

WATER PERMIT NO. 6110-3

Name of Applicant: Dakota Dunes Community Improvement District

Address: 270 West Anchor Drive #300, Dakota Dunes SD 57049

Phone: 605 232-4211

Amount of Water Claimed: 2.22 cfs

Total Acres: 33 acres

Source of Water Supply: groundwater and 2 small lakes

Water to be used for: irrigation

County: Union

Type of Waste Disposal System:

Location: near Dakota Dunes

PRIORITY Date Received: 10-6-98

Fee: \$150

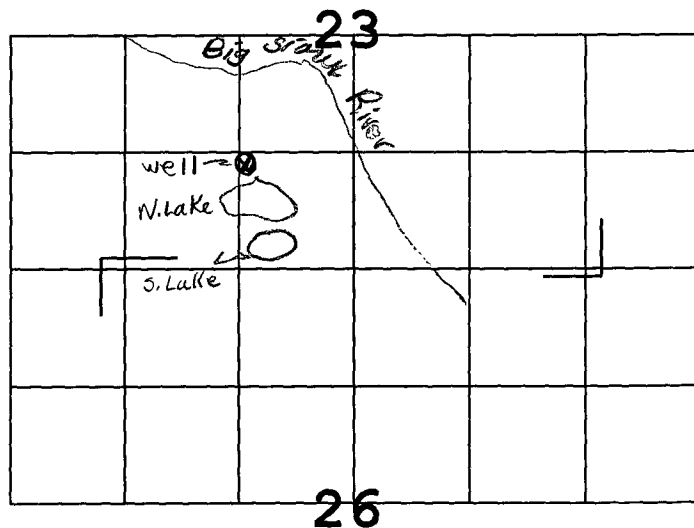
Corrected Application Received: 11-4-98

Period of Annual Use: April 1 – October 31

Remarks: water pumped from the well into the 2 lakes then pumped onto the land

Diversion Point: SE ¼ SW ¼ Sec 23-T89N-R48W

Land to be Irrigated: portions of SW ¼ Sec 23,
N ½ NW ¼ Sec 26; all in T89N-R48W



Depth of Well: 274 feet deep

Well Driller: Layne-Western

Remarks:

Type of Map: plat

Prepared by: Gregory C Meyers, PE

Reviewed and the Number Assigned on: 11-4-1998

By: Karen Schlaak

Notice of Hearing - date to intervene: _____

SOUTH DAKOTA
WATER PERMIT NO. 6110-3

Date of first receipt of application October 6, 1998.

Date of return to applicant for corrections, amendments or changes October 7, 1998.

Date of receipt of corrected application November 4, 1998.

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 6110-3 to Dakota Dunes Community Improvement District, 370 West Anchor Drive, #300, Dakota Dunes SD 57049 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. 6110-3 authorizes 2.22 cubic feet of water per second (cfs) from one well (Dakota Formation) 274 feet deep located in the SE $\frac{1}{4}$ SW $\frac{1}{4}$ Section 23-T89N-R48W. Water will be diverted from the well into the north end of two interconnected lakes (approximate storage capacity: north lake – 46.5 acre-feet and south lake – 59.8 acre-feet) both located in the SE $\frac{1}{4}$ SW $\frac{1}{4}$ Section 23-T89N-R48W. The two lakes were formed as borrow pits during highway construction. The lakes receive incidental surface run-off and possibly groundwater inflow from the Missouri:Elk Point Aquifer. Water is diverted from the lake at a rate of 1.87 cfs to irrigate 33 acres of lawn and landscape areas located in the SW $\frac{1}{4}$ Section 23 and the N $\frac{1}{2}$ NW $\frac{1}{4}$ Section 26; all in T89N-R48W.
2. The amount of the appropriation may not exceed 3 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: April 1 – October 31.
3. The date from which applicant may claim right is October 6, 1998.
4. The date of approval of Permit No. 6110-3 is January 25, 1999.
5. One-fifth of the construction is to be completed on or before July 25, 2001.
6. All construction is to be completed on or before January 25, 2004.
7. Water is to be put to beneficial use on or before January 25, 2008.
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.

(continued)

Water Permit No. 6110-3

Dakota Dunes Community Improvement District

Page 2

2. The well authorized by Permit No. 6110-3 shall be constructed by a licensed well driller and construction shall comply with Water Management Board Well Construction Rules, Chapter 74:02:04 with the well casing pressure grouted (bottom to top) from the producing formation to the surface pursuant to Section 74:02:04:28.
3. SDCL 46-5-6 allows a greater diversion rate if the method of irrigation, time constraints, or type of soils so requires. Therefore, Permit No. 6110-3 authorizes a maximum diversion rate of 1.87 cfs for the irrigation of 33 acres of lawn with an annual volume not to exceed 3 acre-feet of water per acre per year.
4. Water Permit No. 6110-3 authorizes storage in two lakes with a combined storage capacity of 106.3 acre feet of water and sufficient water annually to maintain the water level.
5. Pumping from the Dakota Formation well into the lakes is not authorized when the lakes are full.
6. This Permit is approved subject to the irrigation water use questionnaire being submitted each year.

WATER MANAGEMENT BOARD

By: _____

John Hatch
John Hatch, Chief Engineer
Water Rights Program
Department of Environment and Natural Resources

FEB 22 1999

date



FORM 2: Application for irrigation in South Dakota
(type or print)

Mail to: Water Rights Program Joe Foss Building 523 E. Capitol Pierre, SD 57501-3181 (605) 773-3352	(office use only)
	No. <u>6110-3</u> Hydrologic Unit <u>10/70/01</u>
	Basin <u>Missouri River</u> Newspaper <u>Leader-Courier, Elk Point, SD</u>



Application For Permit To Appropriate Water For Irrigation

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

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

new municipal well

1. Name of Applicant Dakota Dunes Community Improvement District ☒ Owner ☐ Tenant/Lessee Phone 605/232-4211
(check one)
- Mailing Address 370 West Anchor Drive #300 Dakota Dunes State SD 57049
(Street, RR, or Box) (Zip Code)
2. Amount of water claimed 2.222 *CFS or 1,000*GPM 106.3 ***AF Total Acreage 3390
(*Cubic Feet per Second) (**Gallons per Minute) (***)Acre Feet - storage capacity of dam/dugout if applicable
3. Source of water supply Dakota formation
4. Location of point of diversion (example - 3 wells in SW1/4 NE1/4 section 12-T104N-R53W)
well in the SE 1/4 SW 1/4, Section 23, T89N-R48W north and south lakes - SE 1/4 SW 1/4
Sec. 23-T89N-R48W County Union
north lake - 46.5 AF storage capacity & south lake - 59.8 AF storage capacity
5. County or counties where water will be used Union
6. Annual period during which water is to be used April through October 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
SE 1/4 SW 1/4 Section 23 T89N R48W	19.8	Gov't Lot 1 (NE 1/4 NW 1/4) Section 26 T89N R48W	2.53
SW 1/4 SW 1/4 Section 23 T89N R48W	6.94	NW 1/4 SW 1/4 Section 23 T89N R48W	0.69
NE 1/4 SW 1/4 Section 23 T89N R48W	1.45		
NW 1/4 NW 1/4 Section 26 T89N R48W	1.53		

8. Give a description of the project. (Attach sheet if more space is needed)
The proposed well will be used to supply irrigation supply to corporate and public landscape and lawn areas.

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)

STATE OF ~~SOUTH DAKOTA~~ Iowa

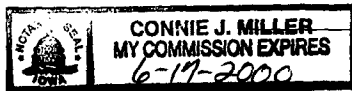
County of Woodbury

Glenn Ivarsen

Glenn Ivarsen, the applicant, have read this application, examined the attached map, and certify that the matters stated are true. I intend and am able to complete the necessary construction.

Signed Glenn Ivarsen

Subscribed and sworn to before me this 3rd day of November 19 98



Connie J. Miller
Notary Public

Supplemental Information

(type or print in ink)



1. Well Information - Proposed Construction

- a) Drill Hole Diameter 24" Depth 274
- b) Casing Type steel/PVC Diameter 24/16" Thickness 0.375/sch 80
- c) Screen Type stainless steel Diameter 16" Thickness 0.375
- d) Gravel Pack Thickness luther maddox Length of Gravel Pack 73'
- e) Depth to Top of Water Bearing Material 201 ft.
- f) Depth to Water (ground surface to water level) 30 ft.
- g) Distance to nearest existing domestic well:
On applicants property 8,200 lf On property owned by others 4500 lf

2. Wastewater Disposal System Information

- a) Type of System (i.e. septic tank, drain field) gravity sewer collection system
- b) System Capacity (gallons) n/a c) Year Constructed 1991
- d) Connected to the City of Dakota Dunes Sanitary System.

3. Dugout Information n/a

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

4. Water Storage Dams n/a

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:

n/a

b) Freeboard n/a

c) Crest Width n/a

Crest Length n/a

d) Height n/a

e) Primary Outlet Capacity n/a

If pipe, diameter n/a

f) Secondary Spillway Capacity n/a

Spillway Width n/a

g) X & Y Slope

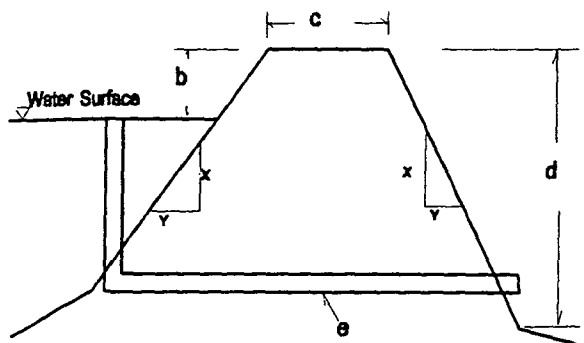
Upstream n/a

Downstream n/a

h) Surface Area of Impoundment n/a

i) Storage n/a Acre Feet

j) Drainage Area Above Dam n/a Acres



RECEIPT

Water Rights Program

South Dakota Department of Environment and Natural Resources

№ 415891

Pierre, _____ October 6, 19 98

RECEIVED OF Dakota Dunes Community Improvement District, P.O. Box 1997, Dakota Dunes, SD 57049
the following amount in fees for services rendered as provided for by law:

Fee for Application for Permit No. <u>6110-J</u> to Appropriate Water, to construct and to put water to beneficial use _____	225	00
Fee for Application for Permit No. _____ to Appropriate Water, for Future Use _____		
Fee to retain Future Use Permit No. _____ after period of seven years.		
Fee for Inspecting Constructed Works, confirming beneficial use and issuing Water License No. _____		
Fee for Filing Transfer Form _____		
Fee for Filing Extension Request _____		
Fee for _____		

(Any Other Work Provided by Law)	Total	225 00

By _____
Chief Engineer

John Hatch (Signature)

NORTH
SCALE: 1" = 400'



ATTACHMENT TO FORM TWO
APPLICATION FOR
WATER PERMIT FOR IRRIGATION

BIG SIOUX RIVER



NORTH
SCALE: 1" = 300'

NE1/4 SW 1/4 SEC 23-89-48

NW1/4 SW 1/4 SEC 23-89-48

BIG SIOUX RIVER



BPI INC.

WELL
LOCATION

120 FT.

DAKOTA
DUNES
C.I.D.

DAKOTA
DUNES
C.I.D.

10 FT.

LAKE

SE1/4 SW 1/4 SEC 23-89-48

IBP INC.

