

WATER PERMIT NO. 6633-3

Name of Applicant: **P J Werdel & Sons Inc.**

Address: **21711 345th Ave, Ree Heights SD 57371**

Phone: **605 943-5609**

Amount of Water Claimed: **1.89 cfs**

Total Acres: **160**

Source of Water Supply: **runoff – 273 AF storage dam**

Water to be used for: **irrigation**

County: **Hand**

Type of Waste Disposal System:

Location: **19 miles south of Ree Heights**

PRIORITY

Date Received: **6-17-05**

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

Corrected Application Received: **6-24-05**

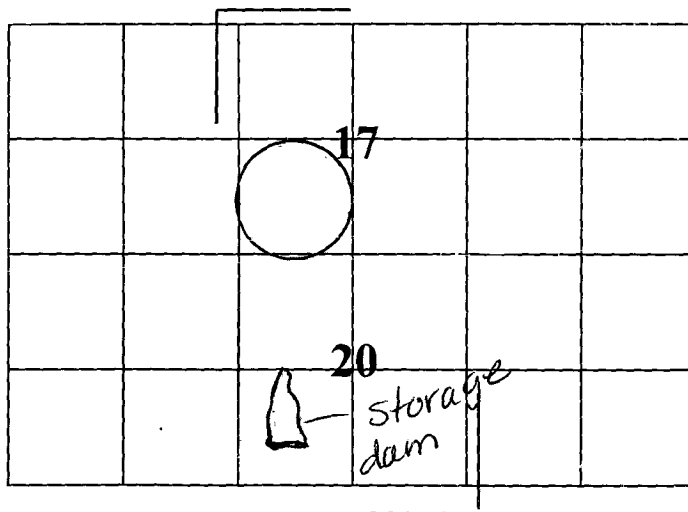
Period of Annual Use: **May 1 – October 31 (irrigation)**

Remarks:

Storage Dam location: **SW ¼ Sec 20-T109N-**

R70W

Land to be Irrigated: **SW ¼ Sec 17-T109N-R70W**



Depth of Well: **NA**

Well Driller:

Remarks:

Type of Map: **plat**

Prepared by: **Dale F Leffers, PE**

Reviewed and the Number Assigned on: **6-27-05**

By: **Karen Schlaak**

Notice of Hearing - date to intervene: _____

**SOUTH DAKOTA
WATER PERMIT NO. 6633-3**

Date of first receipt of application June 17, 2005.

Date of return to applicant for corrections, amendments or changes July 14, 2005.

Date of receipt of corrected application August 24, 2005.

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 6633-3 to PJ Werdel & Sons Inc., 21711 345th Ave, Ree Heights SD 57371 authorizing the construction of the dam and the placing of water to beneficial use subject to the following limitations, conditions and qualifications:

1. Water Permit No. 6633-3 to appropriate 1.89 cubic feet of water per second from a dam (273 acre feet storage capacity) located in the SW ¼ Section 20 to irrigate 160 acres located in the SW ¼ Section 17; all in T109N-R70W. The dam is located on Sand Creek. Water from the dam may be blended with effluent from a wastewater lagoon from a cattle feeding operation prior to application to the land.
2. The amount of the appropriation may not exceed 2 acre feet annually for each acre of land to which water is actually and beneficially applied for irrigation. The water is to be used during the following described annual period: May 1 – October 31 (irrigation) and January 1 – December 31 (storage dam).
3. The date from which applicant may claim right is August 24, 2005.
4. The date of approval of Permit No. 6633-3 is October 3, 2005.
5. One-fifth of the construction is to be completed on or before April 3, 2008.
6. All construction is to be completed on or before October 3, 2010.
7. Water is to be put to beneficial use on or before October 3, 2014.
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. Water Permit No. 6633-3 authorizes a dam with a storage capacity of 273 acre feet of water and sufficient water annually to maintain the water level to the outlet elevation.
2. Low flows as needed for downstream domestic use, including livestock water and prior water rights must be by-passed.
3. The system shall be designed to prohibit the flow of liquid from the livestock waste pond back towards the irrigation dam. Depending on the design, this may require installation of a check valve or similar device.
4. This Permit is approved subject to the irrigation water use questionnaire being submitted each year.

WATER MANAGEMENT BOARD

By: _____

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

NOV 03 2005

date



RECEIVED

JUN 17 2005

WATER RIGHTS
PROGRAM

Mail to: Water Rights Program Joe Foss Building 523 E. Capitol Pierre, SD 57501-3181 (605) 773-3352	No. <u>6633-3</u> (office use only) Hydrologic Unit <u>10140105</u>
	Basin <u>Missouri River</u>
	Newspaper <u>Miller Press, Miller</u>

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 Irrigation | |

Type of Application:
(check one)

- ☒ New ☐ Vested Right (Use predates Mar 2, 1955) ☐ Future Use Reservation
☐ 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 PJ Werdel & Sons Inc. Phone (605) 943-5609
 (check one) ☒ Owner ☐ Tenant/lessee
 Mailing Address 21711 345th Ave Ree Heights State SD 57371
 (Street, RR, or Box and City) (Zip Code)
- Amount of water claimed 1.89 *CFS or 850 **GPM 273.00 ***AF
 (*Cubic Feet per Second) (**Gallons per Minute) (***)Acre Feet - storage capacity of dam/dugout or annual use if applicable)
- Source of water supply Storage dam-runoff Sand Creek Acres Irrigated: 160
- Location of point of diversion (example - 3 wells in SW1/4 NE1/4 section 12-T104N-R53W) County Hand
1 Dam in SW1/4 Section 20-T109N-R70W Water Impounded SW1/4 Sec 20-T109N-R70W
Area Irrigated: 160 AC located SW1/4 Sec 17-T109N-R70W
- County or counties where water will be used Hand
- Annual period during which water is to be used May to October 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)

Construct a dam to contain runoff water for irrigation use.

STATE OF SOUTH DAKOTA)

County of Hand

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, Ed Werdel, 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 Ed WerdelSubscribed and sworn to before me this 14 day of June 20 05
Sheila Coos
 Notary Public signature

 My Commission
 Expires 3/27/2009

(type or print in ink)

1. Well Information - Proposed Construction

- a) Drill Hole Diameter _____ Depth _____
- b) Casing Type _____ Diameter _____ Thickness _____
- c) Screen Type _____ Diameter _____ Thickness _____
- d) Gravel Pack _____ Length of Gravel Pack _____
- e) Depth to Top of Water Bearing Material _____
- f) Depth to Water (ground surface to water level) _____
- g) Distance to nearest existing domestic well:
On applicants property _____ On property owned by others _____

2. Wastewater Disposal System Information

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

3. Dugout Information

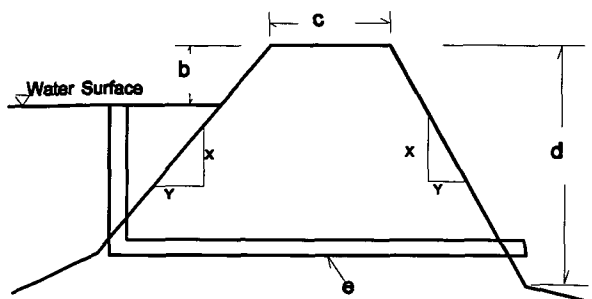
- a) Surface Dimensions _____ Depth _____
- b) Depth to water (ground surface to water level) _____

4. Water Storage Dams

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

- a) If a private engineering firm or government agency was involved in the design of this dam, please give their name and address:

Settje Agri-Services and Engineering, Inc.
4700 W Rock Creek Rd
Raymond NE 68428



- b) Freeboard _____ 4 _____
- c) Crest Width _____ 15 _____
Crest Length _____ See plans _____
- d) Height _____ 27.28 _____
- e) Primary Outlet Capacity _____ 186 cfs _____
If pipe, diameter _____ 36 in _____
- f) Secondary Spillway Capacity _____ 1669 cfs _____
Spillway Width _____ 80 _____
- g) X & Y Slope _____
Upstream _____ 3:1 _____
Downstream _____ 3:1 _____
- h) Surface Area of Impoundment _____ 33 _____
- i) Storage _____ 273.0 _____ Acre Feet
- j) Drainage Area Above Dam _____ 4,574.0 _____ Acres

RECEIPT

WATER RIGHTS PROGRAM

South Dakota Department of Environment and Natural Resources

Date June 17, 2005

RECEIVED OF Settje Agri-Services & Engineering Inc., 4700 W. Rock Creek Road, Raymond NE

68420

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	250	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. _____	50	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.

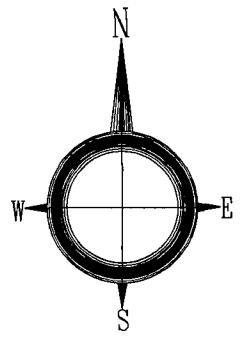
001286

By

J. Darband Elish

Chief Engineer

gmm



SCALE: 1"=500'

PROPOSED EAST PIVOT
SW 1/4, SEC. 17, T 109 N, R 70 W
160 ACRES

UNDERGROUND PIPE TO PIVOT

850 GPM PUMP

PROPOSED LIVESTOCK
WASTE POND

PROPOSED EAST
IRRIGATION POND

850 GPM PUMP



EAST IRRIGATION PLAN
PJ WERDEL & SONS INC.
NE 1/4, SEC 19, T 109 N, R 70 W
NE 1/4, SEC 20, T 109 N, R 70 W
HAND COUNTY
SETTJE AGRI SERVICES
AND ENGINEERING, INC.

**Stage Storage Data
East Irrigation Pond**

	Elev.	Depth From Bottom	Area Sq. ft	Volume			Gallons
				Cubic ft.	Acre ft.	Acre in.	
Top of Berm	1777.0	25	2,111,785	18,787,194	431.3	5175.5	140,528,211
	1776.0	24	1,928,633	16,862,337	387.1	4645.3	126,130,281
Emergency Spillway	1775.0	23	1,754,978	15,067,809	345.9	4150.9	112,707,211
	1774.0	22	1,591,461	13,406,040	307.8	3693.1	100,277,179
Primary Spillway	1773.0	21	1,438,577	11,894,742	273.1	3276.8	88,972,670
	1772.0	20	1,296,674	10,520,847	241.5	2898.3	78,695,936
	1771.0	19	1,165,952	9,281,574	213.1	2556.9	69,426,174
	1770.0	18	1,046,468	8,170,038	187.6	2250.7	61,111,884
	1769.0	17	938,127	7,180,461	164.8	1978.1	53,709,848
	1768.0	16	840,691	6,295,293	144.5	1734.2	47,088,792
	1767.0	15	753,772	5,496,093	126.2	1514.1	41,110,776
	1766.0	14	676,839	4,786,236	109.9	1318.5	35,801,045
	1765.0	13	593,979	4,170,690	95.7	1149.0	31,196,761
	1764.0	12	538,825	3,603,555	82.7	992.7	26,954,591
	1763.0	11	495,690	3,079,944	70.7	848.5	23,037,981
	1762.0	10	461,537	2,596,266	59.6	715.2	19,420,070
	1761.0	9	432,661	2,140,236	49.1	589.6	16,008,965
	1760.0	8	404,971	1,715,040	39.4	472.5	12,828,499
	1759.0	7	374,369	1,332,099	30.6	367.0	9,964,101
	1758.0	6	337,223	994,572	22.8	274.0	7,439,399
	1757.0	5	290,953	703,458	16.1	193.8	5,261,866
	1756.0	4	234,705	459,945	10.6	126.7	3,440,389
	1755.0	3	170,138	265,167	6.1	73.0	1,983,449
	1754.0	2	102,304	120,717	2.8	33.3	902,963
	1753.0	1	40,630	30,807	0.7	8.5	230,436
	1752.0	0	0	0	0.0	0.0	0

WATERWAY CAPACITY CALCULATIONS $Q=CiA$

EAST DRAINAGE AREA

CAPACITY REQUIRED

DRAINAGE AREA	<u>4574</u>	acres
RETURN PERIOD	<u>25</u>	years
RUNOFF COEFFICIENT = C	<u>0.44</u>	

HEIGHT OF MOST REMOTE PT	<u>170.0</u>	ft
DISTANCE FROM MOST REMOTE PT	<u>32,825</u>	ft
MINUTES TO CONCENTRATION	<u>177.7</u>	min
FACTOR = 2 GRASS, 1.5 CULTIVATED	<u>1.5</u>	
ACTUAL MINUTES TO CONCENTRATION	<u>266</u>	min
INTENSITY = I	<u>0.75</u>	in/hr

