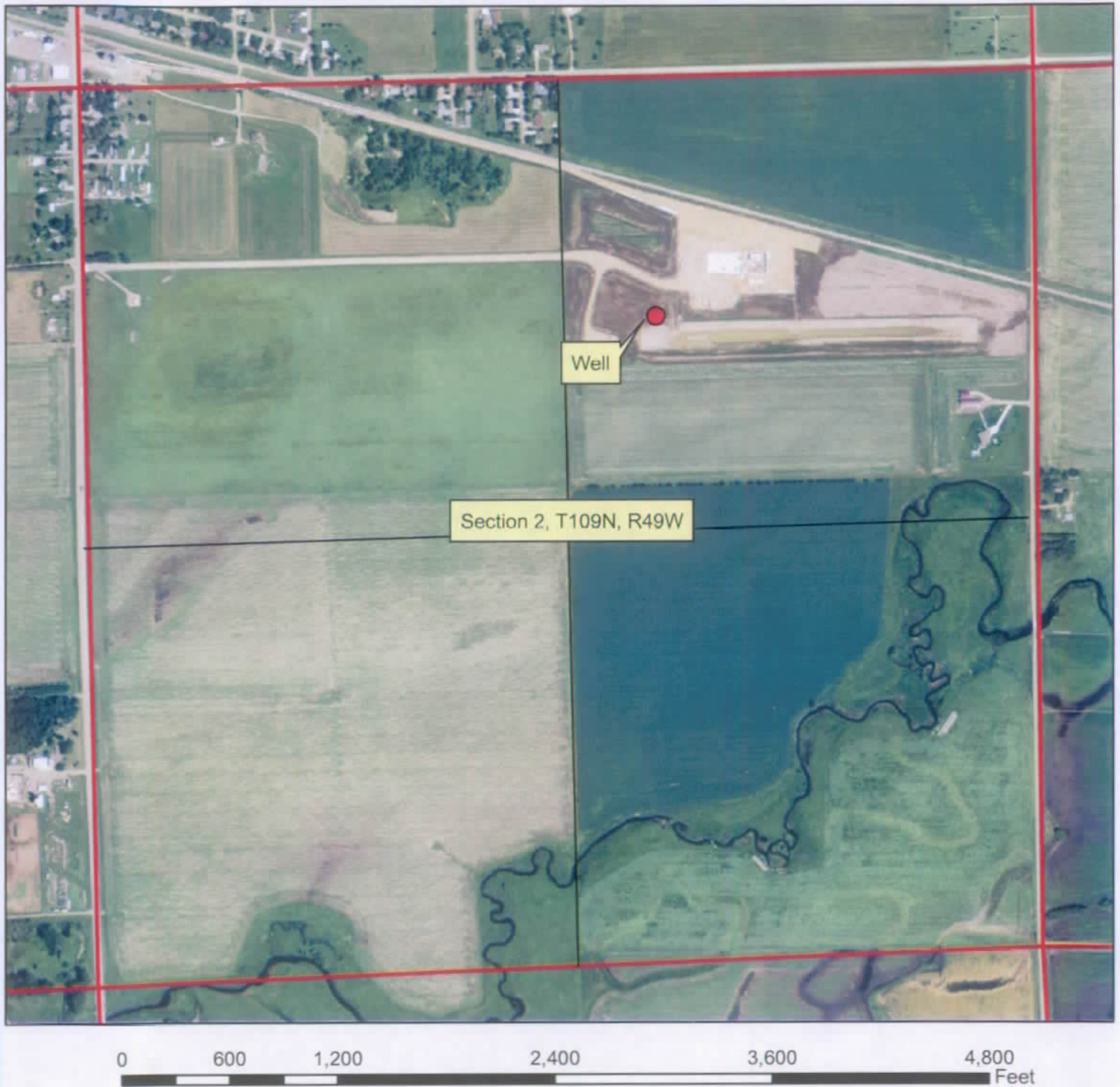
The water use system was completed on July 2010
(date)

Applying the water to beneficial use was completed on July 2010
(date)

You may schedule an investigation so that the water license may be issued.

Alan Ziegler





Well - Lat 44.27835 Lon -96.67558 — approx. 1,350' South and
2,100' West of NE corner Section 2, T109N, R49W



Eric Gronlund
Eric Gronlund
Water Rights Program, DENR
License Inspection - September 14, 2011



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
PMB 2020
523 EAST CAPITOL
PIERRE SOUTH DAKOTA 57501-3182
<http://denr.sd.gov>

MAY 02 2012

7182-3

AgFirst Farmers Cooperative
PO Box 127
Brookings SD 57006 0127

Dear Sirs:

Enclosed is Water License No. 7182-3. This is the final water right document completing your process of obtaining a Water Right. Included with your license is a map prepared by the staff engineer who conducted the field investigation.

For your information SDCL 46-6-27 requires that if the owner of an existing well, such as the well authorized by Water Right No. 7182-3, constructs a replacement well and does not plan to use the old well, the old well is considered abandoned and must be plugged. Also, any well that is being used or is not considered abandoned must be valved and controlled, if flowing, or sealed and capped so that no leaking occurs either underground or at the surface.

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. If you have any questions, please contact our office.

Sincerely,

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

enclosures

**STATE OF SOUTH DAKOTA
WATER LICENSE NO. 7182-3**

(1) Ag First Farmers Cooperative, PO Box 127, Brookings SD 57006-0127 made Application No. 7182-3, January 8, 2010 for a water permit to divert 0.35 cubic feet of water per second (10 acre feet annually) from ground water (one well – Big Sioux Aurora Aquifer), Brookings County, South Dakota for commercial purposes. Permit No. 7182-3, with a priority date of January 8, 2010 was approved April 5, 2010 and issued to the applicant for diversion of water with construction of the described water supply system to be completed on or before April 5, 2015 and for the application to beneficial use of said water on or before April 5, 2019.

(2) It is certified that the permit holder has complied with the provisions of South Dakota State Law relating to completion of the construction of the water supply system and is entitled to divert 0.35 cubic feet of water per second for beneficial use.

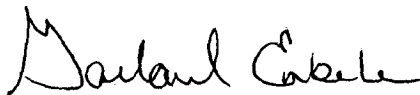
The location of the diversion point is 1,350 feet south and 2,100 feet west of the NE corner of Section 2, T109N, R49W (SW ¼ NE ¼).

(3) The permit holder has complied with the provisions of South Dakota State Law relating to the application of water to beneficial use at the fertilizer plant.

(4) Pursuant to South Dakota Water Law 46-5-30.1 Ag First Farmers Cooperative, PO Box 127, Brookings SD 57006-0127 the holder and/or owner of Water Right No. 7182-3 is issued a license to appropriate water, the right to use 0.35 cubic feet of water per second (10 acre feet annually) from ground water (one well – Big Sioux Aurora Aquifer) with a priority date of January 8, 2010 from the location specified in (2) of this license for commercial purposes.

This license is subject to South Dakota Water Law, any limitations or conditions listed in Water Right No. 7182-3 and subject to the following qualifications:

- 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 right.
- The well authorized by Permit No. 7182-3 shall be constructed by a licensed well driller and construction of the well and installation of the pump shall comply with the 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. *Well constructed by Lacey Well Drilling in July, 2010 – copy of log on file with the Water Rights Program.*



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

MAY 02 2012

date