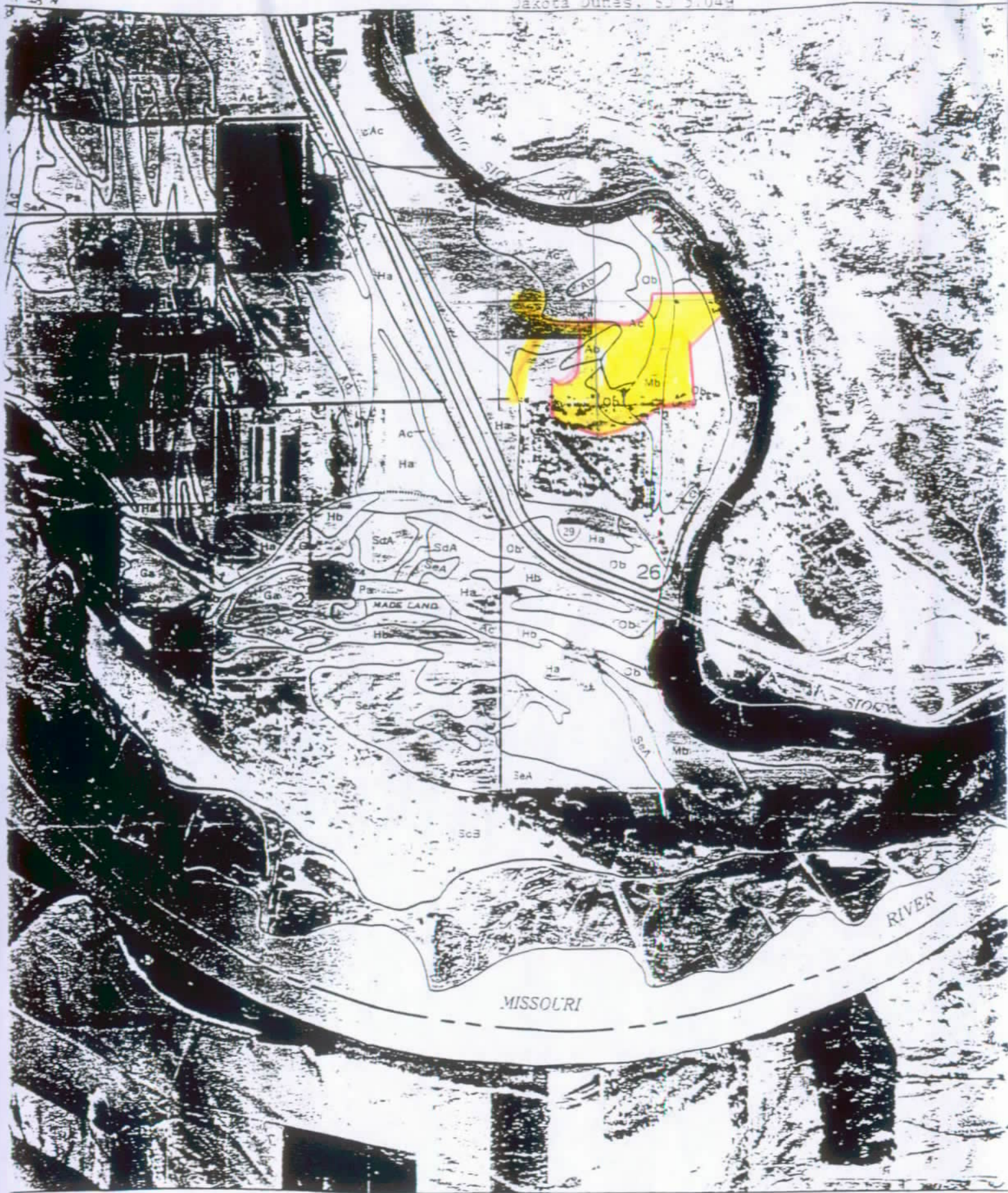
SW 1/4 SW 1/4 SEC 23-89-48

LAKE

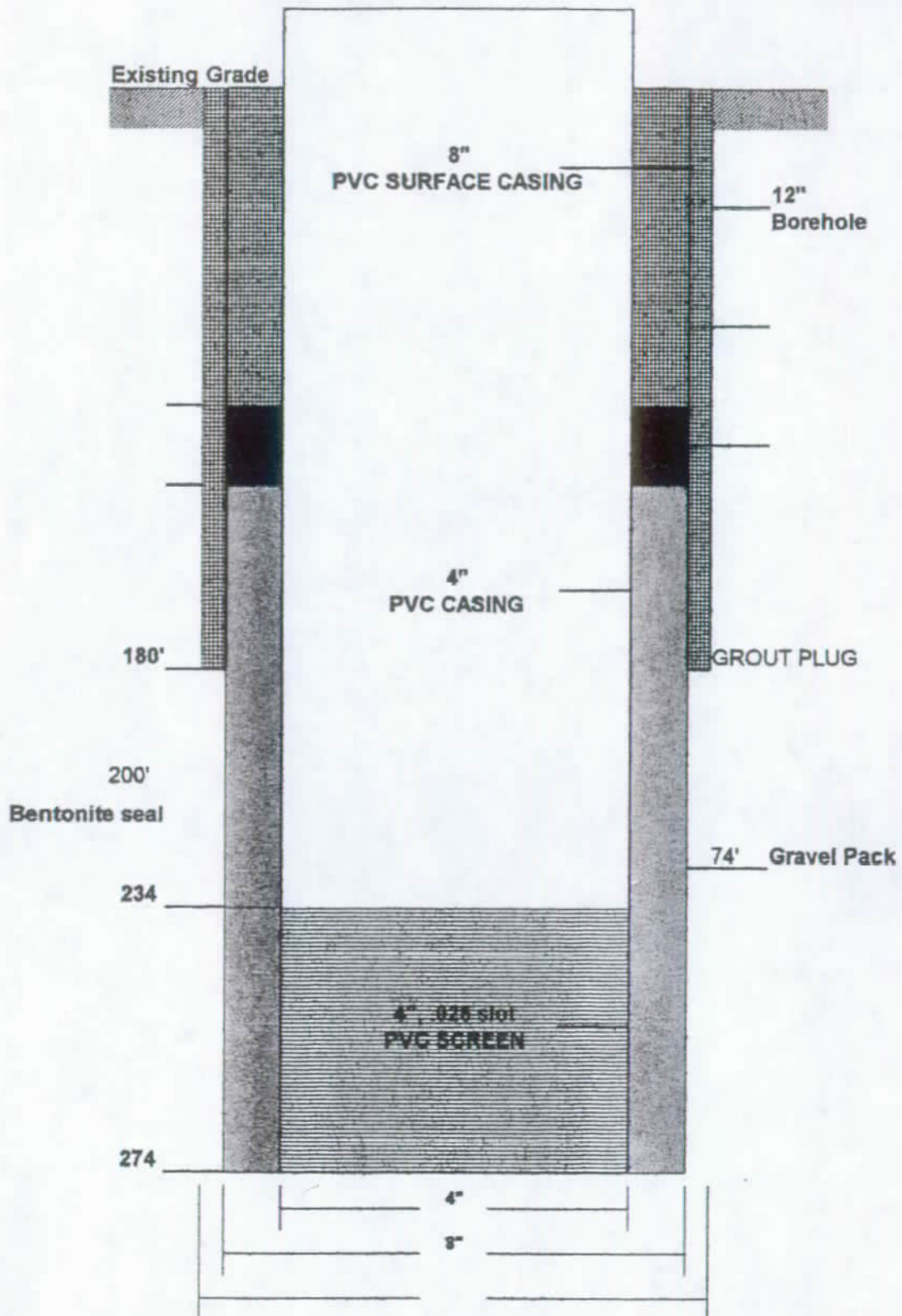


6110-3

Dakota Dunes Community Improvement District
370 W. Anchor Drive #300
Dakota Dunes, WI 53043



**WELL CONSTRUCTION DETAIL
TEST WELL 98-1
Dakota Dunes, SD**



NOT TO SCALE

TEST HOLE REPORT

LAYNE-WESTERN

STATE: SD

DRILLER: Phil Reis

TEST HOLE LOCATION: East across interstate, near ponds SEct.23, T89N, R48W
Distance and direction from permanent landmark or previous test hole.

[illegible]

SIZE MUD PIT: LENGTH: 12' WIDTH: 4' DEPTH: 1.5'

COMMENTS:



South Dakota State University

September 11, 1998



Water Resources Research Institute
Water Quality Laboratory
Water Pesticide Laboratory

Box 2120, Ag. Engineering 211
SDSU
Brookings, SD 57007
Phone: 605-688-4910
FAX: 605-688-4917
E mail: WRISDSU@MG.SDSTATE.EDU

Buell, Winter, Mousel & Associates
Gregory Meyer
705 Douglas St., Ste 636
Sioux City, IA 51101

Dear Mr. Meyer:

Enclosed is a copy of the analysis of your water sample which you submitted to us for testing. We have identified the source of your water as taken from a Well at an unknown depth in an unknown location. We have assigned it lab number 98-0206.

Your water, as represented by this sample, is classified as a high salinity, low sodium hazard for irrigation usage. The electrical conductivity (EC) of this water is 1650 micromhos/cm. The main ions in this water are: calcium (Ca) and sulfate (SO₄).

I have plotted your approximate water quality in red on the outside back cover of the enclosed pamphlet (AES 13). The range in the sodium hazard, from 1.62 to 4.16, is dependent upon the leaching fraction that may result if irrigation water is applied. The higher sodium hazard is associated with no leaching, and the lower sodium hazard is associated with normal leaching fractions (0.03-0.05). The leaching fraction is defined as the amount of water lost below the root zone annually, divided by the total amount received into the soil profile.

This water can be used for irrigation purposes for most normal soils which have adequate internal drainage. This means that if the water table is greater than 10 feet below ground surface the majority of the year and there are no tight impermeable layers within the root zone which may create a perched water table, the salts (ions) that do exist in the water will be able to be leached downward below the root zone where they do little or no harm to growing crops. The probability for soil salinization from this water is low when used on soils with good subsurface drainage. The soils you propose to irrigate are mostly silty clays, silty clay loams, and silt loams. The soils, in order of their desirability for irrigation, are as follows:

- Ha - Haynie silt loam (most desirable)
- Hb - Haynie silty clay loam
- Mb - Modale silt loam
- Ob - Onawa silty clay
- Ab - Albaton silty clay, overwash
- Ac - Albaton silty clay (least desirable)

Since a lot of the salinity in this water is calcium sulfate (which precipitates out at a low solubility), I would not anticipate problems with salinization from use of this water, as long as turf, trees, and shrubs are irrigated. You should be aware that a water table does exist near the surface on these soils part of the year, and most of these soils are quite restrictive in their vertical permeability, particularly the silty clays. You may want to evaluate the soil salinity now, and then in five years test it again to determine if salinity is building up to the point of causing growth problems.

The boron level 0.40 ppm for this water poses a low toxicity level for most normal crops in this area. I have enclosed a sheet that tells the boron toxicity levels for major crops.

I am forwarding a copy of this letter and water analysis to the Division of Water Rights in Pierre for their information and/or action. If you have further questions regarding this water analysis, please do not hesitate to call or write.

Sincerely,

A handwritten signature in black ink, appearing to be 'JH Bischoff', written over a horizontal line.

John H. Bischoff, Assistant Professor
Water Resources Institute

Enclosures

cc: Division of Water Rights

REPORT OF WATER ANALYSIS
Water Quality Laboratory
Water Resources Research Institute
South Dakota State University
Brookings, SD 57007

09/11/1998

Bill To: Buell, Winter, Mousel & A
705 Douglas St., Ste 636
Sioux City, IA 51101
cc: Meyer, Gregory

Date Rec'd 09/04/1998
Lab Sample No 98-0206
Source Well
Depth
Legal ID:

Calcium (Ca)	218 ppm	10.90 me/l
Magnesium (Mg)	53 ppm	4.36 me/l
Sodium (Na)	103 ppm	4.48 me/l
Potassium (K)	21 ppm	0.54 me/l
Sulfate (SO4)	650 ppm	13.53 me/l
Nitrate as N (NO3)	0.02 ppm	me/l
Organic Nitrogen as N	ppm	
Ammonia Nitrogen as N	ppm	
Nitrite as N (NO2)	ppm	
Ortho Phosphorus	ppm	
Total Phosphorus	ppm	
Chloride (Cl)	56 ppm	1.58 me/l
Bicarbonate (HCO3)	315 ppm	5.16 me/l
Carbonate (CO3)	0 ppm	me/l
Iron (Fe)	ppm	me/l
Fluoride (F)	ppm	me/l
Manganese (Mn)	ppm	
Boron (B)	0.40 ppm	
Hardness (EDTA as CaCO3)	763 ppm	44.62 gpg
Total Solids	ppm	
Total Cations		20.28 me/l
Total Anions		20.27 me/l
Alkalinity (Methyl Orange)	258 ppm(as CaCo3)	
Alkalinity (Phenolphthalein)	0 ppm(as CaCo3)	
Electrical Conductivity	1651 micromhos per cm at 25°C	
Sodium Adsorption Ratio (SAR)	1.62 Adjusted SAR	4.16
Sodium	22.09 % of Cations	
Residual Sodium Carbonate	0.00 me/l	
pH	7.07	

gpg = grains per gallon
me/l = milliequivalents per liter

ppm = parts per million

COMMENTS:

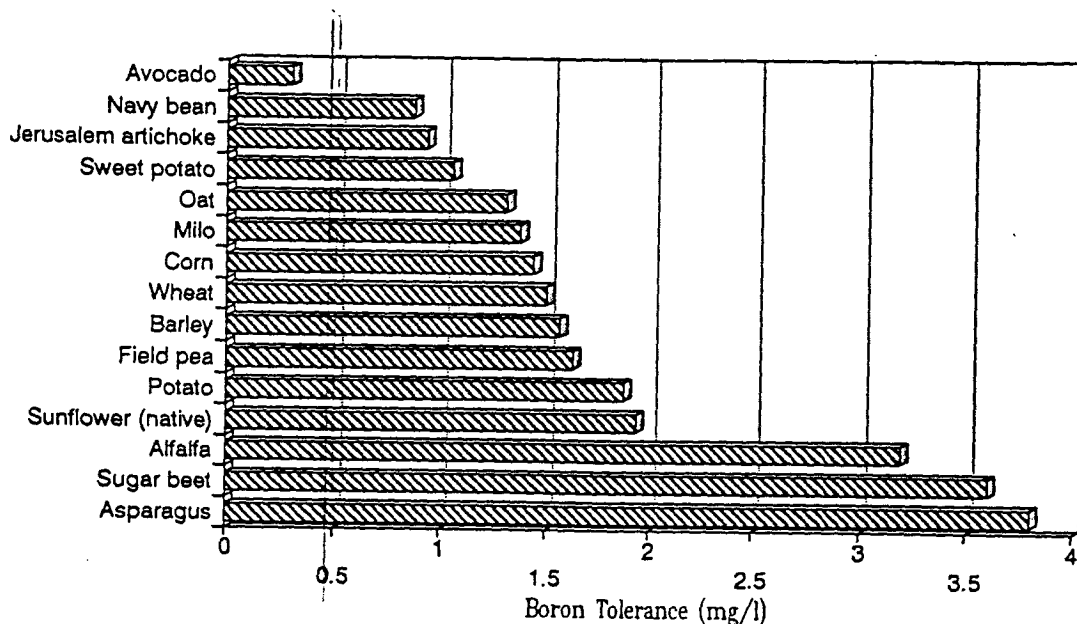
Analysis By: Shirley Mittan

Service Performed:	Analysis Cost:	76.00	Amount Received:	50.00
Irrigation Analysis	Sales Tax:	0.00	AMOUNT DUE:	26.00
	Total Cost:	76.00		