$Q=CiA$	<u>1509</u>	cfs
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SPILLWAY CAPACITY

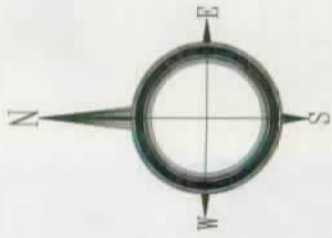
LEFT SLOPE OF SIDE	<u>10.00</u>	:1
RIGHT SLOPE OF SIDE	<u>10.00</u>	:1
WIDTH AT BOTTOM	<u>80.00</u>	ft
WIDTH AT TOP	<u>120.00</u>	ft
DEPTH	<u>2.00</u>	ft
SLOPE OF DITCH	<u>0.01000</u>	ft/ft
CHANNEL AREA	<u>200.00</u>	sq ft
WET PERIMETER	<u>120.20</u>	
HYDRAULIC RAD	<u>1.66</u>	
n	<u>0.025</u>	

Q	<u>1669</u>	cfs
PERCENT CAPACITY	<u>111%</u>	

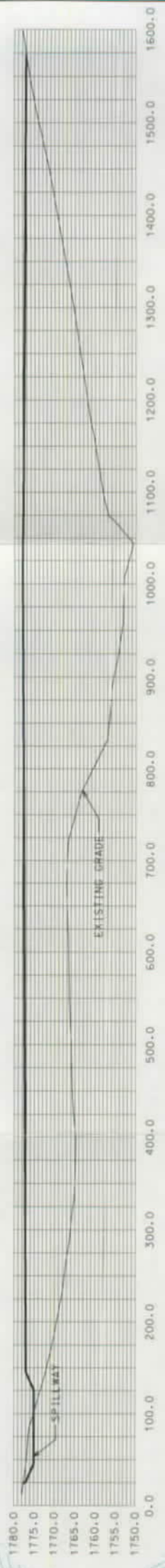
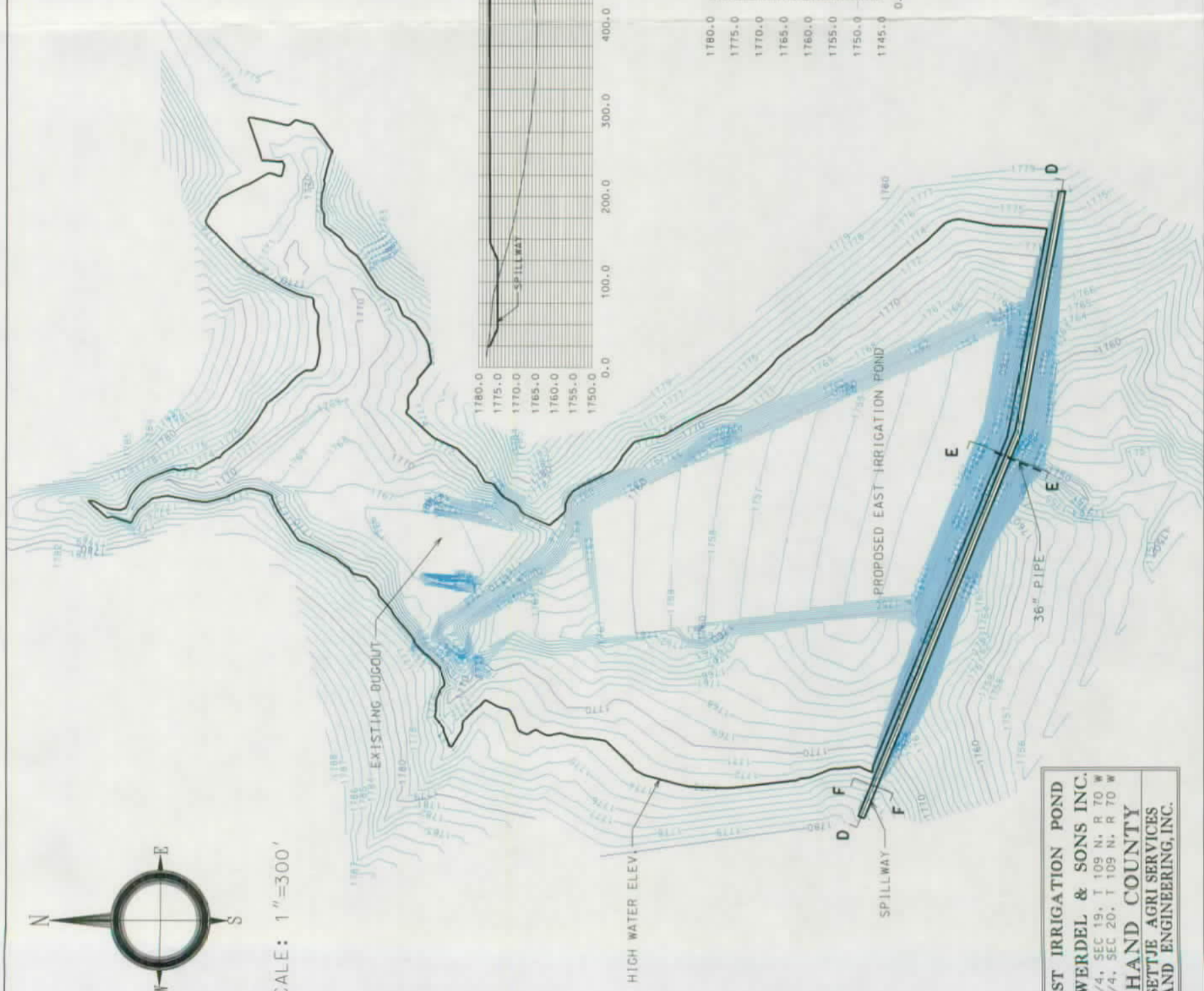
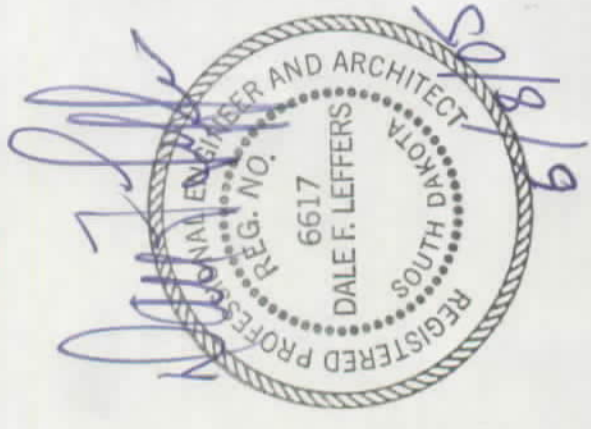
MAXIMUM PIPE FLOW CALCULATIONS $V=(2g\Delta Z/(1+fL/D+\Sigma K_L))^{1/2}$; $Q=VA$

Q =flowrate; A =inside pipe area; V =velocity in pipe; g =acceleration of gravity; ΔZ =total head; f =friction losses due to pipe
 L =pipe length; D =inside pipe diameter; ΣK_L =total minor losses from entrances, exits, valves, etc.

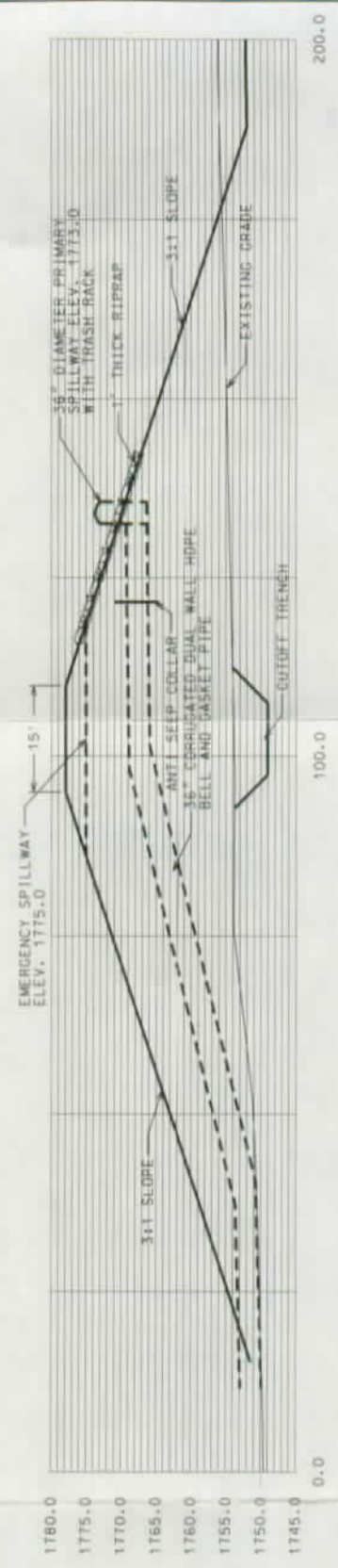
L, Pipe Length (ft)	<u>110</u>	Pipe Material	<u>HDPE</u>
D, Inside Pipe Diameter (in)	<u>36</u>	ϵ , Roughness (Table 1)	<u>5.0E-06</u>
Inside Pipe Area (in ²)	<u>1017.9</u>	Re, Reynold's Number	<u>6.54E+06</u>
ΔZ , Total Head (ft)	<u>23</u>	Turbulent/Laminar?	<u>Turbulent</u>
ΣK_L , Total Minor Losses	<u>0.8</u>	V, Max. Velocity (ft/s)	<u>26.36</u>
Seed Friction Factor	<u>0.009</u>	Q, Max. Flowrate (cfs)	<u>186.33</u>
f, Friction Factor (calculated)	<u>0.009</u>	Q, Max. Flowrate (gpm)	<u>83623</u>
		% of Required Capacity	<u>12.3%</u>



SCALE: 1"=300'



CROSS SECTION DD



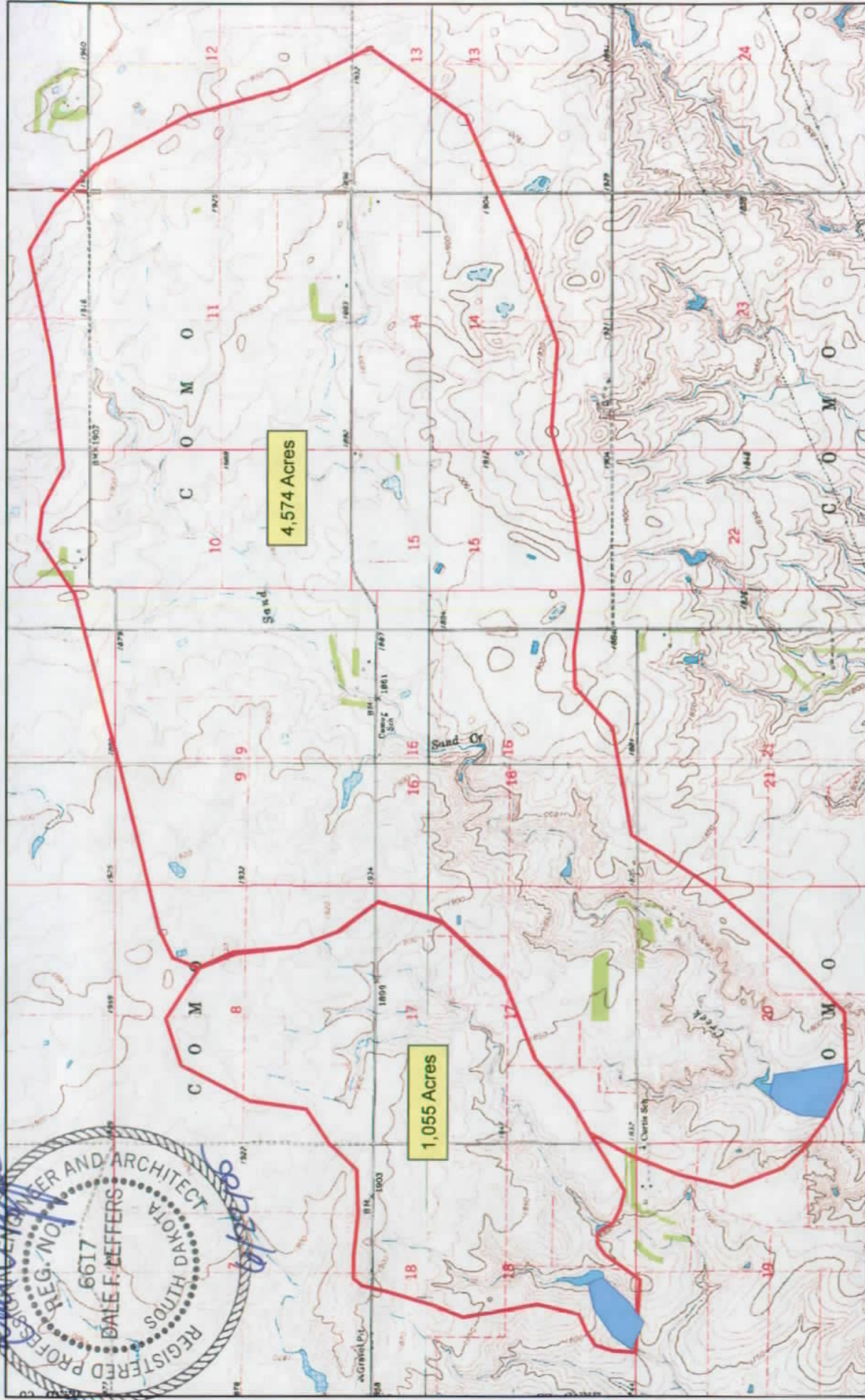
CROSS SECTION EE



CROSS SECTION FF

EAST IRRIGATION POND	
PJ WERDEL & SONS INC.	
NE 1/4, SEC 19, T 109 N, R 70 W	
NE 1/4, SEC 20, T 109 N, R 70 W	
HAND COUNTY	
SETTJE AGRI SERVICES	
AND ENGINEERING, INC.	

P.J. Werdel & Sons Inc



Settle Agri-Services & Engineering, Inc.



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

April 21, 2005

Ed Werdel
P.J. Werdel & Sons, Inc.
21711 345th Avenue
Ree Heights, SD 57371-7009

RE: P.J. Werdel & Sons, Inc. Manure Management System
Animal General Permit Application Review

Dear Mr. WerdelMr. Wipf:

The Department of Environment and Natural Resources has received four copies of your application for coverage under the General Water Pollution Control Permit for Concentrated Animal Feeding Operations. The manure management system will be located in the Northeast $\frac{1}{4}$ of Section 19, and the Northeast $\frac{1}{4}$ of Section 20, Township 109 North, Range 70 West in Hand County, South Dakota.

Your manure management system is for existing and proposed open lots feeding a maximum of 10,000-head of feeder cattle. Your manure management system consists of a west system and an east system, each feeding 5,000-head of feeder cattle.

Your proposed west system consists of piping, diversion dikes or channels, a sediment basin, a holding pond, and 148.57 acres of drainage area. The sediment basin designed capacity is 182 days of solids storage. The holding pond designed capacity is 365 days of liquid storage.

Your proposed east system consists of piping, diversion dikes or channels, three sediment basins, a holding pond, and 95.11 acres of drainage area. The sediment basins have a designed capacity of 182 days of solids storage. The holding pond designed capacity is 365 days of liquid storage.

We have reviewed and hereby conditionally approve the plans and specifications for your project. This approval expires on April 21, 2007, unless construction of the manure management system has been started by that date. Requirements that you must implement are listed on the attached page(s). Failure to implement the requirements on the following page(s) prior to operation of the manure management system will invalidate this approval.

Ed Werdel
P.J. Werdel & Sons, Inc.
April 21, 2005
Page 2 of 9

Two copies of the approved plans and specifications are being retained for our files. If any deviations are required from the approved plans, the department must approve those changes and all change orders prior to construction. A complete set of as-built plans will be required if several major deviations result.

Upon completion of construction, the enclosed Notice of Completion must be returned to the department. **For the existing lots and manure management system, the department will issue a Certificate of Compliance and permit coverage once a Notice of Completion has been received and a satisfactory construction inspection has been conducted. For the proposed lots, you cannot populate these lots until the department issues a Certificate of Compliance and permit coverage.** Continued compliance is dependent upon you performing proper operation and maintenance activities. You will be liable for any noncompliance with applicable South Dakota environmental laws or regulations.

Our review is primarily to assure that the system meets the requirements of the general permit and does not cover items such as, quality of material, structural soundness, electrical, and mechanical design features. Approval of the plans and specifications does not in any way release the producer from the responsibility that the project will be an operable facility when construction is completed.

If you have any questions regarding the content of this letter, please feel free to contact Ben Myers, Surface Water Quality at (605) 773-3351. Thank you for your cooperation.

Sincerely,

Kent R. Woodmansey, PE
Natural Resources Engineering Director
Surface Water Quality Program
Phone: (605) 773-3351

Enclosures: Construction Postcard
Notice of Completion Form

cc: Dale F. Leffers, PE, Settje Agri Services and Engineering, Inc, Raymond, NE
Marvin Nelson, District Conservationist, NRCS, Miller, SD
Hand County Commissioners
Hyde County Commissioners

REQUIREMENTS

The following requirements must be implemented before we will issue a Certificate of Compliance and coverage under the animal general permit. Failure to implement these requirements will invalidate this approval.

Plans and Specifications

The plans and specifications review is to determine whether seepage, storage, and other design requirements will be met.

1. Trash Screen

A trash screen or some other means of preventing solids from entering the pond must be installed in front of the 18-inch RCP that routes runoff from the proposed lot north of proposed holding pond 2 into the pond. **Your engineer must submit a revised plan sheet showing the location of the trash screen and a typical trash screen detail to the department or submit information about the frequency of cleaning solids from the pond and how this will be accomplished without damaging the liner.**

2. Road Ditches

Your submittal indicates that two proposed lots will be constructed on the north side of the county road in Section 20. The runoff from these lots will drain through piping under the road. Your engineer must submit information on how runoff from the proposed lots will be kept out of the road ditch and how clean water will be routed around this area. Your engineer must also submit a pipe profile for the piping that discharges into holding pond 2. **You cannot begin construction of these proposed lots until the department receives this information and approves the proposed lots.**

3. Holding Pond Design

The proposed holding ponds are designed with non-uniform bottoms that slope toward the permanent markers on the opposite side of the ponds as the discharge piping. The department is concerned that the location of the discharge piping and the amount of slope proposed for the pond bottoms will damage the clay liner and potentially cause excess seepage. If erosion problems are found during inspections, erosion protection may be required.

4. Pipe Specifications

The force main to be installed between the pump station and holding pond 2 must pass a leakage test. The testing procedure must be included in the specifications. Force mains shall be tested at a minimum pressure of at least 50 percent above the design operating pressure, for at least 30 minutes. Leakage shall not exceed the amount given by the following formula:

REQUIREMENTS CONTINUED

$$L = NDP^{1/2} / 1850$$

L = The allowable leakage in gallons per hour
N = The number of pipe joints
D = The nominal pipe diameter in inches
P = The test pressure in psi

The effluent lines section of the construction specifications indicates that the tolerance for sewer grades shall be ($\pm 0.5\%$) in any 100-foot section. Please be aware that construction must follow the plans approved by the department. The minimum slope for a 10-inch gravity flow pipe is 0.28 feet for any 100-foot section. **If changes will be made to the approved plans, revised plans must be submitted to the department for approval prior to construction.**

5. Pumping Station

The pumping station detail indicates the proposed pump pit is over 15 feet deep. The pit must have a ventilated opening. Portable ventilation may be required if you enter this pit. Also, specifications for the material and the installation of the pump station are not included in the plans or specifications. The pump station must also be designed with an alarm system. **Please submit revised specifications and a revised pump station detail showing an alarm system.**

Because the pre-cast pump station is designed to hold liquid waste, the department is requiring the installation of a monolithic base in the pump station structure. The base of the pump station must be poured monolithically or keyed and provided with waterstops to be considered watertight. Please submit information showing how this requirement will be met. **A revised pump station and piping detail indicating the installation of a monolithic base must be submitted to the department for approval.**

6. Concrete Chute and Splash Pad Detail

The submitted concrete chute and splash pad detail does not include any reinforcement. Reinforcement must be included in the construction of the chute and splash pad. **Please submit a revised detail indicating the type and placement of reinforcement that will be used.**

7. Irrigation Piping

Your submittal indicates that wastewater from the proposed holding ponds will be used for irrigation purposes via underground PVC piping connected to center pivots. If this piping is not existing, plans and specifications must be submitted to the department before the piping can be installed. Also, if permanent pumping equipment will be installed, your engineer must submit plans for the installation of this equipment.

8. Existing Dams

Your submittal indicates an existing dam will be removed and another existing dam will be extended. You must submit plans and specifications for these changes to the department before construction on

REQUIREMENTS CONTINUED

the dams can begin. Please contact Tim Schaal with the Water Rights Program at (605) 773-3352 if you have any questions.

General Permit

You will be required to operate your feeding operation and manure management system in accordance with the requirements in the animal general permit.

1. Permit Deadline

The Federal Environmental Protection Agency has given existing South Dakota livestock producers until September 30, 2005, to get existing Concentrated Animal Feeding Operations (CAFO's) permitted. You must have all your existing CAFO's covered under DENR's general permit by September 30, 2005.

2. Soil Borings

The general permit requires drilling logs **and the elevation of the top of the boring** from soil borings in the vicinity of the containment structure. The elevation shall be relative to the elevation submitted on the manure containment system plans. The submitted soil borings did not include the surface elevation and the submitted site plan drawings showing the locations of the 10 soil borings did not include the original contours for the boring locations for use in determining the surface elevations. Please submit information providing the surface elevations for the soil borings. Please refer to item K. on page 23 of the general permit.

3. Ground Water Monitoring

Based on the system design, soil boring logs, and other published reports and information, this system does not appear to overlie a shallow aquifer and should not impact ground water. Therefore, a Ground Water Discharge Permit or ground water monitoring will not be required. Should the design or operation of the facility change appreciably, new hydrogeological information become available, or any contamination problems be reported, the department reserves the right to reassess the need for possible remediation, monitoring of ground water, or a Ground Water Discharge Permit.

4. Emergency Spillway

Any discharge through the emergency spillway located along the north side of holding pond 1 must be reported to the department as soon as possible, but no later than twenty-four (24) hours from the time you first become aware of a discharge. The report shall be made to the State of South Dakota at (605) 773-3351. If after normal business hours (8:00 am to 5:00 pm central time on Monday through Friday), the producer shall report the discharge by calling (605) 773-3231. If possible, the producer shall also take immediate steps to notify anyone downstream that may be impacted by the discharge.

The emergency spillway is located to discharge outside of the manure management system containment areas. The department prefers to not have any kind of emergency discharge system in manure management systems as they could lead to non-compliance discharges. The department

Ed Werdel
P.J. Werdel & Sons, Inc.
April 21, 2005
Page 6 of 9

REQUIREMENTS CONTINUED

recommends that the emergency spillway be relocated so as to empty back into the feedlot, if possible. Also, information on erosion protection for the spillway was not provided. **Please submit a detail drawing showing how the spillway will be protected from erosion if it is retained in the holding pond design.**

5. Notification

Construction Schedule - You or your engineer must notify the department of the proposed construction schedule for your project to allow our personnel the opportunity for construction inspections. Please fill out the enclosed postcard and return it to us prior to beginning construction of the manure management system. If any of the dates change from the ones submitted on the postcard, please notify us at (605) 773-3351 and ask for Ben Myers.

Local Government - You are responsible for contacting your local planning and zoning office to determine if there are any local ordinances or requirements with which you need to comply. If a stream, lake, or wetland will be dredged or filled during the construction of the feeding operation, then you need to contact the United States Corps of Engineers at (605) 224-8531 prior to construction of the manure management system.

Notice of Completion - The Notice of Completion form must be completed by your engineer and returned to the department when construction of the manure management system is complete. The department cannot issue you a Certificate of Compliance and coverage under the general permit until we receive a Notice of Completion. **For the existing lots and manure management system, the department will issue a Certificate of Compliance and permit coverage once a Notice of Completion has been received and a satisfactory construction inspection has been conducted. For the proposed lots, you cannot populate these lots until the department issues a Certificate of Compliance and permit coverage.**

6. Setback Distances

The manure management system and the application sites must be located at least 150 feet from a private well owned by you, 250 feet from a private well not owned by you and 1,000 feet from an existing public supply well or public drinking water source. These areas cannot be included in the land application areas.