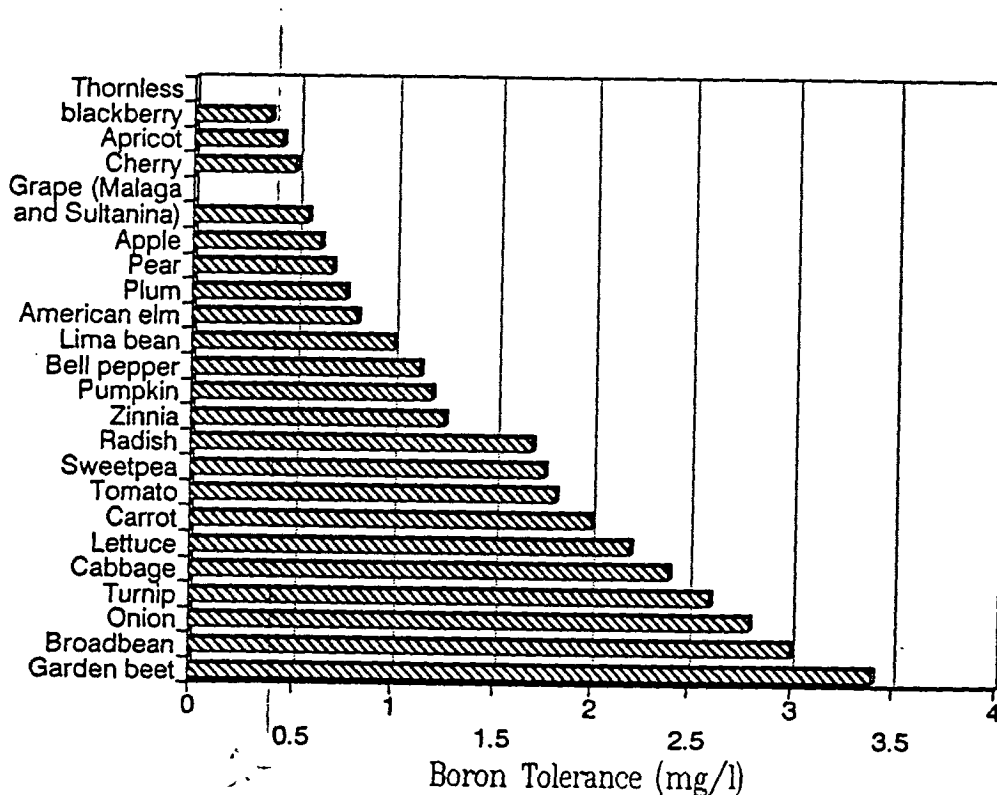
Make checks payable to: SDSU Water Quality Lab
Please write lab number on your check!
Lab Sample No. 98-0206

Limits of Boron in Irrigation Water for Crops of Different Degrees of Boron Tolerance.

Field Crops



Other Crops



* The magnitude of the number may vary somewhat within these groups. The rank, however, is correct. (Taken from Trace Elements in the Environment. 1972. Binham, F.T. "Boron in Cultivated Soils and Irrigation Waters".)

Salt Tolerance of Turfgrass

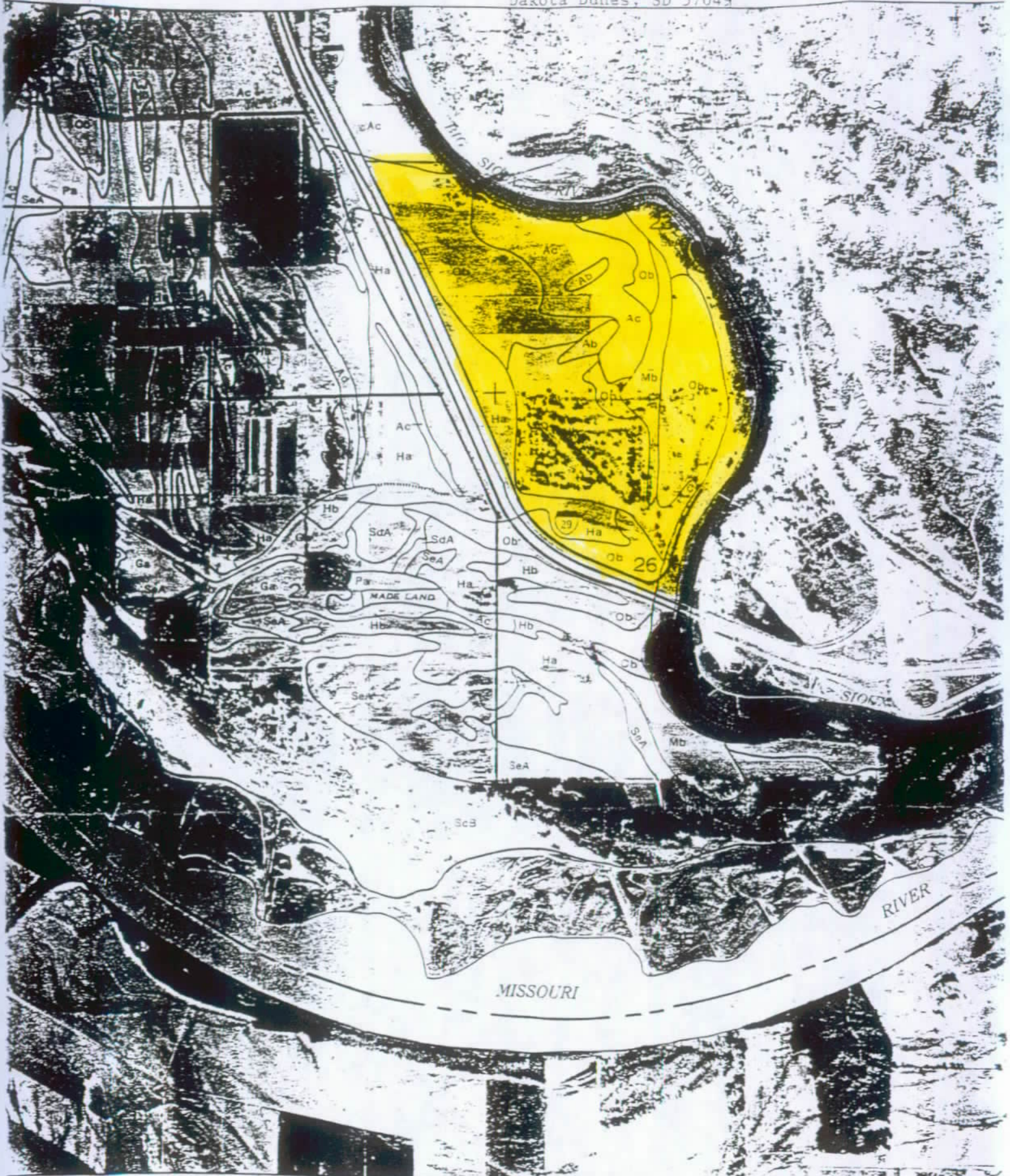
Low tolerance $EC_e = \text{less than } 4^a$ (4,000 $\mu\text{mhos/cm}$)	Moderate tolerance $EC_e = 4-10$ (4,000 - 10,000)	High tolerance $EC_e = 8-15$ (8,000 - 15,000)
Kentucky bluegrass	Alta fescue	<i>Purcinellia distans</i>
Highland bentgrass	Perennial ryegrass	Common bermuda
		Hybrid bermuda
		Tiffway
		Tiffgreen
		Sunturf
		Seaside bentgrass
		Zoysia
		St. Augustine

- a. EC_e = Electrical conductivity of the soil saturation extract expressed as deciSiemens/m or millimhos/cm representative of the more active part of the root zone.

(Taken from Agron. Journal 53:247-249. O.R. Lunt, V.B. Younger, and J.J. Oertli. 1961. "Salinity tolerance of five turfgrass varieties.")

Dakota Dunes Community Improvement District
 370 W. Anchor Drive #300
 Dakota Dunes, SD 57049

R 48 N



September 30, 1998

Water Rights Program
Joe Foss Building
523 E. Capitol
Pierre, SD 57501-3181



RE: Dakota Dunes Well Improvements

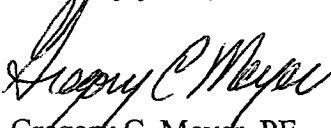
Gentlemen:

Enclosed is an application on behalf of Dakota Dunes Community Improvement District for appropriation of 1,000 (200 ac-ft) gpm from the Dakota Formation for irrigation consumption.

- 1) Two copies of Forms 2 and 2A
- 2) Two copies of a quadrangle map with the indicated location of well development
- 3) Two copies of a test well log
- 4) Dakota Dunes Community Improvement District check in the amount of \$ 225.00
- 5) Letter of September 11, 1998 from South Dakota State University with the following:
 - a) Union County Soil map indicating the area to be irrigated
 - b) Report of water analysis
 - c) Limits of boron in irrigation water for crops of different degrees of boron tolerance

If you require any additional information, please feel free to contact this office.

Sincerely yours,


Gregory C. Meyer, PE
GM/cjm

Encl.

Dunes13;fuehrer2



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3181
www.state.sd.us/denr

October 7, 1998

Gregory C Meyers
Buell Winter Mousel & Associates
705 Douglas St
Suite 636
Sioux City IA 51101

RE: Water Permit Application for Dakota Dunes Community Improvement District

Dear Mr. Meyers:

Thank you for submitting the *Application for a Permit to Appropriate Water* for Dakota Dunes Community Improvement District. In order to complete the application the following is required.

Enclosed are the maps and application as submitted. The land description and number of acres, as listed on Item No. 7 of the application, needs to match the area to be irrigated, as outlined on the map. The plat map does not outline the area to be irrigated. The soils map outlines the area of irrigation, but appears to include lands in Section 22 and 26. Please make the necessary adjustments on the application and/or the maps, preferably the plat map which shows the well location and has the required signature.

State statutes allow 1 cubic foot of water per second (cfs) (450 gallons per minute) for each 70 acres irrigated. This means that the District is allowed 1.42 cfs (640 gpm) for the 100 acres to be irrigated. 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. Many permit holders that water turf request a diversion rate greater than the statutory limit due to the method of irrigation and time constraints on being able to apply water to turf. However, the district will need to submit written justification for the reason they need 1000 gpm.

We are in receipt of the \$225 application filing fee. In addition to the application filing fee, the Water Rights Program now collects the \$50 licensing fee at the time of filing. Please submit \$50 for the licensing of the water permit.

If you have any questions, please contact me.

Sincerely,

Karen Schlaak
Water Rights Program
605 773-3352

enclosure

File No.

Water Rights Program - File Documentation

NAME: Greg Meyers

ADDRESS: Buell Winter Mousel & Associates

DATE: 10-21-98 COUNTY: Union TELEPHONE: 712 258-4202

RE: Dakota Dunes Community Improvement District

COMMENTS:

Called concerning my 10-7-1998 letter

On Item No. 7 of the application – what they actually are going to irrigate is the 10.8 and 6 acres not the entire 43.23 and 40 acres. I told him I had misunderstood the figures and had added all those acres together and came up with 100 acres to be irrigated.

I explained what was required on the map. Outline lands to be irrigated and include any additional lands that would be located in Section 26. The lands in Section 26 would have to be added to Item No. 7 also.

I told him the fee amount quoted in the letter was incorrect. The fee would be \$150 and \$50 license fee. **We will need to refund \$25.**

Mr. Meyers stated he would sent a letter requesting more than the statutory limit of water for the number of acres they intend to water. I explained that 1000 gpm was way more water than allowed.



Karen Schlaak
Environmental Scientist

October 23, 1998

Karen Schlaak
Water Rights Program
Department of Environment and Natural Resources
Joe Foss Building
523 East Capitol
Pierre, SD 57501-3181



RE: Water Permit Application for
Dakota Dunes Community Improvement District

Dear Ms. Schlaak:

Please find the enclosed revised "Application for Permit to Appropriate Water for Irrigation" along with the revised attachment to Form 2 - Application for Irrigation in South Dakota and the revised soil map.

The proposed well will pump into the north end of the two lakes. The irrigation system has a demand rate of 840 gpm based on a 10 hour irrigation period four days per week. The well will pump into the lake at the off-peak maximum period of 5 days per week with a 17 hour per day off-peak window (480 gpm minimum rate). It is estimated that the turf irrigation requirements will exceed the recommended rate of one cubic feet per second and two acre foot of water per acre due to the short term intervals for application and the high water demands for turf. Climatic conditions and operating constraints make it desirable to request the well pumping rate of 1,000 gpm and the annual consumption of three acre feet of water per acre of irrigated land.

Sincerely yours,

Gregory C. Meyer, PE
GM/cjm

Encl.

Dunes13;waterprmt

Water Rights Program - DENR
Conversation File Documentation

NAME OF PERSON OR FILE: Dakota Dunes water right permit application

ADDRESS: COUNTY: Union

DATE: October 26, 1998 TELEPHONE:

RE: Call to Greg Meyer, engineering consultant – 712 258-4202

COMMENTS:

I called Mr. Meyer with additional questions I had about the water right permit application.

The lakes on the map do exist and are actually the borrow pits from when the interchange was constructed. The map shows three lakes but only two of the lakes are used as part of the planned irrigation system. The smaller lake to the west is not used as part of this application. The lakes do receive surface run-off and in general that maintains the lakes but with making irrigation withdrawal they will need to supplement the lakes with well water. The two lakes are connected to one another.

I asked Mr. Meyer to provide a good faith estimate of the surface area, depth and storage capacity of each lake.

Mr. Meyer indicated that diversion of water from the well will be at a rate of 1000 gpm into the north lake to maintain the water level. Water will then be pumped at a peak diversion rate of 840 gpm from the south lake for application of water to the irrigated acres.

Mr. Meyer said he would get a signed application, a new signed map and lake capacity information to the Water Rights Program.