7. Nutrient Management Plan

A. Phosphorus Soil Tests

A field list was submitted with your initial nutrient management plan. This list contained background phosphorus levels for each of the proposed land application sites. However, a copy of this soil test was not submitted. Please submit a copy of the phosphorus soil test for all of the fields so we may complete our review. **You cannot apply manure to these fields until a copy of the background soil tests are submitted to the department for review.**

REQUIREMENTS CONTINUED

B. Manure Application Agreement

Field 16, located in the E ½ of the SE ¼ of Section 9, Township 109 North, Range 70 West, cannot be included in your approved NMP until manure application agreement information is submitted. No manure application agreement was submitted for **Field 16**. Information from the Hand County Director of Equalization office indicates **Field 16** is owned by Charles Yost. If the information from the Director of Equalization office is the most current, a manure application agreement signed by Charles Yost must be submitted before this field can be included in your approved NMP. If the information from the Director of Equalization office is not the most current, please submit documentation verifying that you own the field. **You cannot apply manure to fields that are not in your approved NMP.**

C. Annual Soil Testing

The following table lists the legal descriptions and sampling requirements for all the fields in your nutrient management plan. All the fields require soil testing from 0 to 2-feet prior to manure application.

For fields that require additional soil testing from 2 to 4 feet, you have the option to either conduct the initial 0 to 2-foot and the 2 to 4-foot soil test prior to land application or the alternative option to conduct the initial 0 to 2-foot soil test prior to land application and a second 0 to 2-foot soil test within four weeks of harvesting the crop. Please refer to section 1.4.4.4., beginning on page 29 of the general permit, for the annual nutrient management requirements. **You must notify the department in writing if you plan to use the alternative post-harvest soil sampling option instead of the 2 to 4-foot soil sampling requirement.**

D. Nitrogen Based Manure Application

As indicated in your initial nutrient management plan, manure application on the following fields may be based on nitrogen need as determined from Table 2, on page 29 of the general permit. Please refer to Table 2, on page 29 of your permit prior to land application, to determine the proper procedure for calculating the appropriate application rate for each specific field.

Field ID	County	Location	Soil Sampling	
			Shallow (0-2')	Deep (2-4')
1	Hand	NE ¼, Sec. 18, T109N, R70W	Yes	
2	Hand	SW ¼, Sec. 17, T109N, R70W	Yes	
3	Hyde	S ½ of the N ½, Sec. 1, T109N, R71W	Yes	
4	Hyde	SE ¼, Sec. 1, T109N, R71W	Yes	
5	Hyde	NE ¼, Sec. 12, T109N, R71W	Yes	
6	Hand	SW ¼, Sec. 2, T109N, R70W	Yes	
7	Hand	S ½, Sec. 3, T109N, R70W	Yes	
8	Hand	S ½, Sec. 6, T109N, R70W	Yes	
9	Hand	N ½, Sec. 7, T109N, R70W	Yes	

REQUIREMENTS CONTINUED

10	Hand	SW ¼, Sec. 8, T109N, R70W	Yes	
11	Hand	SE ¼, Sec. 8, T109N, R70W	Yes	
12	Hand	SW ¼, Sec. 9, T109N, R70W	Yes	
13	Hand	S ½ of the SE ¼, Sec. 9, T109N, R70W	Yes	
14	Hand	SW ¼ of the SE ¼, Sec. 9, T109N, R70W	Yes	
15	Hand	N ½, Sec. 10, T109N, R70W	Yes	
17	Hand	N ½, Sec. 11, T109N, R70W	Yes	
18	Hand	Sec. 16, T109N, R70W	Yes	
19	Hand	W ½, Sec. 18, T109N, R70W	Yes	
20	Hand	NW ¼, Sec. 18, T109N, R70W	Yes	
21	Hand	NE ¼, Sec. 18, T109N, R70W	Yes	
22	Hand	SW ¼, Sec. 18, T109N, R70W	Yes	
23	Hand	W ½, Sec. 19, T109N, R70W	Yes	
24	Hand	SE ¼, Sec. 19, T109N, R70W	Yes	
25	Hand	W ½, Sec. 20, T109N, R70W	Yes	
26	Hand	W ½ of the SE ¼, Sec. 20, T109N, R70W	Yes	
27	Hand	E ½ of the SE ¼, Sec. 20, T109N, R70W	Yes	
28	Hand	SW ¼, Sec. 24, T109N, R70W	Yes	
29	Hand	W ½, Sec. 25, T109N, R70W	Yes	
30	Hand	E ½, Sec. 26, T109N, R70W	Yes	
31	Hand	S ½ of the SE ¼, Sec. 28, T109N, R70W	Yes	Yes
32	Hand	W ½ of the SW ¼, Sec. 29, T109N, R70W	Yes	Yes
33	Hand	N ½ of the SE ¼, Sec. 28, T109N, R70W	Yes	Yes
34	Hand	S ½ and NW ¼, Sec. 30, T109N, R70W	Yes	Yes
35	Hand	W ½, Sec. 33, T109N, R70W	Yes	Yes
36	Hand	NE ¼ of the NE ¼, Sec. 33, T109N, R70W	Yes	Yes
37	Hand	SE ¼ and S ½ of the NE ¼, Sec. 33, T109N, R70W	Yes	Yes
38	Hand	Sec. 34, T109N, R70W	Yes	
39	Hand	NE ¼, Sec. 35, T109N, R70W	Yes	
40	Hand	Sec. 36, T109N, R70W	Yes	
41	Hand	NW ¼, Sec. 17, T109N, R70W	Yes	
42	Hand	NE ¼, Sec. 17, T109N, R70W	Yes	
43	Hand	SW ¼, Sec. 17, T109N, R70W	Yes	
44	Hand	E ½ of the SW ¼, Sec. 31, T109N, R69W	Yes	
45	Hand	SE ¼, Sec. 7, T109N, R70W	Yes	
46	Hand	SW ¼ of the SE ¼, Sec. 7, T109N, R70W	Yes	
47	Hand	NW ¼, Sec. 13, T109N, R70W	Yes	
48	Hand	S ½ of the NW ¼ and N ½ of the SW ¼, Sec. 13, T109N, R70W	Yes	
49	Hand	S ½ of the NE ¼, Sec. 13, T109N, R70W	Yes	Yes
50	Hand	S ½, Sec. 13, T109N, R70W	Yes	
51	Hand	SW ¼, Sec. 7, T109N, R69W	Yes	
52	Hand	NW ¼, Sec. 18, T109N, R69W	Yes	
53	Hand	NE ¼, Sec. 18, T109N, R69W	Yes	

REQUIREMENTS CONTINUED

54	Hand	E ½ of the NE ¼, Sec. 7, T109N, R70W	Yes	
55	Hand	SE ¼, Sec. 19, T109N, R70W	Yes	
56	Hand	W ½ of the SW ¼, Sec. 27, T109N, R70W	Yes	Yes
57	Hand	SW ¼ of the SW ¼, Sec. 27, T109N, R70W	Yes	Yes

Please note in your nutrient management plan the estimated time it will take to build your listed fields up to 50 ppm of phosphorus. You may need additional land in order to apply to your fields based on phosphorus removal at that time.

E. Phosphorus Based Manure Application

As indicated in your initial nutrient management plan, none of the fields require a manure application based on phosphorus crop removal at this time. Please review Table 2, on page 29 of the general permit for the phosphorus application requirements when it becomes necessary to apply manure based on phosphorus removal.

8. Other Permits That May or Will be Required

Storm Water Permit - Since the construction of your project disturbs more than one acre in total land area, a general storm water construction permit is required. This permit must be obtained 15 days prior to starting construction. As part of the requirement for obtaining coverage under this permit you must develop and implement a pollution prevention plan. Information concerning this permit and the pollution prevention plan can be obtained by calling Al Spangler at 1-800-737-8676. **A copy of this plan must be kept on site during construction for review by DENR inspectors.**

Water Right Permit - Depending on your water usage, you may need to obtain a water rights permit. You must submit information regarding the source(s) of all water to be used in the operation of your manure management system. You must include the average and maximum daily volumes of water to be used from each source. The water volumes must include all water usage such as water for consumption, washing, misters, overflow watering systems, cooling, dust control, etc. Information concerning this permit can be obtained by calling Eric Gronlund at (605) 773-3352. **Please contact Eric so he can assist you in determining if you need to obtain a water rights permit.**

SETTJE

Agri-Services & Engineering

4700 W. Rock Creek Rd.
Raymond, Ne 68428
office (402) 783-2100
fax (402) 783-2104

Dean Settje

Dale Leffers P.E.

June 22, 2005

Eric Gronlund
Joe Foss Building
523 East Capital Avenue
Pierre, SD 57501-3182

RECEIVED

JUN 24 2005

WATER RIGHTS
PROGRAM

Reference:

Irrigation Pond Addendum
PJ Werdel & Sons, Inc.
Part of S19 & 20, T109N, R70W - Hand County

Dear Eric,

Enclosed are the maps you requested during our recent phone conversation. In addition to the maps, I would like to use this letter to describe some of the logic behind the design of these two structures. The proposed ponds will be constructed to supply irrigation water to one quarter section of cropland each. These two structures have been classified as category 3 low hazard due to the lack of houses or other developed areas on the downstream side of the dams. The spillways are designed to route the expected runoff from a 50-year, 24-hour rainfall event around the dam and safely downstream.

If you have any further questions regarding this application please give me a call at the number listed above.

Sincerely,



Steve Westerbuhr

ORIGINAL

**PJ Werdel & Sons Inc.
S19, T109N, R70W
S20, T109N, R70W
Hand County South Dakota**

RECEIVED

JUN 17 2005

WATER RIGHTS
PROGRAM

**Application For Permit
To Appropriate Water
Within The State of
South Dakota**

**Submitted by:
Settje Agri-Services and Engineering, Inc.
4700 West Rock Creek Road
Raymond, NE 68428
402-783-2100**

ORIGINAL

SETTJE

Agri-Services & Engineering

**4700 W. Rock Creek Rd.
Raymond, Ne 68428
office (402) 783-2100
fax (402) 783-2104**

Dean Settje

Dale Leffers P.E.

June 8, 2005

Karen Schlaak
Joe Foss Building
523 East Capital Avenue
Pierre, SD 57501-3182

Reference:

Irrigation Pond Application
PJ Werdel & Sons, Inc.
Part of S19 & 20, T109N, R70W - Hand County

Dear Karen,

Enclosed are the required plan and calculation sheets for the approval of the construction of two irrigation ponds at the above referenced facility. Each pond will be used to irrigate one center pivot of crop land.

The first property owner downstream from the west pond is Canyon River Ranch and downstream from the east pond is John Etbauer.

I have included a check for \$600.00 to cover the application fee of \$300.00 for each irrigation pond. If you have any questions regarding this application please give me a call at the number listed above.

Sincerely,



Steve Westerbuhr

CONSTRUCTION SPECIFICATIONS AND QUALITY ASSURANCE PROCEDURES

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1. CONSTRUCTION SPECIFICATIONS

1.1 SITE PREPARATION

All areas scheduled for new earthwork shall be cleared of old equipment, trees, stumps, roots, brush and boulders. In the area of the irrigation pond berms, the upper 6 inches of the on-site soil material (topsoil) is not considered suitable for use as compacted fill used in the construction of the embankment or soil liner and shall be removed from proposed cut and fill areas. The topsoil material shall be either treated as waste and disposed of away from the proposed fill areas or stockpiled for later use as top dressing in grassed areas. After all unsuitable materials have been removed from the area of the new irrigation pond, the resulting ground surface shall be thoroughly scarified and compacted to a minimum depth of 6 inches before placement of additional compacted earth fill. All drainage channels crossing fill areas shall be cleaned and widened to accommodate compaction equipment. Such channels shall be backfilled with suitable material as specified for compacted earth fill. All waste material cleared from the areas to be cut and filled shall be discarded away from the cut or fill areas.

Unless specified by the Engineer, all materials to be used as fill shall be on site materials removed from planned excavations for site grading, ditches, pens, utilities, etc. shown on the plans. A sample of any additional alternative borrow materials should be submitted to the Engineer a minimum of 5 working days before its planned use for pertinent laboratory testing and approval. Any borrow areas outside the impoundment area shall be graded and left in a well-drained condition. The new holding pond area shall be excavated to the lines and grades as shown on the plans

1.2 LWCF POND EMBANKMENT

A core trench shall be excavated beneath the center of the dams to a minimum depth of 4 feet below the existing ground with a bottom width of 10 feet and sloping to the original ground surface with a maximum slope of 1.0 [H] : 1.0[V]). The core trench shall be backfilled and the remainder of the embankment shall be subsequently filled starting at the lowest point along the centerline of the embankment in horizontal layers not to exceed 6 inches in compacted depth before placement of a successive layer. Rocks larger than 2 inches in diameter shall not be used in the fill if their number and placement is such as to not allow adequate compaction.

Dewatering of the site (if necessary) during construction shall be done in a manner that optimizes the condition of the borrow area. Water shall not be allowed to pond over potential borrow material for long periods of time. Pumping of runoff water that collects in the retention pond construction site during construction (if necessary) shall be conducted in a timely manner to prevent saturation of large areas of materials to be excavated and re-used as fill. All runoff water shall be released to an acceptable drainage course as determined by the Engineer. Equipment to apply water to the soil and remove water from the borrow area shall be supplied by the Contractor. Care should be taken to prevent excessive drying of compacted fill before a successive layer is applied.

Compacted fill (excluding free draining granular materials) shall be placed at a minimum dry density corresponding to 95% of the Maximum Dry Density as determined by ASTM D 698-00a, Procedure A, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³) (600 kN-m/m³). All laboratory testing performed on soil shall be performed by a testing laboratory approved by the Engineer. The required minimum and maximum moisture content at the time of compaction for cohesive soils shall be 2% below and 2% above the optimum moisture content, respectively, as determined by ASTM D 698 and as needed for granular materials. The in place moisture and density of compacted fill will be randomly tested to ensure compliance with the above specifications.

1.3 PRIMARY SPILLWAY STRUCTURES

The primary spillway structures shall be installed to the lines and grades as shown on the plans. They shall be constructed of Corrugated Dual-Wall black plastic pipe and shall be hand back-filled and compacted a minimum of 3' from the pond interior finish line to preclude any seepage path along the pipe.

1.4 OTHER REQUIREMENTS

1.4.1 Seeding

All cut and fill areas above the crest of the permanent impoundment pool and the entire back slope of the embankment shall be seeded to perennial grass as specified by the plans.

1.4.2 Clean Up

During construction the Contractor shall keep the work site, areas adjacent to the work site, and access roads in an orderly condition. Any spillage or debris resulting from the Contractor's operations shall be immediately removed. Upon completion, all debris, etc. shall be removed from the area. All access roads, other than public, shall be graded, smoothed over and left in a well-drained condition prior to equipment removal.



2301 EAST RICE ST., SIOUX FALLS, SD 57103 • PHONE (605) 339-3722 • FAX (605) 332-5443

Settje Agri-Services & Engineering

4700 West Rock Creek Road
Raymond, NE 68428

February 11, 2005

Attn: Mr. Steve Westerbuhr

Subj: Subsurface Exploration
PJ Werdel and Sons
Ree Heights, South Dakota

Ref No. 05G-9397

We have completed the geotechnical explorations at the project site. The site is located in the NE 1/4 of Section 19 and the NE 1/4 of Section 20 both of which are in Township 109 N, Range 70 W of the 5th PM in Hand County, South Dakota. This evaluation was authorized in accordance with our proposal dated January 20, 2005.

The purpose of our exploration was to obtain a profile of the existing soil. This was accomplished by extending 10 borings to depths of approximately 20 to 50 feet below the existing grades. The boring locations were located by personnel from Settje Agri-Services, Inc.. The soil profiles are as shown on the attached boring logs.

Groundwater levels were checked at the completion of the explorations. The encountered water table elevations are indicated on the attached boring logs. Fluctuations in the groundwater table may occur for various reasons, e.g. variations in precipitation, evaporation, surface runoff, groundwater withdrawal and recharge.

The properties of the soil sample tested are as follows:

LOCATION	Atterberg Limits (LL/PL)	Standard Proctor Value
Boring 5 Sample 1	75/27	86.5 pcf @ 34.6 % moisture
Boring 6 Sample 2	51/24	94.6 pcf @ 26.5 % moisture

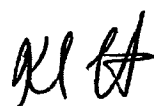
ATS assumes no liability for any future distress caused by construction techniques or materials testing (improper or lack of) not observed or performed by ATS. It would be logical for American Technical Services to provide the materials testing services since

we are most qualified to determine consistency of field conditions with the data used in our analysis.

If you have any questions about this report, or require additional consultation, observation, or testing services, please contact us. We look forward to working with you on future projects.

Sincerely,
AMERICAN TECHNICAL SERVICES, INC.

Kris Baum, EIT
Project Manager


Karl Liester, PE
Branch Manager



AMERICAN TECHNICAL SERVICES, INC.

BORING LOG NOTES

The number shown in "**BORING NUMBER**." refers to the approximate location of the same number indicated on the "Site Plan" as positioned in the field by pacing from property lines and/or existing features.

"**DESCRIPTION OF MATERIAL**" refers to the soil type as defined by "Method of Soil Classification". The soils were visually classified in the field and, where appropriate, classifications were modified by visual examination of samples in the laboratory and/or by appropriate test.

Water level, "**WL**" refers to the depth at which groundwater was noted in the boring. Groundwater levels may fluctuate due to seasonal variations and other factors.

"**N**" refers to the number of blows of a 140-pound weight, dropped 30 inches, required to advance a 2-inch-inside-diameter ring sampler a distance of 1 foot. Refusal to penetration is considered more than 50 blows per foot.

"**NO**" refers to the sample number. This is used to mark each sample obtained in the field for comparison and testing in the laboratory.

"**TYPE**" refers to the form of sample recovery wherein FA=Flight Auger Sample and SB=Split Barrel Sample.

"**METHOD OF DRILLING**" refers to the exploratory equipment used in the boring wherein HSA = hollow-stem auger.

These notes and boring logs are intended for use in conjunction with the purposes of our services defined in the text. Boring log data should not be construed as part of the construction plans or as defining construction conditions.

Boring logs depict our interpretations of subsurface conditions at the locations and on the date(s) noted. Variations in subsurface conditions and soil characteristics may occur between borings.

In general, terms and symbols on the boring logs conform with "Standard Definitions of Terms and Symbols Relating to Soil and Rock Mechanics" (ASTM D653).

Further definitions are provided in the GENERAL NOTES attached to this report.

GEOTECHNICAL BORING LOG

PROJECT TITLE: PROPOSED LAGOON: P.J. WERDEL & SONS: W SITE: HAND CO., S.D.

PROJ. NUMBER: 05G-9397

BORING NUMBER: 1

DEPTH IN FEET	DESCRIPTION OF MATERIAL surface elevation:	GEOLOGIC ORIGIN	SAMPLE DATA				LABORATORY TESTS				
			WL	N	NO	TYPE	W	D	LL	QU	
									PL		
1'	TOP SOIL: mostly fat clay, very dark brown, frozen (CH)	TOP SOIL									
	FAT CLAY: trace of gravel, brown, dry, weathered (CH)	GLACIAL TILL									
5'	FAT CLAY: gray, dry to moist, weathered (CH)	PIERRE SHALE			1	FA					
					2	FA					
					3	FA					
20'	END OF BORING				4	FA					
DATE: WATER TABLE MEASUREMENTS		DATE: 2-2-05									
		METHOD OF DRILLING: 3 1/4 HSA									
		CREW CHIEF: MIKE HUDSON									

GEOTECHNICAL BORING LOG

PROJECT TITLE: PROPOSED LAGOON: P.J. WERDEL & SONS: W SITE: HAND CO., S.D.

PROJ. NUMBER: 05G-9397

BORING NUMBER: 2

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GEOLOGIC ORIGIN	SAMPLE DATA				LABORATORY TESTS			
			WL	N	NO	TYPE	W	D	LL	QU
									PL	
1'	TOP SOIL: mostly fat clay, very dark brown, frozen (CH)	TOP SOIL								
	FAT CLAY: trace of gravel, brown, dry to moist, weathered (CH)	GLACIAL TILL								
					1	FA				
					2	FA				
					3	FA				
18'	FAT CLAY: gray, dry, weathered (CH)	PIERRE SHALE								
20'	END OF BORING				4	FA				
DATE:			WATER TABLE MEASUREMENTS				DATE: 2-2-05			
			METHOD OF DRILLING: 3 1/4 HSA							
			CREW CHIEF: MIKE HUDSON							

GEOTECHNICAL BORING LOG

PROJECT TITLE: PROPOSED LAGOON: P.J. WERDEL & SONS: W SITE: HAND CO., S.D.
 PROJ. NUMBER: 05G-9397 BORING NUMBER: 3

DEPTH IN FEET	DESCRIPTION OF MATERIAL surface elevation:	GEOLOGIC ORIGIN	SAMPLE DATA				LABORATORY TESTS			
			WL	N	NO	TYPE	W	D	LL PL	QU
1'	TOP SOIL: mostly fat clay, very dark brown, frozen (CH)	TOP SOIL								
	FAT CLAY: trace of gravel, brown, dry, weathered (CH)	GLACIAL TILL								
5'	FAT CLAY: gray, dry, weathered (CH)	PIERRE SHALE			1	BAG				
					2	FA				
					3	FA				
20'	END OF BORING									
DATE: WATER TABLE MEASUREMENTS		DATE: 2-2-05								
		METHOD OF DRILLING: 3 1/4 HSA								
		CREW CHIEF: MIKE HUDSON								

GEOTECHNICAL BORING LOG

PROJECT TITLE: PROPOSED LAGOON: P.J. WERDEL & SONS: W SITE: HAND CO., S.D.
 PROJ. NUMBER: 05G-9397 BORING NUMBER: 4

DEPTH IN FEET	DESCRIPTION OF MATERIAL surface elevation:	GEOLOGIC ORIGIN	SAMPLE DATA				LABORATORY TESTS			
			WL	N	NO	TYPE	W	D	LL PL	QU
1'	TOP SOIL: mostly fat clay, very dark brown, frozen (CH)	TOP SOIL								
	FAT CLAY: trace of gravel, brown, moist, weathered (CH)	GLACIAL TILL								
					1	FA				
					2	FA				
					3	FA				
18'	FAT CLAY: gray, dry, weathered (CH)	PIERRE SHALE								
20'	END OF BORING				4	FA				
DATE: WATER TABLE MEASUREMENTS		DATE: 2-2-05								
		METHOD OF DRILLING: 3 1/4 HSA								
		CREW CHIEF: MIKE HUDSON								

GEOTECHNICAL BORING LOG

PROJECT TITLE: PROPOSED LAGOON: P.J. WERDEL & SONS; W SITE: HAND CO., S.D.

PROJ. NUMBER: 05G-9397

BORING NUMBER: 5

[illegible]

AMERICAN TECHNICAL SERVICES (605) 339-3722

55

GEOTECHNICAL BORING LOG

PROJECT TITLE: PROPOSED LAGOON: P.J. WERDEL & SONS: W SITE: HAND CO., S.D.
 PROJ. NUMBER: 05G-9397 BORING NUMBER: 5B

DEPTH IN FEET	DESCRIPTION OF MATERIAL surface elevation:	GEOLOGIC ORIGIN	SAMPLE DATA				LABORATORY TESTS			
			WL	N	NO	TYPE	W	D	LL PL	QU
27'	FAT CLAY: gray, dry, weathered (CH)	PIERRE SHALES	▼ ≡		6	FA				
37.5'	FAT CLAY: gray, dry, unweathered (CH)				7	FA				
40'	END OF BORING									
DATE: WATER TABLE MEASUREMENTS			DATE: 2-2-05							
2-1-05 27'			METHOD OF DRILLING: 3 1/4 HSA with 3" CSS							
2-2-05 5.5'			CREW CHIEF: MIKE HUDSON							

Schlaak, Karen

From: Gronlund, Eric
Sent: Friday, June 17, 2005 11:06 AM
To: Schlaak, Karen
Cc: Schaal, Tim
Subject: PJ Werdel

We received two applications for irrigation from two yet to be constructed irrigation dams in Hand County. The application came in one binded packet (we'll need to break them apart). I contacted Settje Agri-Service and Engineering with the following issues. He indicated he'd submit an addendum to the applications.

Applications were submitted on non-irrigation forms (I told him we'd accept them if the addendum properly covered the items. The fee is correct so I had Glenda do up two receipts.

Need diversion rate from each dam for irrigation (I believe it will be 850 gpm)
Need number of acres irrigated (he's just going to put down 160 acres)
Need quarter-quarter breakdown of irrigated lands
Need signed map showing acres to be irrigated
Submitted map of dam locations must be signed

Asked how they came up with the dam category classification. He's going to provide a paragraph of explanation
Asked whether they did flood routing. He said they did not but that the design for 25 year event. He's going to include a paragraph of explanation.