File in Permit or other file as necessary. Use to document conversations and what the other party was told; why action or decision was made.

NAME: Eric Thonlund

BW	BUELL WINTER MOUSEL AND ASSOCIATES, P.C.
MA	CONSULTING ENGINEERS

DATE: 10-28-98PROJECT #: 51398 155TIME: 3:10PROJECT NAME: Dunes CID Irrigation Well

Please deliver the following page(s):

TO: Eric Gronlund FAX #: 605/773-6035FIRM: SD-Water RightsFROM: Connie MillerTOTAL NUMBER OF PAGES INCLUDING THIS COVER LETTER 2MESSAGE: Please review the attached letter..If it answers your questions or you
need further revisions - let me know
as I will then forward the application.Thank youIf you do not receive all the pages or have any questions, contact this office.

705 Douglas Street, Suite 636
Sioux City, Iowa 51101
712/258-4202 712/258-3304 (Fax)



BUELL WINTER MOUSEL AND ASSOCIATES, P.C.
CONSULTING ENGINEERS

October 28, 1998

Eric Gronlund
Water Rights Division
South Dakota Department of Environment and Natural Resources
Joe Foss Building
523 East Capitol
Pierre, SD 57501-3181

RE: Dakota Dunes Community Improvement District
Irrigation Well

Dear Mr. Gronlund:

As we discussed Monday, I am writing to provide additional information on the subject application. The requested water right is to pump at a rate of 1,000 gpm from a well into the north lake which has an estimated surface area of approximately 135,000 square feet. Assuming an average depth of 15 feet, the approximated volume of the north lake is 46.5 acre-feet. Water flows from the north lake under Stevens Port Drive to the south lake, which has an estimated surface area of 173,000 square feet. Assuming an average depth of 15 feet, the approximate volume of the north lake is 59.8 acre-feet. The irrigation system will be served by pump stations in the south lake with a combined capacity of 840 gpm.

The lakes are actually borrow pits for the interchange constructed by the South Dakota DOT which receive drainage from the adjoining streets and property. The lakes have sustained their level without an overflow to the Big Sioux River. Survey information on the borrow pits does not exist so the information provided herein is based on a survey of the lake perimeter and remembrances of visual perception of depths.

Sincerely yours,

A handwritten signature in cursive script, appearing to read 'Gregory C. Meyer'.

Gregory C. Meyer, PE
GM/cjm

Encl.

Dunes13;gronland

**Water Rights Program
File Documentation**

NAME OF PERSON OR FILE: Ron Peterson, Engineering Supervisor,

ADDRESS: SD DOT Yankton Area Office COUNTY: Yankton, SD

DATE: December 11, 1998 TELEPHONE: (605) 668-2929, ext.13

RE: Dakota Dunes "Lakes" (Barrow Pits for Interchange)

COMMENTS:

I called Ron Peterson to find out if groundwater was encountered when the barrow pits for the Dakota Dunes Interchange were excavated. Mr. Peterson explained that the interchange was constructed in 1990 and there were three barrow pits for the project, one on the west side of the interstate and the two on the east side that Dakota Dunes has turned into lakes. Mr. Peterson discussed it with the project engineer and informed me that they excavated the pits with scrapers, however, they quit one night and came back the next day to find water in the bottom of the pits.

He agreed with the statement that "once the pits were deep enough they intercepted groundwater".



Ken Buhler
Natural Resources Engineer

REPORT FOR
WATER PERMIT APPLICATION NO. 6110-3
DAKOTA DUNES COMMUNITY IMPROVEMENT DISTRICT
DECEMBER 7, 1998

Application No. 6110-3 proposes to appropriate 2.22 cubic feet of water per second from one well (Dakota Aquifer) 274 feet deep located in the SE $\frac{1}{4}$ SW $\frac{1}{4}$ Section 23, T89N-R48W. Water will be diverted from the well into two interconnected lakes (approximate storage capacity: north lake = 46.5 acre-feet and south lake = 59.8 acre-feet) both located in the SE $\frac{1}{4}$ SW $\frac{1}{4}$ Section 23, T89N-R48W. The lakes currently receive incidental surface run-off and possibly groundwater inflow from the Missouri Aquifer. Water is to be diverted from the lake at a rate of 1.87 cfs to irrigate 33 acres of lawn and landscape areas located in the SW $\frac{1}{4}$ Section 23 and N $\frac{1}{2}$ NW $\frac{1}{4}$ Section 26; all in T89N-R48W.

AQUIFERS: Missouri: Elk Point (M:EP) and Dakota Aquifer (DKOT)

The test well log submitted with the application identifies silty clay from ground surface to 19 feet below grade; silty sand, sand, and gravel from 19-179 feet below grade (Missouri Aquifer); and shale, clay and sandstone from 179-290 feet below grade (Dakota Formation).

The Missouri and the Dakota Aquifers should both be identified as water sources for this appropriation. The excavations that have become "lakes" probably incised the sand and gravel of the Missouri Aquifer. Reportedly, groundwater was encountered when the barrow pits were excavated, although only near the bottom of the excavation (Peterson, 1998).

Missouri Aquifer:

The Elk Point Management Unit of the Missouri Aquifer is an alluvium mantled, glacial aquifer (sand and gravel) that underlies the Missouri and Big Sioux River flood plains in southern Union County. The aquifer underlies 99,600 acres and contains an estimated 1,494,600 acre-feet of recoverable water in storage in the county (Hedges, 1982). The aquifer is under unconfined conditions at this site. Recharge to the aquifer occurs through: 1.) Infiltration and percolation of precipitation in areas where the aquifer is exposed at the ground surface; 2.) Groundwater inflow from the Lower Vermillion-Missouri aquifer, the Big Sioux aquifer, and possibly the Dakota aquifer; and 3.) Streamflow loss from the Big Sioux and Missouri Rivers (Niehus, 1994). Water Rights' Observation wells show good response to climatic conditions and that the effects of pumping are not significant in the aquifer. The nearest Missouri Aquifer observation well (UN-78C) is located approximately 1.5 miles north west of this site.

The water table of the Missouri Aquifer is estimated to be above 20 feet below grade at this site (Niehus, 1994). Under most circumstances this can be expected to be lower than the stage of the lakes, suggesting leakage from the lakes to the aquifer. However, high water levels in the aquifer in conjunction with a low lake stage, such as during heavy pumping from the lake, could induce water from the aquifer to the lake.

Dakota Aquifer:

The Dakota Aquifer is a bedrock aquifer consisting of the sand and sandstone units of the Dakota Formation. The aquifer underlies 452 square miles of Union County and contains an estimated 7.8 million acre-feet of water in storage in the county (Hedges, 1982). The aquifer is laterally extensive throughout most of eastern South Dakota and extends into Nebraska to the south and Iowa to the east. Ground water movement across Union County in the Dakota Aquifer is basically from north to south (Niehus, 1994). The Dakota is recharged by underlying aquifers in the western part of South Dakota and possibly from the overlying Missouri Aquifer in Union County. The top of the Dakota aquifer is reported to be 201 feet below grade and is reported to be 73 feet thick in this area. The aquifer is under confined (artesian) conditions at this site. The nearest Water Rights Program Dakota observation well (UN-98A) is located approximately 3.5 miles north west of this site. The well was installed in 1998; therefore historic water level information is limited for this immediate area. The next nearest Dakota observation well (UN-77E) is located approximately thirty miles northwest of this site. Observation well data indicates the aquifer can support additional appropriations.

There is 22 feet of shale and clay separating the Missouri Aquifer from the Dakota at this well site. This separation between aquifers is not persistent over southern Union County. In fact, in places, water-level measurements and chemical analyses indicate there is a hydraulic connection between the Dakota and the overlying Missouri: Elk Point aquifer (Niehus, 1994).

REVIEW OF EXISTING WATER RIGHTS/PERMITS

There are 17 water rights/permits appropriating water from the Dakota Aquifer in Union County. The nearest water right from the Dakota (not belonging to Dakota Dunes) is approximately 1.5 miles north of this site at North Sioux City. Dakota Dunes has several Dakota Permits/Rights south of this well site. Drawdown will result from pumping this well but will not be significant at the distance between wells. Adverse impacts to adequate wells are not expected.

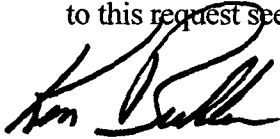
There are 253 water rights/permits appropriating water from the Elk Point Management Unit of the Missouri Aquifer in Union County. The nearest water permit from the M:EP (not belonging to Dakota Dunes) is approximately 2 miles west of this site. Adverse impacts to adequate wells are not expected.

SPECIAL CONSIDERATIONS:

This application has requested a diversion rate and annual appropriation in excess of the statutory limit due to the short term application intervals and the high water demands for turf that is to be irrigated. SDCL 46-5-6 allows that 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.

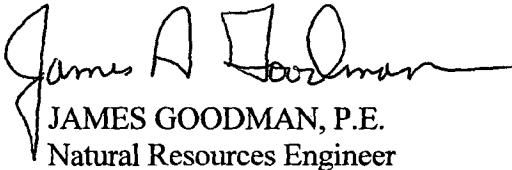
CONCLUSIONS

1. Water is available from the Dakota Aquifer for this appropriation.
2. The Dakota Aquifer is under confined (artesian) conditions at this site. Drawdown from this appropriation will not have a significant affect on existing wells .
3. Water is available from the Elk Point Management Unit of the Missouri Aquifer.
4. The Missouri: Elk Point Aquifer is unconfined (water table) conditions at this site. Drawdown from this appropriation will not have a significant affect on existing wells.
5. This appropriation can be made without adversely impacting adequate wells in the area.
6. This application requests a diversion rate greater than allowed by statute. The applicant's claim to this request seems reasonable.



KEN BUHLER
Natural Resources Engineer

approved by



JAMES GOODMAN, P.E.
Natural Resources Engineer

REFERENCES:

- Niehus, C.A., 1994, Water Resources of Lincoln and Union Counties, South Dakota, U.S. Geological Survey Water Resources Investigations Report 93-4195, USGS, Rapid City, SD
- Peterson, R. December 11, 1998, Personal Communication, SD DOT Yankton Area Office
- Water Rights Program, 1998, "Observation Well Files", DENR-Water Rights Program, Joe Foss Building, Pierre, SD
- Water Rights Program, 1998, "Water Permit/Right Files", DENR-Water Rights Program, Joe Foss Building, Pierre, SD

**RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 6110-3, Dakota Dunes Community Improvement District**

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. 6110-3, Dakota Dunes Community Improvement District, c/o Glenn Ivarsen, 370 West Anchor Drive #300, Dakota Dunes, SD 57049.

The Chief Engineer is recommending APPROVAL of Application No. 6110-3 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. 6110-3 shall be constructed by a licensed well driller and construction shall comply with Water Management Board Well Construction Rules, Chapter 74:02:04 with the well casing pressure grouted (bottom to top) from the producing formation to the surface pursuant to Section 74:02:04:28.
3. SDCL 46-5-6 allows a greater diversion rate if the method of irrigation, time constraints, or type of soils so requires. Therefore, Permit No. 6110-3 authorizes a maximum diversion rate of 1.87 cfs for the irrigation of 33 acres of lawn with an annual volume not to exceed 3 acre-feet of water per acre per year.
4. Water Permit No. 6110-3 authorizes storage in two lakes with a combined storage capacity of 106.3 acre feet of water and sufficient water annually to maintain the water level.
5. Pumping from the Dakota Formation well into the lakes is not authorized when the lakes are full.
6. This Permit is approved subject to the irrigation water use questionnaire being submitted each year.

See report on application for additional information.



JOHN HATCH, Chief Engineer
December 18, 1998



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3181
www.state.sd.us/denr

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

December 28, 1998

Dakota Dunes Community Improvement District
%Glenn Ivarsen
370 West Anchor Drive #300
Dakota dunes, SD 57049

Dear Mr. Ivarsen:

Water Permit Application No. 6110-3 for irrigation use has been examined and found to comply with the South Dakota Water Laws and applicable rules. A notice of hearing has been sent to the Publisher of the Leader-Courier printed at Elk Point, SD (Ph # (605) 356-2632). For your information, a copy of the notice, the recommendation of the Chief Engineer and a 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 of Hearing and to arrange for payment. Early contact with the paper can eliminate delays. The publisher has been instructed to publish your notice once each week for two consecutive weeks with the last publication to occur twenty days before the board meeting. The newspaper has 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

c: Gregory C. Meyer, PE, Buell Winter Mousel & Associates, 705 Douglas St., Ste. 636, Sioux City, IA 51101.

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.



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3181
www.state.sd.us/denr

Leader-Courier
Box 310
Elk Point, SD 57025-0310

ATTENTION: Legal Department

Enclosed is a Notice of Hearing on Application No. 6110-3 to Appropriate Water to be published twice. Please publish the first notice on January 7, 1999, with the second publication 7 days later.

The applicant must verify to you that the notice is to be published, before you make the first publication. **Please BILL the APPLICANT for the cost of publication.** The APPLICANT is Dakota Dunes Community Improvement District, %Glenn Ivarsen, 270 West Anchor Drive #300, Dakota Dunes, SD 57049 (Ph # (605) 232-4211).

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

-----CU T HERE-----

No. 6110-3

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

Date _____

We are in receipt of your letter of December 28, 1998, enclosing Notice of Hearing to Appropriate Water by Application No. 6110-3 which was first published in our issue of _____. **ENCLOSED IS A COPY OF THIS FIRST PUBLICATION.**

Name

Newspaper

Instruction to Newspaper - Publish first Notice on January 7, 1999, with the second publication 7 days later. The applicant is responsible for payment.