I did not send him a letter (at this point) as he said he'd get us the necessary information.

6/27/2005



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

July 14, 2005

Steve Westerbuhr
Settje Agri-Services & Engineering
4700 W. Rock Creek Rd.
Raymond, NE 68428

I'm writing as a follow up to the phone conversation we had yesterday regarding the plans and specifications for the two dams associated with Water Permit Nos. 6633-3 and 6634-3 for PJ Werdel & Sons, Inc. The follow is a summary of the items we discussed.

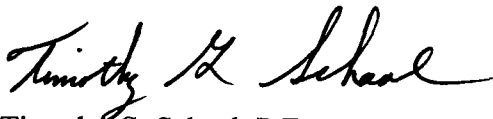
1. In your cover letter dated June 22, 2005 you reference that both dams were designed for 50-year, 24 hour events; however, the Waterway Capacity Calculations data indicates a return period of 25 years was used. You indicated that you thought the calculations were correct and only needed to change the return period figure, however, you would double check the calculations along with sending me copies of your reference material for these calculations.
2. We discussed using 3 feet of freeboard on the emergency spillways for both dams instead of only 2 feet as shown on the plan sheets and stage storage data. Along with that, we discussed the fact that the elevations for top of dam, secondary spillway and primary spillway for the West Dam on the plan sheet Cross Section BB and the elevations used on the stage storage data page do not match up. You indicated the elevations on the stage storage page should be the correct elevations; however, to reflect the 3 foot freeboard change you will need to submit new cross sections and stage storage data for both dams.
3. Instead of using the HDPE pipe as the primary spillway risers, we discussed using a concrete riser on both dams similar to what I see on NRCS designed dams in South Dakota. Enclosed is a copy of a set of NRCS plans illustrating what I would like to see incorporated in your design and shown on the plan sheets. I checked with the NRCS and they get the pre-cast risers from South Dakota Concrete Products in Rapid City (605-343-1450).
4. You indicated you would send size and elevation information on the breach and/or diversion ditch from the east dam transferring that drainage over to the west dam.

Page 2
Steve Westerbuhr
July 14, 2005

5. And finally, we discussed the existing dam just upstream of the West Dam. You indicated that you did not include the upper dam's storage capacity in the Water Permit Application since it will be unavailable to use with the pump being located in the lower reservoir. My concern with this is that with the additional drainage area diverted into the upper dam from the east, the existing spillway located at the west end of the upper dam will eventually eroded to where both reservoirs are connected or there may be times during low runoff years that the Werdel's may want the two reservoirs connected. You indicated you would talk this over with Mr. Werdel and maybe try to connect the reservoirs with an additional pipe. If so, that detail should be included on the plan sheets and the storage capacity for Water Permit Application No. 6634-3 (West Dam) should be changed to include both reservoirs.

Thank you for discussing these matters with me and please let me know if you have any questions. Also please let me know when you will be up here on site so I could come out and look things over with you.

Sincerely,



Timothy G. Schaal, P.E.
Natural Resources Engineer Specialist
Water Rights Program
(605) 773-3352

enclosure

c: PJ Werdel & Sons, Inc.

Water Permit Application No. 6633-3
 PJ Wardel & Sons Inc.
 East Dam

Top of Dam Elev. - *1778
 2nd Spillway Elev. - 1775
 P. Spillway Elev. - 1773
 DIS Toe Elev. - 1750

Ht. = 28 ft.

Cat. 3 - Low Hazard Dam

* Elevations are
Local Datum

Normal Storage Capacity - 273 Ac.-Ft
 Int. Storage Capacity - 346
 Max. Storage Capacity - 478

Int. Capacity x Eff. Ht. = $346 \times 25 = 8650 > 3000 \therefore$ 50 yr
Minimum Spillway Design

From USGS WRI 98-4055 "Tech. for Est. Peak Flood ... in 50"
 $CA = 4574 \text{ ac.} = 7.15 \text{ mi.}^2$
 Region B $P_H = 0.80$

$$Q_{50} = 206 CA^{.606} P_H^{.728}$$

$$= 206 (7.15)^{.606} (0.80)^{.728}$$

$$= 206 (3.2939) (0.8501)$$

$$= \underline{577 \text{ cfs}}$$

$$Q_{100} = 275 CA^{.625} P_H^{.742}$$

$$= 275 (7.15)^{.625} (0.80)^{.742}$$

$$= 275 (3.4193) (0.8474)$$

$$= \underline{800 \text{ cfs}}$$

Secondary Spillway Flow

$$Q = CLH^{3/2}$$

$$C = 2.6$$

$$L = 80$$

$$H = 3$$

$$= 2.6 (80)(3)^{1.5}$$

$$= \underline{1080 \text{ cfs}}$$

Settje Ag used the Rational Method $Q = CIA$ to calc. a
 $Q_{50 \text{ peak}} = 1509 \text{ cfs}$ and a sloped Secondary w/ capacity = 1669 cfs

Section 74:02:08:09

1. Topo Map - OK
2. Dam Axis Profile - OK
3. Dam Max X-Sec. - OK
4. Area Capacity - OK
5. Outlet Details - OK
6. Spillway Rating - OK
7. Spillway Details - OK
8. Spec. sth. NRCS - OK
9. LPP NIA Cat. 3 - OK

NRCS Annual Yield

$$DA = 4574 \text{ ISO} = 2 \text{ CN} = 78$$

$$80\% \text{ chance} = 0.20$$

$$0.20 \times 4574/12 = \underline{76 \text{ Ac.-Ft.}}$$

$$50\% \text{ chance} = 0.50$$

$$0.50 \times 4574/12 = \underline{190 \text{ Ac.-Ft.}}$$

$$10\% \text{ chance} = 2.3$$

$$2.3 \times 4574/12 = \underline{876 \text{ Ac.-Ft.}}$$

SETTJE

Agri-Services & Engineering

4700 W. Rock Creek Rd.
Raymond, Ne 68428
office (402) 783-2100
fax (402) 783-2104

Dean Settje

Dale Leffers P.E.

August 19, 2005

Timothy Schaal
Joe Foss Building
523 East Capital Avenue
Pierre, SD 57501-3182

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Reference:

Irrigation Pond Addendum
PJ Werdel & Sons, Inc.
Part of S19 & 20, T109N, R70W - Hand County

Dear Mr. Schaal,

This addendum is in response to your comment letter dated July 14, 2005. The following comments and the enclosed information have been provided for clarification.

1. I have changed the return period to 50 year and the calculations were correct. I have also included a copy of the IDF curves used for the calculations.
2. The spillways for both ponds now provide 3 feet of depth.
3. After talking with South Dakota Concrete Products about their concrete risers, I am not comfortable with the joint from concrete to HDPE or the trash rack that they can provide. Therefore, I have proposed using the HDPE risers with a concrete case poured around them.
4. I have provided cross sections and capacity calculations for the diversion ditch which transfers water over to the west dam.
5. The management of this facility would like to leave the existing dam as it is today to help settle any sediment out before it reaches the new irrigation pond. They will place riprap in the existing spillway to provide erosion protection.

If you have any further questions regarding this application please give me a call at the number listed above.

Sincerely,



Steve Westerbuhr

WATERWAY CAPACITY CALCULATIONS $Q=CiA$

EAST DRAINAGE AREA

CAPACITY REQUIRED

DRAINAGE AREA	<u>4574</u>	<i>acres</i>
RETURN PERIOD	<u>50</u>	<i>years</i>
RUNOFF COEFFICIENT =C	<u>0.44</u>	

HEIGHT OF MOST REMOTE PT	<u>170.0</u>	<i>ft</i>
DISTANCE FROM MOST REMOTE PT	<u>32,825</u>	<i>ft</i>
MINUTES TO CONCENTRATION	<u>177.7</u>	<i>min</i>
FACTOR =2 GRASS, 1.5 CULTIVATED	<u>1.5</u>	
ACTUAL MINUTES TO CONCENTRATION	<u>266</u>	<i>min</i>
INTENSITY=I	<u>0.75</u>	<i>in/hr</i>

$Q=CiA$	<u>1509</u>	<i>cfs</i>
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SPILLWAY CAPACITY

LEFT SLOPE OF SIDE	<u>10.00</u>	<i>:1</i>
RIGHT SLOPE OF SIDE	<u>10.00</u>	<i>:1</i>
WIDTH AT BOTTOM	<u>80.00</u>	<i>ft</i>
WIDTH AT TOP	<u>120.00</u>	<i>ft</i>
DEPTH	<u>2.00</u>	<i>ft</i>
SLOPE OF DITCH	<u>0.01000</u>	<i>ft/ft</i>
CHANNEL AREA	<u>200.00</u>	<i>sq ft</i>
WET PERIMETER	<u>120.20</u>	
HYDRAULIC RAD	<u>1.66</u>	
n	<u>0.025</u>	

Q	<u>1669</u>	<i>cfs</i>
PERCENT CAPACITY	<u>111%</u>	

MAXIMUM PIPE FLOW CALCULATIONS $V=(2g\Delta Z/(1+fL/D+\Sigma K_L))^{1/2}$; $Q=VA$

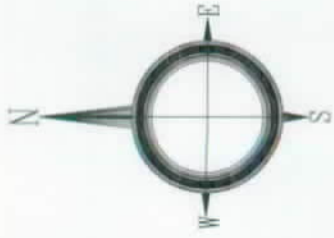
Q=flowrate; A=inside pipe area; V=velocity in pipe; g=acceleration of gravity; ΔZ =total head; f=friction losses due to pipe
L=pipe length; D=inside pipe diameter; ΣK_L =total minor losses from entrances, exits, valves, etc.

L, Pipe Length (ft)	<u>110</u>	Pipe Material	<u>HDPE</u>
D, Inside Pipe Diameter (in)	<u>36</u>	ϵ, Roughness (Table 1)	<u>5.0E-06</u>
Inside Pipe Area (in²)	<u>1017.9</u>	Re, Reynold's Number	<u>6.54E+06</u>
ΔZ, Total Head (ft)	<u>23</u>	Turbulent/Laminar?	<u>Turbulent</u>
ΣK_L, Total Minor Losses	<u>0.8</u>	V, Max. Velocity (ft/s)	<u>26.36</u>
Seed Friction Factor	<u>0.009</u>	Q, Max. Flowrate (cfs)	<u>186.33</u>
f, Friction Factor (calculated)	<u>0.009</u>	Q, Max. Flowrate (gpm)	<u>83623</u>
		% of Required Capacity	<u>12.3%</u>