NOTICE OF APPLICATION NO. 6110-3 to Appropriate Water

Notice is given that Dakota Dunes Community Improvement District, 370 West Anchor Drive, #300, Dakota Dunes SD 57049 has filed an application for a water permit to appropriate 2.22 cubic feet of water per second (cfs) from one well (Dakota Formation) 274 feet deep located in the SE $\frac{1}{4}$ SW $\frac{1}{4}$ Section 23-T89N-R48W. Water will be diverted from the well into the north end of two interconnected lakes (approximate storage capacity: north lake – 46.5 acre-feet and south lake – 59.8 acre-feet) both located in the SE $\frac{1}{4}$ SW $\frac{1}{4}$ Section 23-T89N-R48W. The two lakes were formed as borrow pits during highway construction. The lakes receive incidental surface run-off and possibly groundwater inflow from the Missouri:Elk Point Aquifer. Water is diverted from the lake at a rate of 1.87 cfs to irrigate 33 acres of lawn and landscape areas located in the SW $\frac{1}{4}$ Section 23 and the N $\frac{1}{2}$ NW $\frac{1}{4}$ Section 26; all in T89N-R48W.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 6110-3 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 the 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 the 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 25, 1999.

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. Nettie H. Myers, Secretary, Department of Environment and Natural Resources.

**PROOF OF PUBLICATION**

STATE OF SOUTH DAKOTA)
 County of Union) SS

I, Kelly Kruithoff

certify that the attached printed Notice was taken

from the Leader-Courier

printed and published in Elk Point

County of Union and

state of South Dakota. The notice was published

in the newspaper on the following two dates:

January 7, 1999

January 14, 1999

Cost of Printing \$ 44.20

Kelly Kruithoff
 (Signature)

Editor
 (Title)

January 14, 1999
 (Date Signed)

**NOTICE OF APPLICATION
 NO. 6110-3 TO
 APPROPRIATE WATER**

Notice is given that Dakota Dunes Community Improvement District, 370 West Anchor Drive, #300, Dakota Dunes SD 57049 has filed an application for a water permit to appropriate 2.22 cubic feet of water per second (cfs) from one well (Dakota Formation) 274 feet deep located in the SE 1/4 SW 1/4 Section 23-T89N-R48W. Water will be diverted from the well into the north end of two interconnected lakes (approximate storage capacity: north lake - 46.5 acre-feet and south lake - 59.8 acre-feet) both located in the SE 1/4 SW 1/4 Section 23-T89N-R48W. The two lakes were formed as borrow pits during highway construction. The lakes receive incidental surface run-off and possibly groundwater inflow from the Missouri:Elk Point Aquifer. Water is diverted from the lake at a rate of 1.87 cfs to irrigate 33 acres of lawn and landscape areas located in the SW 1/4 Section 23 and the N 1/2 NW 1/4 Section 26; all in T89N-R48W.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 6110-3 because 1) unappropriated water is available, 2) existing rights will not be unlawfully impaired, 3) it is 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 the 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 the application. Notice of the hearing will be given to the applicant and any person filing a petition.

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Publish: January 7 & 14, 1999
 1-1-77



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3181
www.state.sd.us/denr

FEB 22 1999

Dakota Dunes Community Improvement District
%Glenn Ivarsen
370 West Anchor Drive, #300
Dakota Dunes, SD 57049

Dear Mr. Ivarsen:

Enclosed is Water Permit No. 6110-3 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.

Very truly yours,

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

JOHN HATCH, Chief Engineer
Water Rights Program
(605) 773-3352

enclosures

PAYMENT REQUEST FORM

PAYEE: Dakota Dunes Comm. Imp. Dist.
%Glenn Ivarsen
370 West Anchor Drive, #300
Dakota Dunes, SD 57049

FROM: Water Rights Program
523 E. Capitol
Pierre, SD 57501-3181

DESCRIPTION OF SERVICE, PRODUCE OR TRANSFER

Applicant originally paid a \$225.00 application fee, but correct fee should have been \$150.00 + the \$50.00 final inspection fee; therefore, \$25.00 needs to be refunded.

AMOUNT: \$25.00

FUNDING SOURCE:

GENERAL: X

FEDERAL:

COMMENTS:

AUTHORIZATION: _____

John Hated

2-25-99

I declare and affirm under the penalties of perjury that this claim is in all things, true and correct. I further agree to comply with the provisions of the Civil Rights Act of 1964 and regulations issued thereunder relating to nondiscrimination in federal assisted programs.

April 23, 1999

Eric Gronlund
South Dakota Dep't of Natural Resources
Joe Foss Building
523 East Capitol
Pierre, SD 57501

RE: Dakota Dunes Irrigation Well

Dear Mr. Gronlund:



Dakota Dunes, South Dakota intends to convert an existing test well into a producing irrigation well. The test well was constructed in September of 1998 under the attached "Section 02571 - Test Well Drilling" specification.

The well was drilled to a depth of 274 feet with 40 feet of 4" - 0.025" slot PVC screen and 236 feet of 4" PVC casing. An 8" PVC surface casing was also placed to a depth of 180 feet. Gravel pack was placed from 274 - 200 feet with a bentonite seal at 200 feet and a grout plug up into the surface casing. (See the attached Well Construction Detail & Test Hole report)

We intend on removing the surface casing and well casing to a depth of 6 feet and installing a pitless adapter with a 2" drop pipe and discharge piping. The well will discharge to a pond from which water will be drawn for irrigation.

The water rights have previously been appropriated for this use. This well is intended to function as an interim well until a greater irrigation production is developed, then a larger well will be constructed in accordance with the attached Section 02580 Pumps and Discharge Piping and Water Well Construction Plan.

If is the purpose of this letter to request the opportunity for the Dakota Dunes CID to use the existing well as a production well until the full production well is used.

We look forward to your response to this request.

Sincerely yours,

Gregory C. Meyer, PE
GM/cjm

Encl.

Dunes13;irrgtwell

SECTION 02571
TEST WELL DRILLING

1.0 GENERAL

1.1 DESCRIPTION

1.1.1 TEST WELL DRILLING shall include the drilling, casing, screening, formation stabilization, gravel packing, developing, testing, and sterilization as necessary for test well and site clean-up, all in accord with these Specifications and Drawings.

1.1.2 THE LOCATION of the test wells shall be determined by the Owner before commencement of work. The Test Well Contractor shall secure the location of all underground utilities and the location of the test well to avoid all underground utilities.

1.1.3 THE DESIRED YIELD from the future wells is 1730 gpm. Test pump the test well and record the pumping yield and maximum drawdown that is obtainable.

1.2 SUBMITTALS

1.2.1 SUBMIT to the Engineer the following:

Well Log
Electric Log
Water Sample
Formation Samples

1.2.2 WELL LOG shall be carefully and accurately kept for the hole drilled, with entries made in sequence so that each can be correlated with the depth of the hole at that time. It shall be brought up-to-date at the end of each working day, and shall be furnished to the Engineer within one week after the performance of all work on the well. The well log shall record the following:

- .1 Location of the well by section, range, township, and quarter section, in accord with the USGS standard well location system.
- .2 Depth, thickness, type, general characteristics, and drilling characteristics of each material encountered.
- .3 Time required to drill each foot of depth along with the speed of rotation when a rotary rig is used for drilling in rock foundations.
- .4 Depth, thickness, and static water level of each water-bearing formation encountered.
- .5 Test pumping data.
- .6 Method and date of water sampling.

1.2.3 SUBMIT PUMP TEST RESULTS to the Engineer for approval within one week after the completion of each test.

1.2.4 SUBMIT CHEMICAL TEST SAMPLES to the Engineer the same day they are taken by the Contractor.

1.2.5 GEOLOGICAL SAMPLES. Submit to the Engineer a set of geological samples collected at 5-foot intervals, along with a well log and a log of all materials installed into the well including gravel pack, grout, and casing.

2.0 PRODUCTS

3.0 EXECUTION

3.1 DRILLING

3.1.1 DRILL-WELL no deeper than the depth authorized by the Owner.

3.1.2 DRILLING may be accomplished by a cable tool, conventional hydraulic (mud) rotary, reverse hydraulic, or air rotary drilling machine. Equipment used shall be in good repair and capable of drilling to the depth specified.

3.1.3 DIAMETER OR DRILL HOLE shall be as required to test pump the well for water quality.

3.1.4 TAKE SAMPLES OF THE FORMATION, as drilling progresses, and furnish to the Engineer. Samples shall not be washed, and shall be kept in cloth bags. When an aquifer is encountered, take a sample of sufficient volume and have it analyzed, by the manufacturer of the well screen or by the driller, to determine the required slot size of the well screen and gradation of gravel pack. Samples shall be taken as follows:

- .1 Cable Tool Drilling. As each water-bearing stratum is encountered, keep an accurate record of the location of the top and bottom of each stratum penetrated and the elevation to which the water level stabilized. Samples taken from each 5 feet of drilling and at every change in formation shall be placed and saved in cloth bags. If so directed by the Engineer, the driller may be required to take samples at 1-foot intervals in a potential aquifer.
- .2 Conventional Hydraulic (Mud) Rotary, Reverse Hydraulic, or Air Rotary Drilling. Because the hydrostatic water level of aquifers encountered cannot readily be determined during rotary drilling methods and because of the relatively high speed of penetration of rotary methods of drilling, take samples during drilling at 5-foot intervals and at every change in formation. If so directed by the Engineer, the driller may be required to take samples at 1-foot intervals when a potential aquifer is encountered.

3.2 PRECAUTIONS DURING THE CONSTRUCTION

3.2.1 TAKE PRECAUTIONS NECESSARY OR REQUIRED to permanently prevent contaminated water or water having undesirable physical or chemical characteristics from entering the well. Also take precautions during construction to prevent contamination or pollution from the ground surface.

3.3 TESTING OF WATER SAMPLE (IRRIGATION WELL)

3.3.1 WATER SAMPLES shall be taken by the Contractor after the well has been flushed, and samples taken from the well and submitted to the Engineer complete chemical analysis. Sample analysis (both acquisition and payment) shall be by the Owner who will provide the sampling bottles.

3.4 ABANDONMENT OF WELL

3.4.1 ABANDONMENT. The Contractor shall pull the casing and screen and fill the well hole with the excavated material up to within 12 feet of the top and then fill the remaining 12 feet with well compacted clay material. The casing and screen may be salvaged and used by the Contractor. In the event of damage to the casing or screen during pulling operations, where the Contractor is not at fault, the Owner will not replace the damage parts. The Contractor shall adhere to the State Health Department rules and regulations for well abandonment.

3.5 MOBILIZATION AND DEMOBILIZATION

3.5.1 ONE MOBILIZATION AND DEMOBILIZATION CHARGE is allowed under this Contract. Mobilization consists of moving the drilling rig into the area to which the work is to be done.

02571-3

SECTION 02580

PUMPS AND DISCHARGE PIPING

1.0 GENERAL

1.1 DESCRIPTION

1.1.1 THE CONTRACTOR is responsible for the submersible pump, motor, discharge piping and appurtenances as covered in this Section.

1.2 SUBMITTALS

1.2.1 SUBMIT SHOP DRAWINGS to the Engineer in accord with the General Conditions and General Requirements. Shop drawings shall include, but are not limited to, the following:

- Check Valve
- Pitless Adapter
- Gate Valves
- Motor
- Pressure Gauge
- Submersible Pump

1.2.2 SUBMITTAL. The Bidder shall submit with his Bid Form the characteristics and pump curves for each pump showing the following:

- Rated Speed
- Rated Total Pump
- Rated Horsepower at rated speed and capacity
- Pump Efficiency at rated point
- Shut-off Head
- Column Piping, Type of Joints and Opening of Joints
- Line Shafting, Length of Sections and Diameter
- Spacing of Line Shaft Bearing
- Manufacturer of Motor
- Type of Motor
- Horsepower of Motor
- Efficiency of Motor
- Electrical Equipment and Wiring Diagram
- Guaranteed Wire-to-water Efficiency of the installed pumping equipment

1.3.3 SUBMIT PERFORMANCE CURVES, including head capacity, efficiency, and break horsepower, along with a guaranteed wire-to-water efficiency of the installed pumping equipment.

1.3.4 SUBMIT OPERATION AND MAINTENANCE MANUALS to the Engineer, in triplicate, prior to substantial completion for the following items:

- Check and Gate Valves
- Pump and Motor

1.4 WORK SPECIFIED THIS PROJECT

1.4.1 Work under this contract consists of construction of well, piping and other work as described on the Plans and Specifications, except for work to be performed by the Owner.

1.5 QUALITY OF WORK

1.5.1 MAXIMUM PUMP VIBRATION shall not exceed the limits as set forth in the latest edition of the Hydraulic Institute. Pump shall not dewater the screen.

1.5.2 AWWA Standard E101 shall govern the execution of this work.

2.0 PRODUCTS

2.1 SUBMERSIBLE PUMP

2.1.1 PUMP shall be of the submersible type and shall consist of the proper number of stages for a pumping capacity as follows:

Well Description	Capacity	Total Dynamic Head	RPM	Minimum Effluent	Minimum Motor HP
98-1	55 gpm	50	3,500	50%	2 hp

Pump bowls shall be constructed of cast iron with cast bronze impellers of either the semi-open or enclosed type, accurately machined and balanced, and securely attached to an impeller shaft of stainless steel. Pump shall be designed for water lubrication, and bowl bearings may be either of cutless rubber or bronze. Provide pump discharge bowl with flanged connection for a 4-inch I.D. wrought steel column pipe. Provide a check valve in the column pipe above the pump.

2.1.2 PROVIDE AN INTERCONNECTION UNIT with motor mounting adapter and stainless steel suction strainer of the proper size.

2.1.3 THE PITLESS ADAPTER UNIT shall be an industrial type similar or equal to Monitor for installing the submersible pump as specified above and as shown on the Drawings. It shall have a spool with an integral check valve, with seals that permit withdrawing the entire assembly within the casing without any excavation and also provide space for passage of power cable and air testing tube. The cap shall be the watertight type with a vent top and a conduit tap. All major parts below ground shall be either galvanized or constructed of corrosion-resistant materials. The unit shall be mounted on the well casing with a threaded or compression connection. Provide an air depth test block fitting on the pitless adapter.

2.2 ELECTRIC MOTOR

2.2.1 SUBMERSIBLE ELECTRIC MOTOR shall be a submersible type suitable for across-the-line starting service and designed to operate on 208-volt, 3-phase 60-cycle current.

- .1 Motor shall be water-filled, water-cooled, and lubricated of the wet stator type with mechanical seal fitted outside the motor to exclude abrasive material in the well water. A diaphragm shall be provided in the base of the motor to provide for internal water expansion during operation.
- .2 Motor shall be provided with a thrust bearing of sufficient capacity for carrying the weight of rotating parts of the pump plus the maximum downthrust of the pump under continuous operation.
- .3 A sufficient length of three-conductor flexible insulated lead wire for connection to the drop pipe shall be sealed into the motor. The cable shall be firmly attached to the drop pipe at 20 foot intervals or less.
- .4 Motor and end bells shall be sufficient to not overload under any conditions of pumping or discharge head, shall be in accord with the manufacturer's recommendations, and further provided that the minimum size of motor shall be as listed in paragraph 2.1.1.

2.2.3 CABLE shall be sized per Manufacturer's recommendations. Cable shall be 600-volt and suitable for submerged installation.

2.3 DISCHARGE COLUMN

2.3.1 PUMP COLUMN PIPE shall be the size shown on the Drawings and shall conform to the dimensions and weight of extra strong pipe as defined by the American Institute of Steel Construction. Column pipe shall meet the requirements of AWWA E101, along with ASTM A53 and A120.

2.3.2 PVC COLUMN PIPE shall meet or exceed the requirements of Sch. 80 PVC pipe per ASTM D 1785 and shall be an approved equal to CERTA-LOK manufactured by CertainTeed.

2.4 DISINFECTION

2.4.1 PUMP DISINFECTION shall be accomplished with calcium hypochlorite, the equal of HTH, as manufactured by Mathieson Alkali Works.

2.5 CHECK VALVE

2.5.1 CHECK VALVE shall be installed in the column pipe just above the pump motor. Check Valve shall be designed for in-line installation in the vertical position. The Check Valve flap or flaps shall be spring loaded, normally closed and designed to prevent water hammer. Seating shall be resilient and water tight.

3.0 EXECUTION

3.1 PUMP INSTALLATION

3.1.1 PUMP SHALL NOT BE ORDERED until the well production test has been completed and written instructions received from the Engineer regarding the exact characteristics of the pump to be furnished. The pump characteristics as previously specified are the best obtainable in advance of conducting the well production test, and will serve for the taking of Bids for this item. In the event that characteristics vary widely from those specified any changes in the Contract Price will be negotiated at that time before the order for the pump is placed by the Contractor. The basis for any adjustment in Contract Price shall be the difference in the invoice price of the specified pump and the new pump.

3.1.2 FOLLOWING PUMP INSTALLATION, conduct a field performance test of the installed equipment to determine the actual wire-to-water efficiency at the specified capacity and head. Provide all necessary testing equipment, such as accurate test gauges, electrical instruments, orifice meter, weir box, etc. Failure to meet the specified capacity at specified head or the guaranteed wire-to-water efficiency may be cause for rejection of the installed pumping equipment.

3.2 PUMP STERILIZATION

3.2.1 EXTERIOR OF PUMP BOWL ASSEMBLY AND PUMP COLUMN PIPE shall be thoroughly cleaned and then rinsed with hypochlorite solution as the pump is being installed. Following installation, pour a solution made up of two pounds of hypochlorite through the pump discharge openings to sterilize the interior of the pump. After sterilization, pump water to waste until hypochlorite is eliminated.

3.3 MOTOR

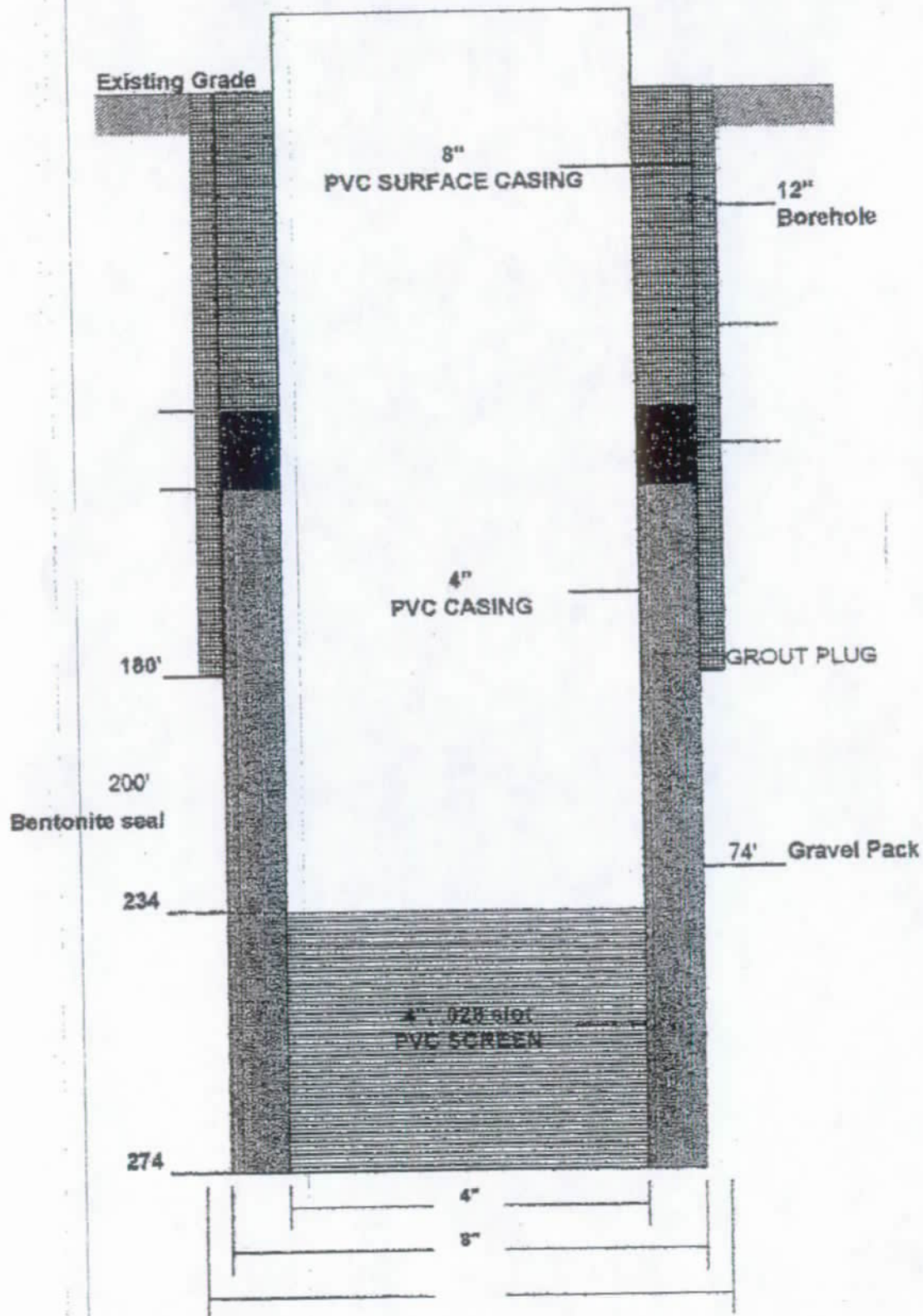
3.3.1 INSTALL PUMP MOTOR according to the manufacturer's recommendations and make electrical connections.

3.4 PUMP DISCHARGE PIPING

3.4.1 FOLLOWING INSTALLATION OF PUMP, install the discharge piping and connection piping as shown on the Drawings.

02580-4

**WELL CONSTRUCTION DETAIL
TEST WELL 98-1
Dakota Dunes, SD**



NOT TO SCALE

THE UNIVERSITY OF CHICAGO PRESS

THE UNIVERSITY OF CHICAGO

CONTRACT NAME: Dakota dunes

JOB NO: 72.4492

DATE: 9-3-98

CITY: Dakota Dunes

STATE: SD

TEST HOLE

NO: 98-1

DRILLER: Phil Reis

TEST HOLE LOCATION:

East across interstate, near ponds SEct.23,T89N,R48W

Distance and direction from permanent landmark or previous test hole.

[illegible]

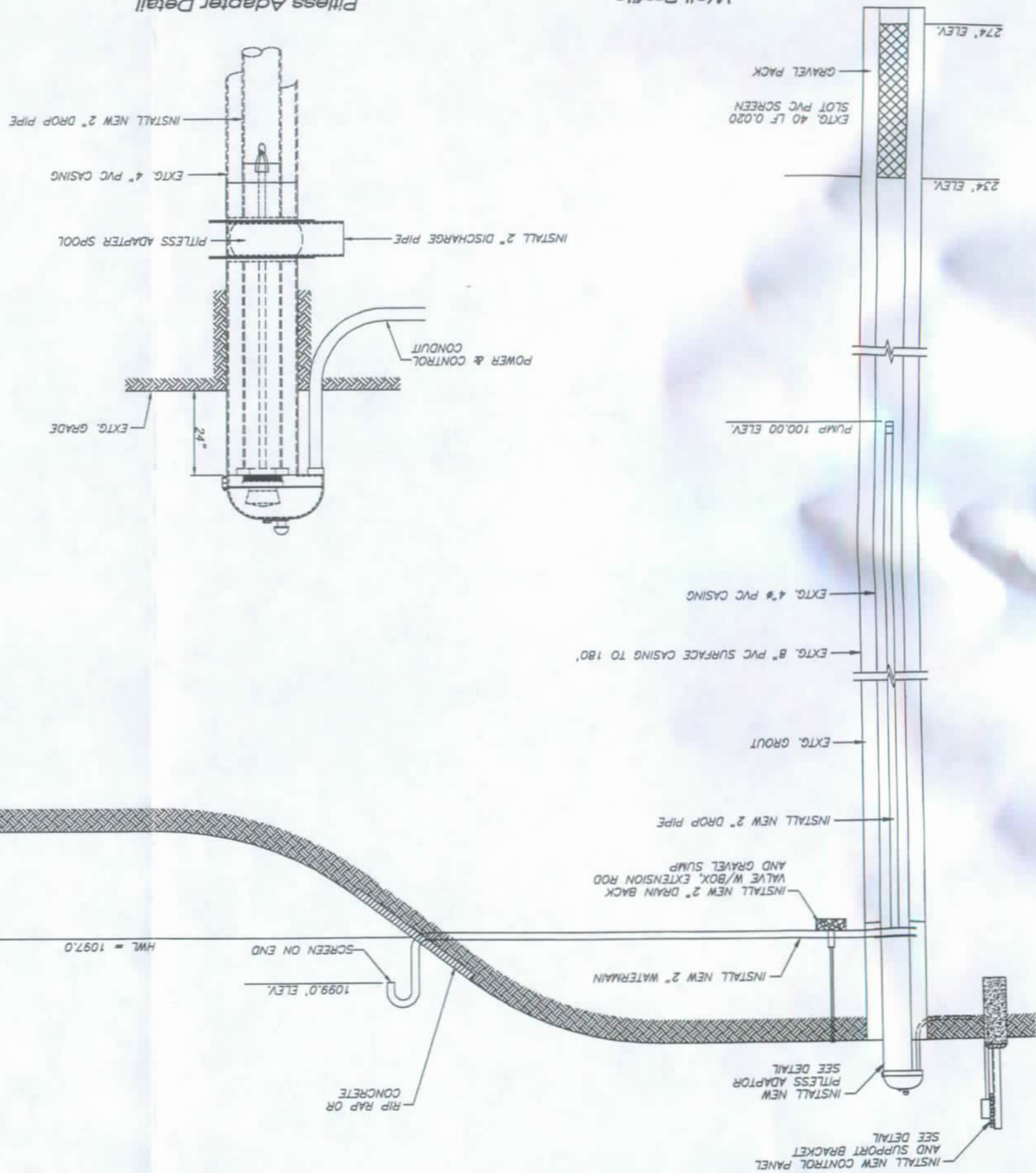
SIZE MUD FIT:

LENGTH: 12' : WIDTH: 4' DEPTH: 1.5'

COMMENTS:

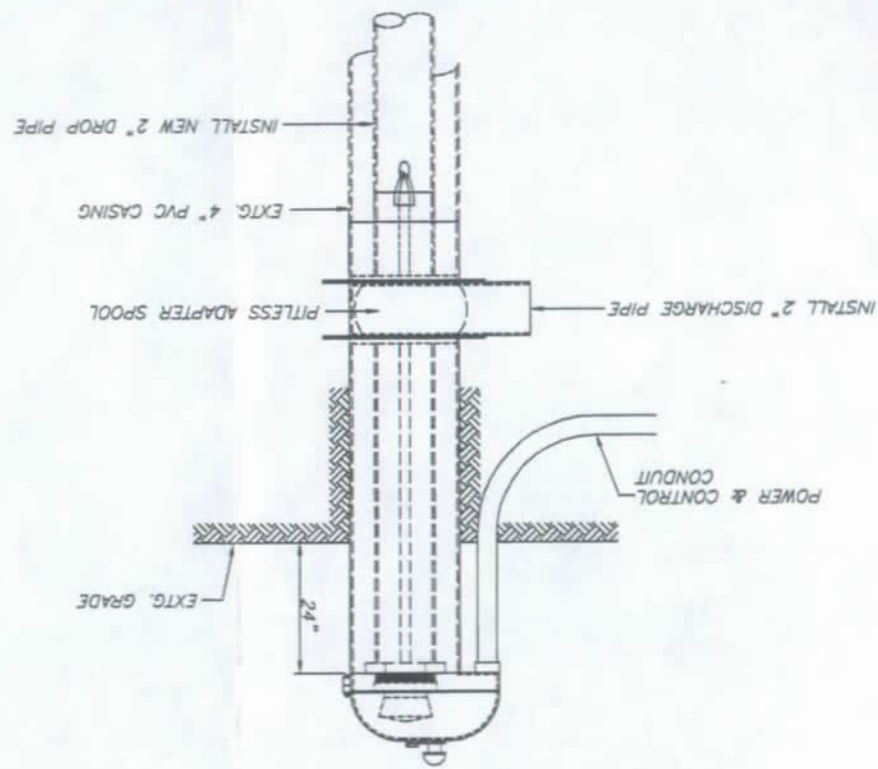
Well Profile

NOT TO SCALE



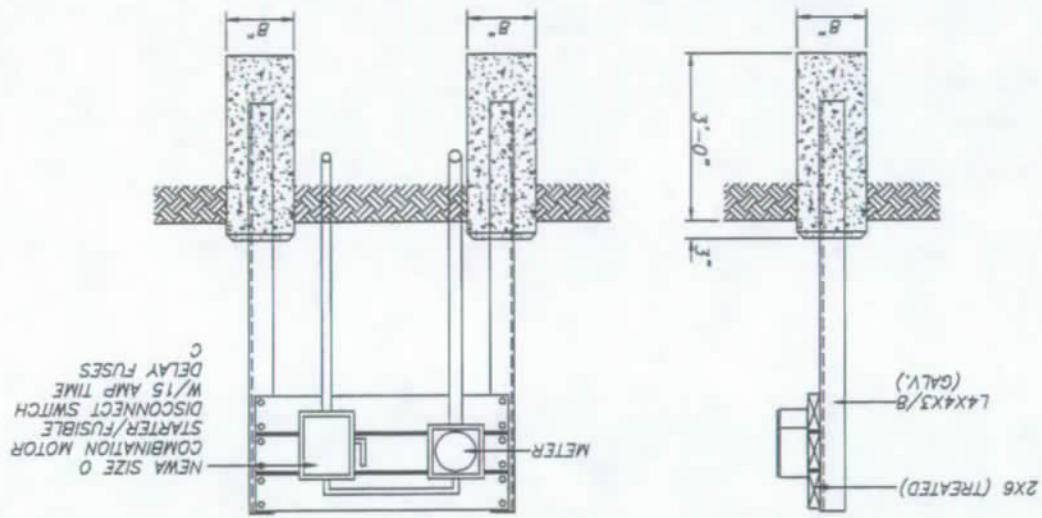
Pitless Adapter Detail

NOT TO SCALE



Control Panel Support Detail

NOT TO SCALE



DATE	REVISION	PROJECT
		DAKOTA DUNES, SOUTH DAKOTA
		IRRIGATION WELL PROJECT
		WATER WELL
		CONSTRUCTION PLAN
		7

Layne-Western

a division of Layne Christensen Company

P. O. Box 189 Zip: 68848-0189 • 215 Landon Street • Kearney, Nebraska 68847 • (308) 234-1914 • Fax: (308) 234-6326

FAX TRANSMISSION

DATE 5-24-99

TO: Ken Buhler

FROM: DAW Freese

NUMBER OF PAGES 4

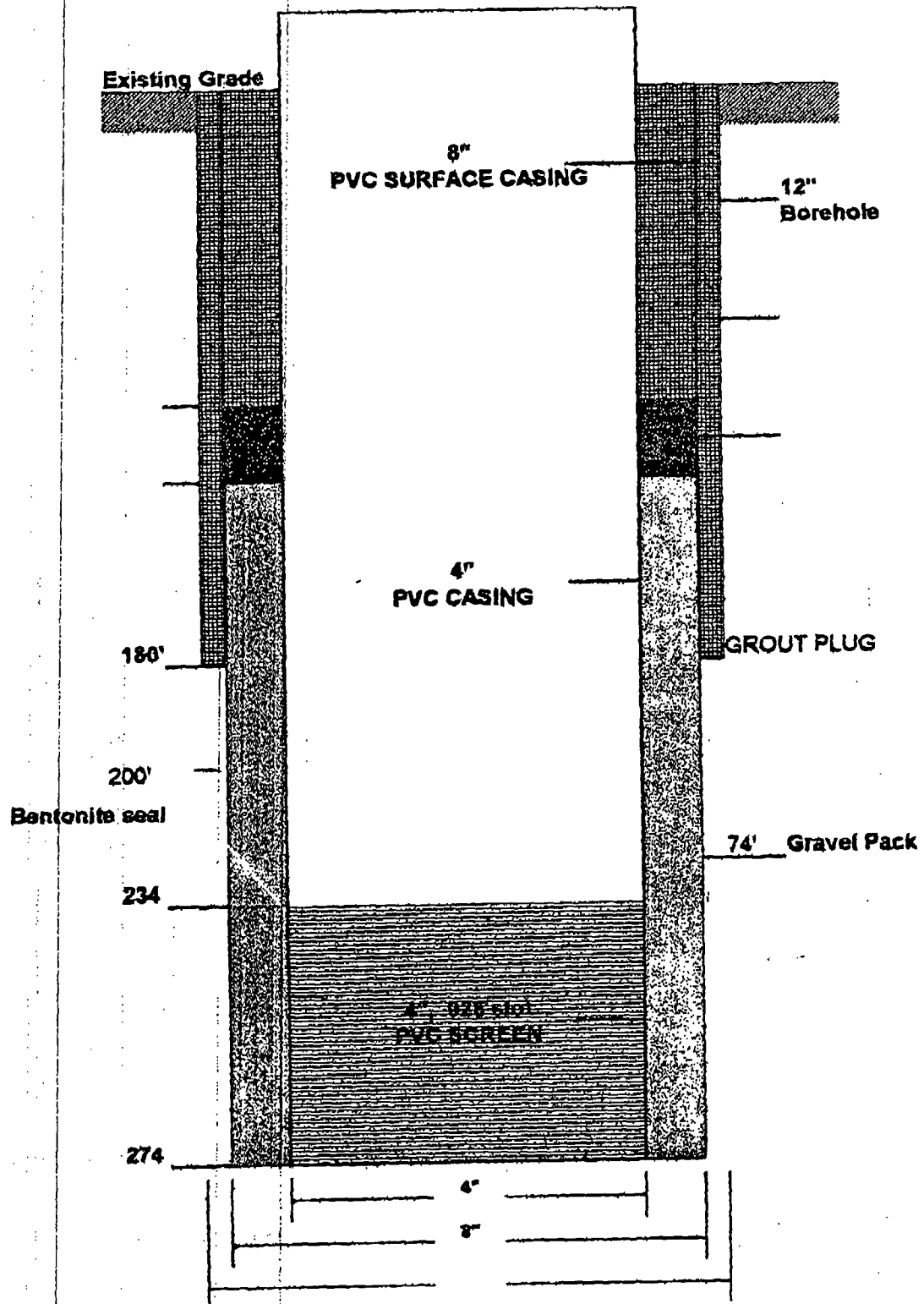
If there is a problem with this transmission, please call 308-234-1914.



07-92

Date: _____

**WELL CONSTRUCTION DETAIL
TEST WELL 98-1
Dakota Dunes, SD**



NOT TO SCALE

LAYNE-WESTERN

STATE: SD

DRILLER: Phil Reis

East across interstate, near ponds SEct. 23, T89N, R48W
Distance and direction from permanent landmark or previous test hole.

COMMENTS:

**Water Rights Program
File Documentation**

NAME OF PERSON OR FILE: Gregory Meyer

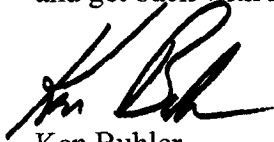
ADDRESS: Buell Winter Mousel and Associates, P.C.

DATE: May 24, 1999 TELEPHONE: (712)258-4202

RE: Dakota Dunes Request to use a test well

COMMENTS:

I called Gregory Meyer today to discuss the 4" diameter test well constructed for Dakota Dunes by Layne-Western Co. I told Mr. Meyer that the Well Completion Report faxed to me today, and my discussion with Dan Freese with Layne-Western Co. left me wondering if the well meets the SD Well Construction Standards. (It is not clear if the surface casing was grouted and the 4" casing appears to be grouted with cement grout and bentonite grout but lacks 20' of cement grout at the surface). I told Meyer that I was reluctant to approve the use of a well that doesn't meet the standards. He was going to work with Layne-Western Co. and his field people and try to determine how the well was built and/or if it can be brought into compliance. He will get details and get back with me.



Ken Buhler
Natural Resources Engineer



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3181
www.state.sd.us/denr

June 17, 1999

Gregory C. Meyer
Buell Winter Mousel and Associates
705 Douglas St.
Suite 636
Sioux City IA 51101

Dear Mr. Meyer:

In April you submitted a request on behalf of Dakota Dunes to use an existing test well. The intent is to use a test well on an interim basis as the water source for irrigation of a portion of the land authorized by Water Permit No. 6110-3. The existing test well is to be used until the irrigation authorized by the water permit is further developed and requires a larger production well to be constructed.

The Water Rights Program had questions whether the test well met SD Well Construction Standards. Ken Buhler, staff engineer, discussed our concerns with you the later part of May. You planned to get more information on well construction to determine construction and then get back to us with details.

The request to use the test well will remain on hold until questions on well construction of the test well are answered. If you have any questions, please contact Ken Buhler or myself at (605) 773-3352.

Sincerely,

Eric Gronlund
Water Rights Program
(605) 773-3352

July 19, 1999

Eric Gronlund
Water Rights Program
South Dakota Department of Environment and Natural Resources
Joe Foss Building
523 East Capitol
Pierre, SD 57501-3181



RE: Water Permit 6110-3

Dear Mr. Gronlund:

I recently spoke with Mr. Ken Buhler to advise him that it appears to be feasible to grout the top 20 feet of the test hole and possibly to a greater depth. The annulus between the bore hole and the surface casing appears to be sufficient to allow a grouting of the annulus as previously mentioned.

I understand from my recent telephone conversation with Mr. Buhler the well driller should submit to your office a well rehabilitation report upon completion of the grout work on the well.

If you require any submittals in addition to the well rehabilitation report, please advise this office.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "Gregory C. Meyer".

Gregory C. Meyer, PE
GM/cjm

cc: Jim Coyle, DDCID
Dave Fuehrer, DDCID

Dunes14;gronlund



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3181
www.state.sd.us/denr

July 22, 1999

Gregory C. Meyer, PE
Buell Winter Mousel & Associates
705 Douglas St., Suite 636
Sioux City IA 51101

Dear Mr. Meyer:

I received your recent letter regarding the use of the test well as the water source authorized by Water Permit No. 6110-3. Once well rehabilitation report is filed and it is determined the well is constructed in compliance with SD Well Construction Standards, a letter will be sent authorizing the use of this well.

If you have any questions, please contact Ken Buhler or myself at (605) 773-3352.

Sincerely,

Eric Gronlund
Water Rights Program
(605) 773-3352

Permit No. 6110-3
Big Sioux River - Water District

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

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

I have this day, July 28, 2005, made a thorough examination of the water use system constructed by Dakota Dunes Community of 335 South Point Rd, Dakota Dunes SD 57049 holder of Permit No. 6110-3, bearing the priority of October 6, 1998 authorizing the diversion of 2.22 cu. ft. per second from a well, 1.87 cu. ft. per second from a pond up to 3 ac.ft. per acre per year and/or the storage of 106.3 acre-feet of the waters of Missouri: Elk Point Aquifer and incidental runoff for irrigation purposes, in Union County.

Inspection contact & relationship to permit holder, if applicable: **Dave Fuehrer – Public Works Manager (605)232-4211**

A. Works used to divert the water:

Well Information: Well Drilling Firm: <u>Layne-Western</u> No. of Wells <u>1</u> Depth(s) <u>290</u> feet Well log is available <u>yes</u> Comment: Outside Casing: Diameter <u>8</u> inches Length <u>180</u> feet Type <u>pvc</u> Inside Casing: Diameter <u>4</u> inches Length <u>236</u> feet Type <u>pvc</u> Screen: Type <u>pvc</u> Length <u>40</u> feet Static water level <u>21</u> feet Pump: Make <u>submersible</u> Model Size <u>4"</u> Capacity <u>55</u> GPM Motor: Make <u>submersible</u> Model No. Horsepower rating <u>2</u> hp	Pump house Information: Pump: Make <u>submersible</u> Model Size Capacity <u>55</u> GPM Motor: Make <u>Hitachi</u> Model No. Horsepower rating <u>2</u> hp
--	---

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

- 1) Type pvc 2) Size 10 inches 3) Length 89 feet
1) Type steel 2) Size 8 inches 3) Length 200 feet
4" pvc irrigation main and 3" pvc service line.

C. Works used to apply water to beneficial use:

Rainbird lawn sprinkler system.