**Stage Storage Data
East Irrigation Pond**

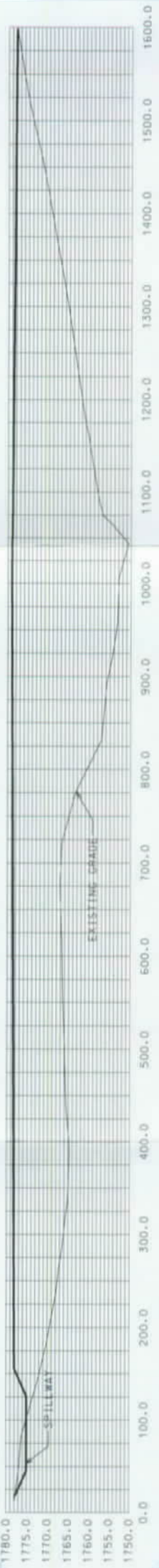
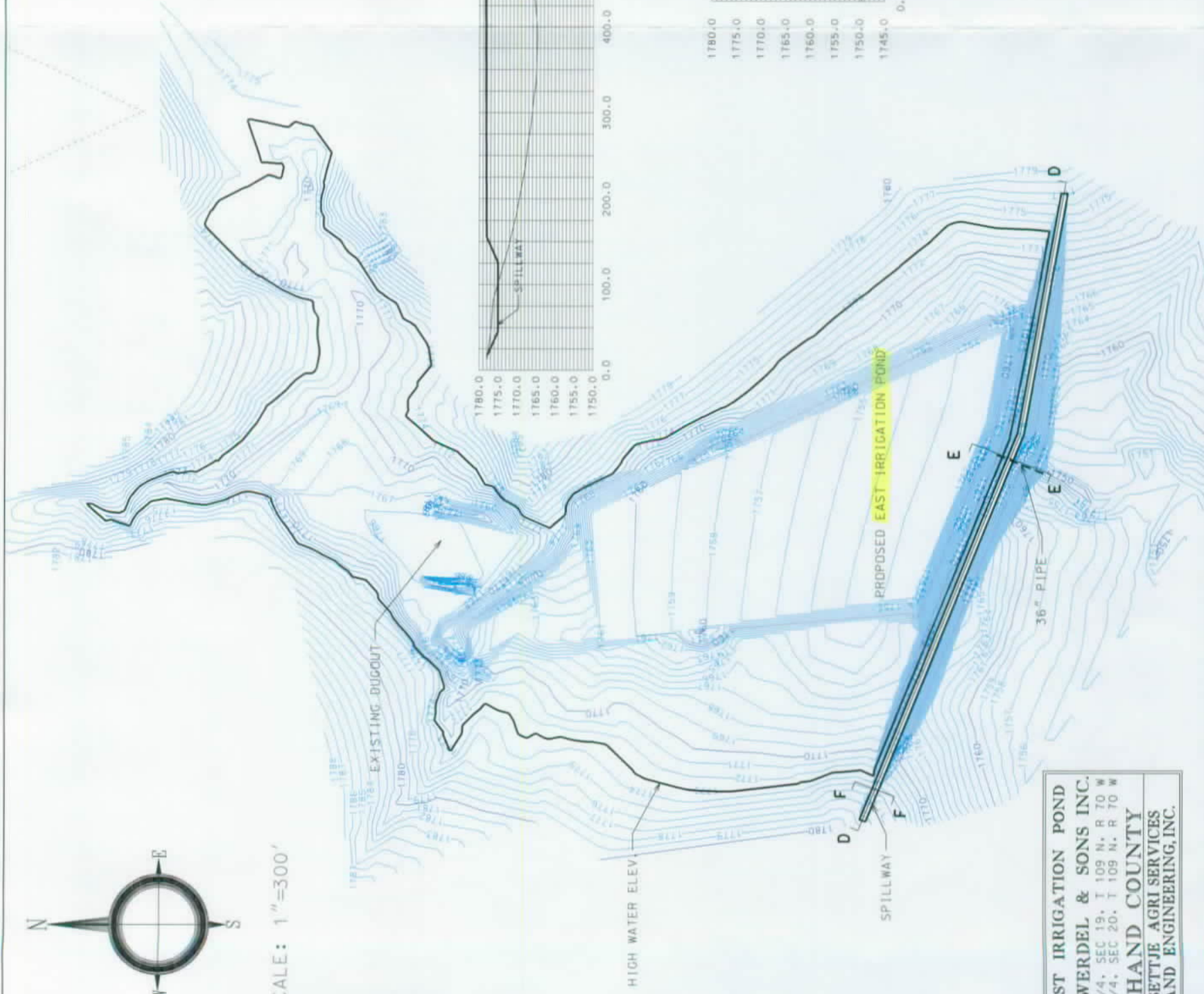
	Depth		Area Sq. ft	Volume			
	Elev.	From Bottom		Cubic ft.	Acre ft.	Acre in.	Gallons
Top of Berm	1778.0	26	2,303,643	20,841,624	478.5	5741.5	155,895,348
	1777.0	25	2,111,785	18,787,194	431.3	5175.5	140,528,211
	1776.0	24	1,928,633	16,862,337	387.1	4645.3	126,130,281
Emergency Spillway	1775.0	23	1,754,978	15,067,809	345.9	4150.9	112,707,211
	1774.0	22	1,591,461	13,406,040	307.8	3693.1	100,277,179
Primary Spillway	1773.0	21	1,438,577	11,894,742	273.1	3276.8	88,972,670
	1772.0	20	1,296,674	10,520,847	241.5	2898.3	78,695,936
	1771.0	19	1,165,952	9,281,574	213.1	2556.9	69,426,174
	1770.0	18	1,046,468	8,170,038	187.6	2250.7	61,111,884
	1769.0	17	938,127	7,180,461	164.8	1978.1	53,709,848
	1768.0	16	840,691	6,295,293	144.5	1734.2	47,088,792
	1767.0	15	753,772	5,496,093	126.2	1514.1	41,110,776
	1766.0	14	676,839	4,786,236	109.9	1318.5	35,801,045
	1765.0	13	593,979	4,170,690	95.7	1149.0	31,196,761
	1764.0	12	538,825	3,603,555	82.7	992.7	26,954,591
	1763.0	11	495,690	3,079,944	70.7	848.5	23,037,981
	1762.0	10	461,537	2,596,266	59.6	715.2	19,420,070
	1761.0	9	432,661	2,140,236	49.1	589.6	16,008,965
	1760.0	8	404,971	1,715,040	39.4	472.5	12,828,499
	1759.0	7	374,369	1,332,099	30.6	367.0	9,964,101
	1758.0	6	337,223	994,572	22.8	274.0	7,439,399
	1757.0	5	290,953	703,458	16.1	193.8	5,261,866
	1756.0	4	234,705	459,945	10.6	126.7	3,440,389
	1755.0	3	170,138	265,167	6.1	73.0	1,983,449
	1754.0	2	102,304	120,717	2.8	33.3	902,963
	1753.0	1	40,630	30,807	0.7	8.5	230,436
	1752.0	0	0	0	0.0	0.0	0

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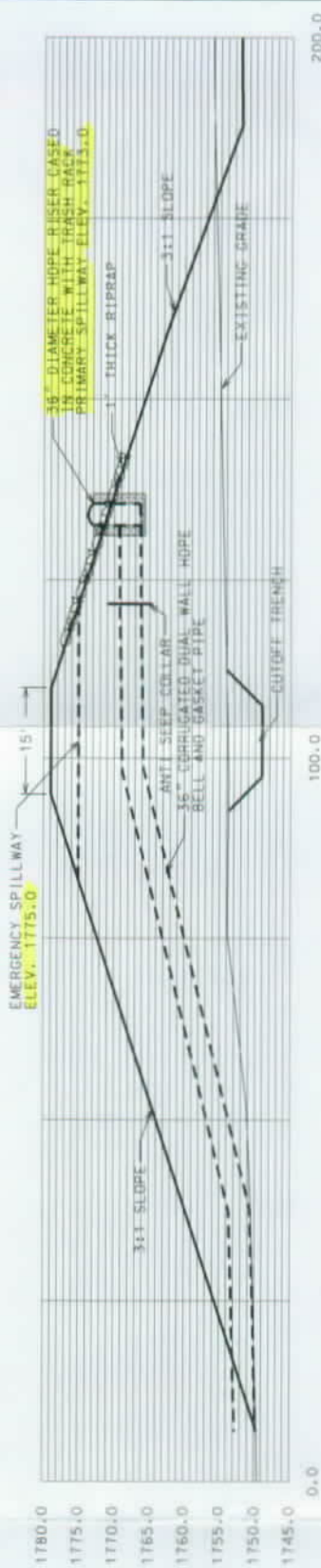


SCALE: 1"=300'

EAST IRRIGATION POND
PJ WERDEL & SONS INC.
NE 1/4, SEC 19, T 109 N, R 70 W
NE 1/4, SEC 20, T 109 N, R 70 W
HAND COUNTY
SETTJE AGRI SERVICES
AND ENGINEERING, INC.



CROSS SECTION DD



CROSS SECTION EE



CROSS SECTION FF





**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

PJ Werdel & Sons Inc.
21711 345th Ave.
Ree Heights, SD 57371

Dear Mr. Werdel:

We have reviewed the plans and specifications for your dam projects located in the SW ¼ of Section 18 and the SW ¼ of Section 20-T109N-R70W, in Hand County. The plans and specifications for your dams are approved. Approval of the plans and specifications does not authorize construction of the dams. The construction of the dams may not begin until Water Permit Nos. 6633-3 and 6634-3 are approved.

Our review was to determine compliance with the requirements of the Water Management Board Safety of Dams Rules, Chapter 74:02:08. Approval of these plans and specifications does not release you, as owner of the dams, from the responsibility for operating and maintaining the dams in good repair to ensure the safety of the dams.

The Werdel West Dam will be classified as a small size Category 3, Low Hazard dam with a dam height of 40 ft. and a normal storage capacity of 196 acre-feet and a maximum storage capacity of 265 acre-feet. The Werdel East Dam will be classified as a small size Category 3, Low Hazard dam with a dam height of 28 ft. and a normal storage capacity of 273 acre-feet and a maximum storage capacity of 478 acre-feet.

If you have any questions, please feel free to contact us.

Sincerely,

Timothy G. Schaal, P.E.
Natural Resources Engineer Specialist
for Garland Erbele, Chief Engineer
Water Rights Program
(605) 773-3352

c: Steve Westerbuhr, Settje Agri-Services

Schaal, Tim

From: Gronlund, Eric
Sent: Monday, September 26, 2005 11:07 AM
To: Schaal, Tim
Subject: Werdel applications

John Etbauer had previously called in about Werdel's applications. I sent him your reports and the maps. He called back in stating he has a dam below the proposed dam on Sand Creek. Your report must say there are no water rights below the Werdel dam to the Missouri River. He thought he had a water right but in checking I could only find a cancelled WR he once received from a well. I then check the Location Notice database. He said his dam is in the NW 1/4 Section 29. I found the attached LN for the approximate location but have no idea if this is construct on the creek.

I told him you were out of town but that when you got back you'd check into it. He has until Oct. 3rd to petition and cause a hearing. Mr. Etbauer is an elderly gentle who stated he does not want to cause trouble. He just want to make sure he gets water to his dam. He is in assisted living at Miller and can be reached at 853-0302. If no one answer press 1 and you'll get the main desk who can track him down.

9/29/2005

Location Notice Report

09/30/2005

Ln No 29019 Owner JOHN ETBAUER

Business

County	HAND	Legal	NESW 29-T109N-R70W	Date Reced	12/03/1963						
Af Total	1.4	Af1	1.4	Af2	0.0	Af3	0.0	Af4	0.0	Af5	0.0
		Af6	0.0	Af7	0.0	Af8	0.0	Af9	0.0		

Ln No 29936 Owner JOHN ETBAUER

Business

County	HAND	Legal	SESW 29-T109N-R70W	Date Reced	05/27/1964						
Af Total	1.0	Af1	1.0	Af2	0.0	Af3	0.0	Af4	0.0	Af5	0.0
		Af6	0.0	Af7	0.0	Af8	0.0	Af9	0.0		

LOCATION NOTICE--DRY DRAW

HAND 39736
County Dry Draw No.

I, John Etbauer, of
Name

Ree Heights, SD
Address Town County

Owner of the following described land, do hereby notify the Water
owner or operator

Resources Commission of the State of South Dakota and all others concerned that I am exercising my right under Section 61.0138 of Chapter 130 of the Session Laws of 1955 as amended, for construction of a Dry Draw dam for the purpose of storing (storing, diverting, or both) flood waters for livestock purposes.

The following data is presented in compliance with Section 61.0138, as amended:

(1) Dates of

(a) This application April 28, 1964 STATE WATER RESOURCES COMM.
(b) Posting at construction site PIERRE, SOUTH DAKOTA

(2) Legal description of the land upon which the dam is located. SE $\frac{1}{4}$ of the NW $\frac{1}{4}$ of Section 29, Township 109, Range 70. The dam is located 97 rods S and 124 rods E of the NW corner of said Section (N.S.E.W.) (N.S.E.W.) (NW,NE,SE,SW)

in the County of HAND

The owner of the land is John Etbauer Ree Heights, SD
Name Address

- (3) Amount of water claimed for all purposes each year 2.0 acre feet.
(4) Storage capacity of reservoir 1.0 acre feet.
(5) Surface area of reservoir .19 acres.
(6) Size of watershed above dam 100 acres.