Chemigation Equipment:

- 1) Does chemigate no

D. Compliance with Permit Requirements:

- 1) Permit qualifications being abided by yes
2) Irrigation Questionnaires checked to determine if permit owner started irrigation by the end of construction period yes
3) Exceptions to compliance are: none

The system is in good condition with the point(s) of diversion located as follows: well location: 1200' N and 1330' W (Lat 42.506713, Long -96.482431); diversion at pond: 270' N and 1370' W (Lat 42.504166, Long -96.482202) of the SW corner Section 23-T89N-R48W. The works are capable of diverting and conveying to the place of use 0.12 cu. ft. per second of water from the well; 0.12 cu.ft. per second of water from the south pond; up to 3 ac. ft. per acre per year and/or storing 40 acre-feet of water which is to be used for irrigation. Water has been put to beneficial use to the maximum extent as follows:

Section 23-T89N-R48W:

SW $\frac{1}{4}$ SW $\frac{1}{4}$ 2 acres

SE $\frac{1}{4}$ SW $\frac{1}{4}$ 7 acres

Section 26-T89N-R48W:

NW $\frac{1}{4}$ NW $\frac{1}{4}$ 0.5 acre

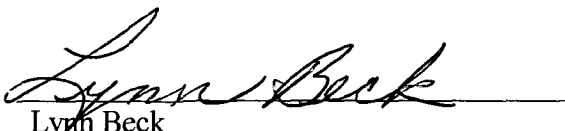
NE $\frac{1}{4}$ NW $\frac{1}{4}$ 1.5 acres

Comprising a total of 11 acres of land and the license should be issued for 0.12 cu. ft. per second from a well, 0.12 cu. ft. per second from a pond and/or the storage of 40 acre-feet of storage.

All structures, wells and lands on map yes

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

The N Pond stores 14.4 acre feet of water and the S Pond stores 25.6 acre feet of water.



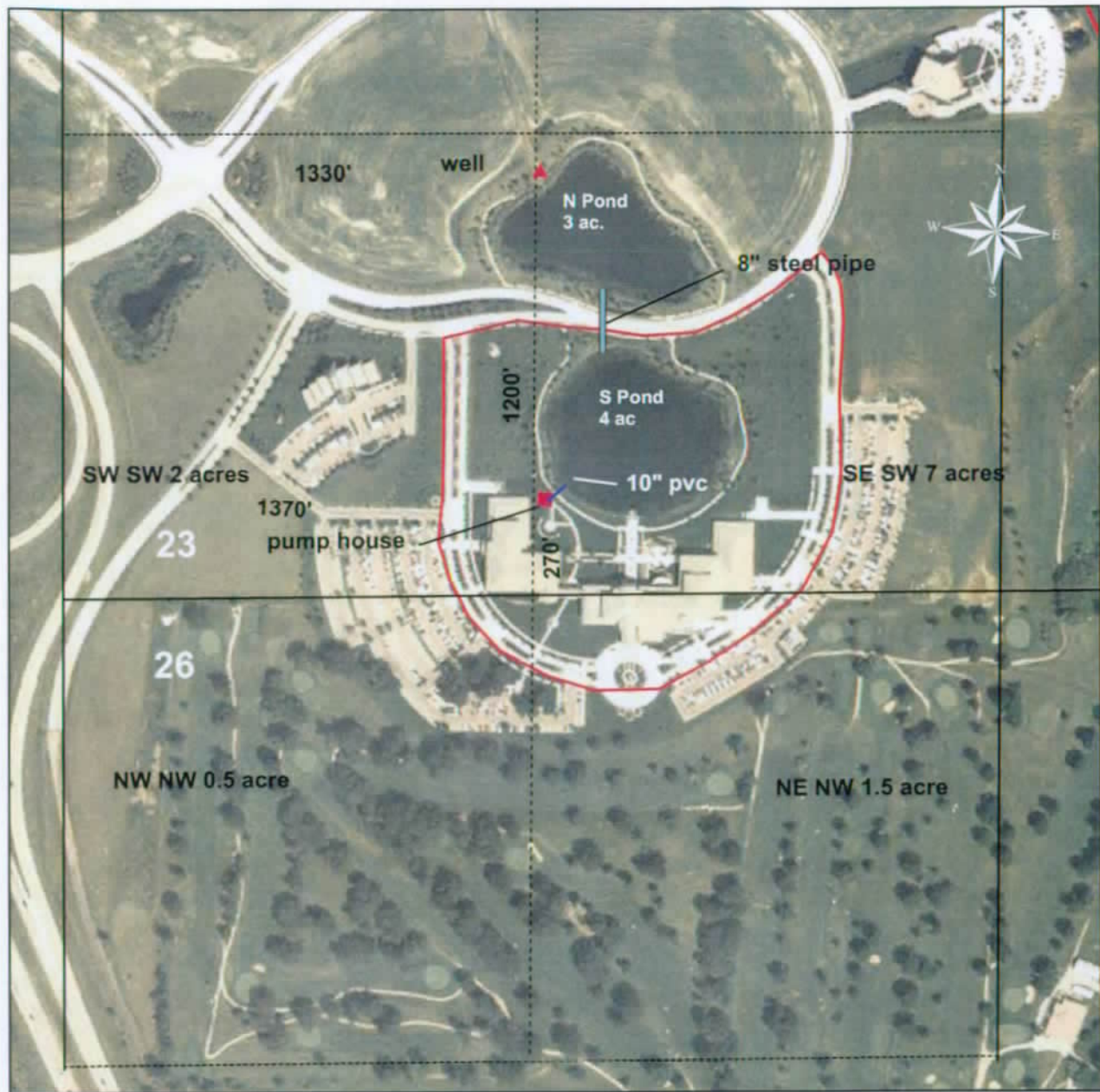
Lynn Beck

Natural Resources Engineer Specialist
DENR, Water Rights Program

Date report completed: August 11, 2005

WATER RIGHT NO. 6110-3
DAKOTA DUNES COMMUNITY IMPROVEMENT DISTRICT
August 10, 2005

R48W

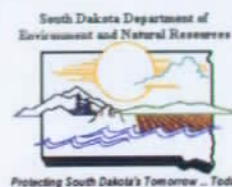


SCALE

0 330 660 1,320 1,980 2,640 Feet

Lynn Beck

Lynn Beck
Natural Resources Engineer Specialist
DENR, Water Rights Program
August 11, 2005





**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

September 8, 2005

6074-3
6110-3

Dakota Dunes Community Improvement District
c/o Dave Fuehrer, Public Works Manager
PO Box 1997
Dakota Dunes SD 57049-1197

Dear Mr. Fuehrer:

On July 28, 2005 the investigation of the water use systems, including the extent of application of water to beneficial use, as developed under Water Permit Nos. 6074-3 and 6110-3, were completed by Lynn Beck, staff engineer with our program. The final water right document, the water license, can now be issued for each permit.

State law requires that we charge a \$50.00 fee for the investigation and issuance of each water license (\$100 total). Upon receipt of the fee, we will complete processing the water licenses. The check or money order for the fee should be made payable to the "Water Rights Program".

The licensed water right will be similar to a property right that can not be lost as long as the water use continues and you abide by the permit requirements.

If you have any questions regarding the water permits, investigation of your water use system or payment of the fee, please contact Genny McMath with our program at (605) 773-3352.

Sincerely,

Karen Schlaak

Karen Schlaak
Water Rights Program
(605) 773-3352

RECEIPT

WATER RIGHTS PROGRAM

South Dakota Department of Environment and Natural Resources

Date September 23, 2005

RECEIVED OF Dakota Dunes Community Improvement Dist., PO Box 1997, Dakota Dunes SD 57049

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

Fee for Application for Permit No. _____ to Appropriate Water, to construct and to put water to beneficial use	50 00	
Fee for Application for Permit No. _____ to Appropriate Water for Future use		
Fee to retain Future Use Permit No. _____ after period of seven years.		
Fee for Inspecting Constructed Works, confirming beneficial use and issuing Water License No. <u>611003</u>		
Fee for Filing Transfer Form _____		
Fee for _____		
Fee for Issuing New Well Driller's License No. _____ for C.Y. _____		
Fee for Renewal of Well Driller's License No _____ for C.Y. _____		
Fee for Issuing Well Pump Installer's License No. _____ for C.Y. _____		
Fee for Renewal of Well Pump Installer's License No. _____ for C.Y. _____		
(Any Other Work Provided by Law)	TOTAL	50.00

No. 001976

By Darlene E. Eide
Chief Engineer gne

**STATE OF SOUTH DAKOTA
WATER LICENSE NO. 6110-3**

(1) Dakota Dunes Community Improvement District, c/o Dave Fuehrer, PO Box 1997, Dakota Dunes SD 57049-1197 made Application No. 6110-3, October 6, 1998 for a water permit to divert 2.22 cubic feet of water per second (cfs) from groundwater (one well) to be diverted into two ponds (106.3 acre-feet storage capacity), Union County, South Dakota for irrigation purposes. Permit No. 6110-3, with a priority date of October 6, 1998 was approved January 25, 1999 and issued to the applicant for diversion of water with construction of the described water supply system to be completed on or before January 25, 2004 and for the application to beneficial use of water on or before January 25, 2008.

(2) The water supply system has been completed and water applied to beneficial use in accordance with South Dakota State Law. Pursuant to South Dakota Codified Law 46-5-30.1, the holder and/or owner of Water Right No. 6110-3 is issued a license, bearing a priority date of October 6, 1998 to appropriate 0.12 cfs from the well to fill two ponds (40 acre-feet storage capacity). The permit holder is authorized the diversion of 0.12 cfs from the ponds to irrigate 11 acres of the golf course.

The diversion points are located: well – 1,200 feet north and 1,330 feet west; diversion at pond – 270 feet north and 1,370 feet west of the southwest corner Section 23-T89N-R48W (SE ¼ SW ¼). The acres authorized for irrigation are as follows:

Sec 23-T89N-R48W	SW ¼ SW ¼	2 ac	Sec 26-T89N-R48W	NW ¼ NW ¼	0.5 ac
	SE ¼ SW ¼	7 ac		NE ¼ NW ¼	1.5 ac
Total 11 acres					

(3) This license is subject to South Dakota Water Law, any limitations or conditions listed in Water Permit No. 6110-3 including the following now applicable 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 rights.
- The wells authorized by Permit No. 6110-3 shall be constructed by a licensed well driller and construction shall comply with Water Management Board Well Construction Rules, Chapter 74:02:04 with the well casing pressure grouted (bottom to top) from the producing formation to the surface pursuant to Section 74:02:04:28.
- SDCL 46-5-6 allows a greater diversion rate if the method of irrigation, time constraints, or type of soils so requires. Therefore, Permit No. 6110-3 authorizes a maximum diversion rate of 0.12 cfs for the irrigation of 11 acres of lawn with an annual volume not to exceed 3 acre-feet of water per acre per year.
- Water Permit No. 6110-3 authorizes storage in two lakes with a combined storage capacity of 40 acre feet of water and sufficient water annually to maintain the water level.
- Pumping from the Dakota Formation well into the lakes is not authorized when the lakes are full.
- This Permit is approved subject to the irrigation water use questionnaire being submitted each year.



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

OCT 13 2005

date





**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

OCT 13 2005

6074-3
6110-3

Dakota Dune Community Improvement District
% Dave Fuehrer Public Works Manager
PO Box 1997
Dakota Dunes SD 57049-1197

Dear Mr. Fuehrer:

Enclosed are Water License Nos. 6074-3 & 6110-3. These are the final water right document completing your process of obtaining a Water Right. Enclosed are Receipt Nos. 001966 & 001967 in the amount of \$50.00 each which you paid for the investigation and issuance of the Water Licenses.

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

Sincerely,

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

enclosures



**DEPARTMENT of AGRICULTURE
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 E. CAPITOL AVE
PIERRE SD 57501-3182
danr.sd.gov

April 24, 2024

6110-3

Dakota Dunes Community Improv. Dist.
c/o Dave Fuehrer
PO Box 1997
Dakota Dunes SD 57049

Dear Mr. Fuehrer:

I am writing in regard to your Water Right No. 6110-3. The water right authorizes diversion 0.12 cfs (approx. 54 gpm) of water from groundwater, one well, completed into the Dakota Aquifer, for the irrigation of 11 acres in the S $\frac{1}{2}$ SW $\frac{1}{4}$ Section 23 & N $\frac{1}{2}$ NW $\frac{1}{4}$ Section 26; all in T89N-R48W.

In reviewing your 2023 irrigation questionnaire, we have found discrepancies in the amount of water used and have some concerns. Enclosed is a copy of your questionnaire for reference purposes.

Water Right No. 6110-3 allows you to use up to 3 acre-feet (ac-ft) (36 inches) of water, per acre, per year. On the questionnaire you reported substantially more water use. The following information is what was reported and what is authorized:

- 11 acres irrigated
- Reported water use – 40 ac-ft of water (approximately 43.6 inches)
- Authorized water use – 33 acre-feet (11 acres x 3 ac-ft per year)

We realize that water use depends greatly on climactic conditions and may vary year to year. However, it is very rare that irrigators come close to the 36 inches per acre that is authorized. Typical water use is between 8 and 12 inches per acre. The information we receive each year from irrigators across the state is very valuable. The water use data supplied by irrigators is one of the tools we use to help determine whether an aquifer or stream is nearing full appropriation.

If you do in fact apply as much water as claimed on your questionnaire, you are exceeding the limits of your water right and will have to reduce your discharge to stay within the authorized limit. If you simply estimated your water use, we ask that you please ensure the information reported is as accurate as possible. As stated before, the information you provide to us is very valuable. If you have any questions, please contact me.

Sincerely,

Amanda Dewell
Water Rights Program
605 773-3352
Amanda.Dewell@state.sd.us

NOTE: Water Right No. 6110-3 authorizes a diversion rate of 0.12 cubic feet or water per second (approx. 54 gallons per minute). The 2023 irrigation questionnaire you submitted lists a pump rate of 110 gpm.

enclosure