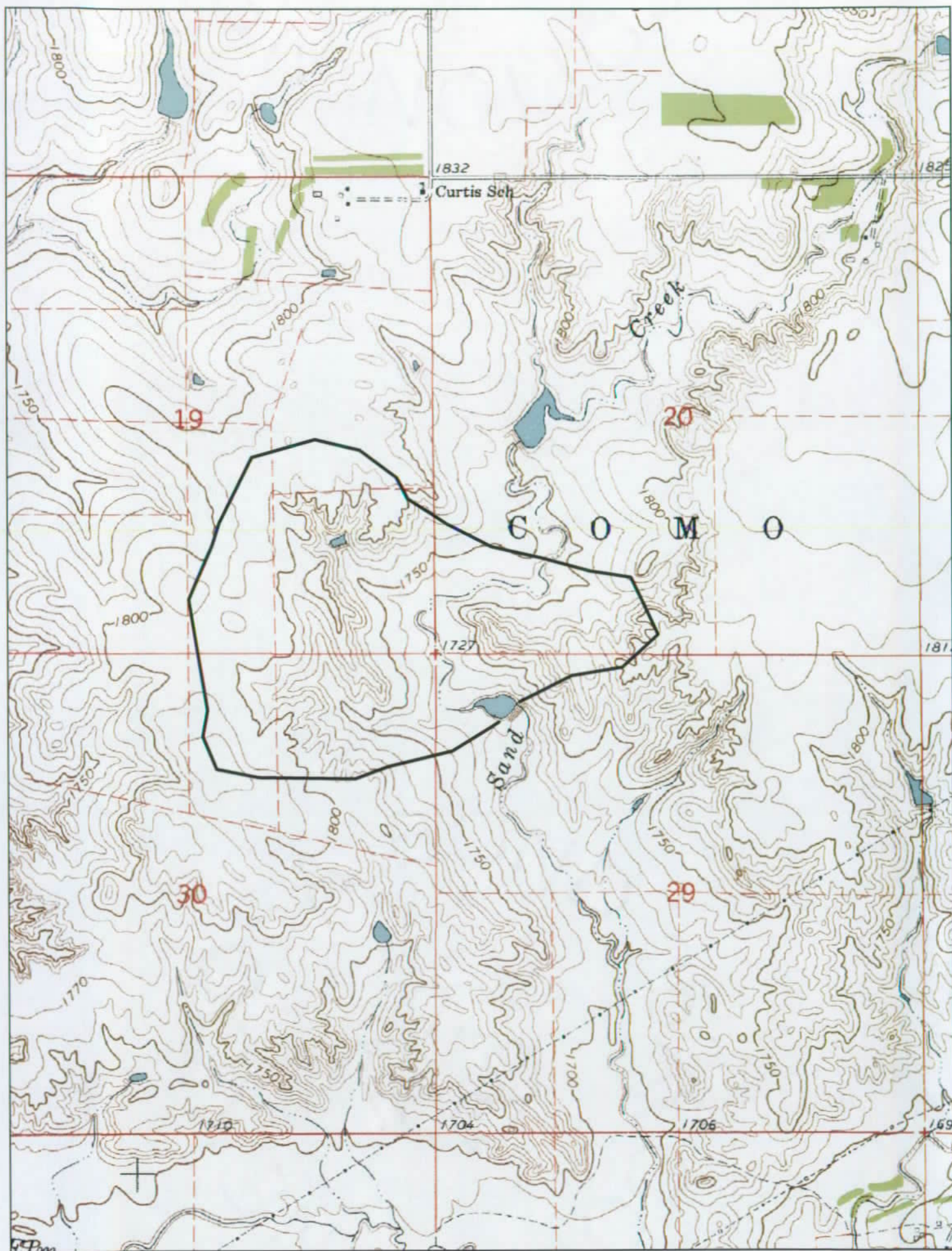
(Over)



STATE WATER RESOURCES COMM.
PIERRE, SOUTH DAKOTA

7/15/64
3





REPORT ON
WATER PERMIT APPLICATION No. 6633-3
PJ Werdel & Sons Inc.
August 29, 2005

Water Permit Application No. 6633-3 has been filed by PJ Werdel & Sons Inc. to impound 273 acre-feet of water by constructing a dam located in the SW ¼ of Section 20-T109N-R70W on Sand Creek, in Hand County. Water from the dam will be blended with effluent from a wastewater lagoon from a cattle feeding operation to irrigate 160 acres of land located in the SW ¼ of Section 17-T109N-R70W.

Discussion:

The dam will be classified as a small size, Category 3, Low Hazard dam. Settje Agri-Services & Engineering has designed the dam. The plans and specifications have been reviewed and will be approved; however, construction of the dam can not begin until Water Permit Application No. 6633-3 is approved.

The dam will be 28 feet high with a normal storage capacity of 273 acre-feet with a reservoir level at the primary spillway elevation, and a maximum storage capacity of 478 acre-feet with a reservoir level at the top of dam elevation. A dam of this size and hazard classification is required to have a minimum spillway design capable of passing a 50-year frequency event.

The dam has a drainage area of 4574 acres or 7.15 square miles. The dam is designed to have a 36 inch diameter HDPE drop inlet structure with 5.0 feet freeboard as the primary spillway, and an 80 foot wide earthcut secondary spillway with 3.0 feet of available freeboard. A 50 year frequency event produces a peak runoff of 577 cfs and a 100 year frequency event produces a peak runoff of 800 cfs. The 80 foot wide secondary spillway has a capacity of approximately 1080 cfs.

The annual yield for this drainage area with an 80 percent chance of occurrence, or 8 out of 10 years, is expected to be 76 acre-feet. The annual yield with a 50 percent chance of occurrence, or 1 out of 2 years, is expected to be 190 acre-feet and the annual yield with a 10 percent chance, or 1 out of 10 years, is expected to be 876 acre-feet.

The Werdel East Dam will be located in the SW ¼ of Section 20-T109N-R70W on Sand Creek about 2.0 miles upstream of the confluence of Sand Creek and Elm Creek and about 18 miles upstream of the confluence of Elm Creek and Crow Creek, which eventually empties into Lake Francis Case on the Missouri River about 6 miles downstream of the Big Bend Dam at Fort Thompson. There are no existing Water Permits/Rights located between the proposed dam and Lake Francis Cass.

Conclusions:

1. Water Permit Application No. 6633-3 should be approved since unappropriated water is available and approval should not have any adverse effect on existing Water Permits/Rights.
2. If approved, the low flow bypass requirement for downstream domestic use should be a qualification on Water Permit Application No. 6633-3.



Timothy G. Schaal, P.E.
Natural Resources Engineer Specialist



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

**RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 6633-3, PJ Werdel & Sons, Inc.**

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. 6633-3, PJ Werdel & Sons, Inc., 21711 345th Avenue, Ree Heights, SD 57371.

The Chief Engineer is recommending APPROVAL of Application No. 6633-3 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. Water Permit No. 6633-3 authorizes a dam with a storage capacity of 273 acre feet of water and sufficient water annually to maintain the water level to the outlet elevation.
2. Low flows as needed for downstream domestic use, including livestock water and prior water rights must be by-passed.
3. The system shall be designed to prohibit the flow of liquid from the livestock waste pond back towards the irrigation dam. Depending on the design, this may require installation of a check valve or similar device.
4. This Permit is approved subject to the irrigation water use questionnaire being submitted each year.

See report on application for additional information.

Garland Erbele, Chief Engineer
September 8, 2005

Line rate: _____

this 22 day of 9 2005
Paula L McFarlane
 Paula L McFarlane, Notary Public
 My Commission expires: 10-11-10

WATER RIGHTS
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Instruction to Newspaper - Publish first Notice on September 14, 2005 with the second publication 7 days later. The applicant is responsible for payment.

NOTICE OF APPLICATION NOS. 6633-3 and 6634-3 to Appropriate Water

Notice is given that P J Werdel & Sons Inc., 21711 345th Ave, Ree Heights SD 57371 have filed the following applications for a water permit.

Application No. 6633-3 proposes to appropriate 1.89 cubic feet of water per second (cfs) from a dam (273 acre feet storage capacity) located in the SW ¼ Section 20 to irrigate 160 acres located in the SW ¼ Section 17; all in T109N-R70W. The dam is located on Sand Creek. Water from the dam may be blended with effluent from a wastewater lagoon from a cattle feeding operation prior to application to the land.

Application No. 6634-3 proposes to appropriate 1.89 cfs from a dam (196 acre-feet storage capacity) located in the SE ¼ SW ¼ Section 18 to irrigate 160 acres located in the NE ¼ Section 18; all in T109N-R70W. The dam is located on an unnamed tributary to Elm Creek. Water from the dam may be blended with effluent from a wastewater lagoon from a cattle feeding operation prior to application to the land.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application Nos. 6633-3 and 6634-3 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 applications, as recommended, unless a petition is filed opposing the applications or the applicant files a petition contesting the Chief Engineer's recommendation. If a petition opposing the applications or contesting the recommendations is filed, then a hearing will be scheduled and the Water Management Board will consider the applications. Notice of the hearing will be given to the applicant and any person filing a petition.

Any person interested in opposing or supporting these applications or recommendations 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 October 3, 2005.

The petition may be informal, but must include a statement describing the petitioner's interest in the applications, the petitioner's reasons for opposing or supporting the applications, 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.



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

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

September 9, 2005

PJ Werdel & Sons Inc.
21711 345th Ave
Ree Heights SD 57371

Dear Mr. Werdel:

Water Permit Application Nos. 6633-3 & 6634-3 for irrigation use has been examined and found to comply with the South Dakota Water Laws and applicable rules. A notice has been sent to the Publisher of the Miller Press printed at Miller, SD (Ph # 605-853-3375). You will need to contact the newspaper and authorize publication of this notice. For your information, a copy of the notice, the recommendations of the Chief Engineer and the reports on the applications 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

enclosures

cc: Steve Westerbuhr, Settje Agri-Service, 4700 W Rock Creek Rd., Raymond NE 578428

NOTE: If you plan to contest any part of the Chief Engineer's recommendations, 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 applications.



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 9, 2005

Miller Press
PO Box 196
Miller SD 57362-0196

ATTENTION: Legal Public Notice

Enclosed is a Notice on Application Nos. 6633-3 & 6634-3 to Appropriate Water to be published twice. Please publish the first notice on September 14, 2005 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 P J Werdel & Sons Inc., 21711 345th Ave, Ree Heights SD (Ph # 605-943-5609).

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. 6633-3 & 6334-3

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

Date _____

We are in receipt of your letter of September 9, 2005 enclosing Notice to Appropriate Water by Application Nos. 6633-3 & 6634-3 which was first published in our issue of _____. ENCLOSED IS A COPY OF THIS FIRST PUBLICATION.

Name

Newspaper



NOV 03 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

P J Werdel & Sons Inc
21711 34th Ave
Ree Heights SD 57371

Dear Mr. Werdel:

Enclosed is Water Permit No. 6633-3 & 6634-3 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



6633-3
DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

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

January 24, 2012

NOTICE

TO: P J WERDELL & SONS INC, 21711 345TH AVE, REE HEIGHTS, SD 57371
FROM: Ron Duvall, Natural Resources Engineer
for Garland Erbele, Chief Engineer
Water Rights Program
SUBJECT: Reporting Requirement for 2011 Irrigation Questionnaire(s)

Our records indicate that the 2011 Irrigation Questionnaire(s) has not been submitted for Permit No(s) 6633-3, 6634-3. The request for the Questionnaire was dated October 14, 2011. The Water Management Board has directed that owners of water permits who have not submitted the 2011 Irrigation Questionnaire(s) be given notice of permit violation and a hearing to be held by the Board. The hearing is to determine what action is to be taken for violation of Water Permit No(s) 6633-3, 6634-3 qualification:

"This permit is approved subject to the Irrigation Water Use Questionnaire being submitted each year."

The hearing will be held at **10:00 am, March 7, 2012** in the Floyd Matthew Training Center, Joe Foss Building, 523 E Capitol Avenue, Pierre, SD and will be conducted pursuant to SDCL 46-1-12, 46-1-14, 46-2-9, 46-2-11 and 46-2-17. These are contested case hearings pursuant to Chapter 1-26. According to SDCL 46-1-12, the Board may suspend a permit for a period of up to one year for the first violation of a permit qualification or up to three years for a second violation, or cancel a permit for a third violation. Following the hearing, the Water Management Board can:

1. Suspend or cancel Permit No(s) 6633-3, 6634-3 in accordance with applicable provisions of SDCL 46-1-12;
2. Postpone any action; or
3. Take no action.

The hearing is an adversary proceeding. The permit owner has the right to be present or to be represented by a lawyer. These and other due process rights will be forfeited if they are not exercised. Decisions of the Board may be appealed to the Circuit Court and the State Supreme Court as provided by law.

If the questionnaire(s) is (are) received in this office on/or before **March 2, 2012**, you will no longer be in violation of your permit and your name will be removed from the Board agenda. Enclosed are additional questionnaire(s) for your use. If you have questions or need assistance, please contact Genny McMath at (605) 773-3352 or email at genny.mcmath@state.sd.us. If you prefer, you can complete the questionnaire online at the following link: <http://denr.sd.gov/iq.aspx>

NOTE: Please contact the Water Rights Program, Joe Foss Building, 523 E Capitol, Pierre, SD (605-773-3352) to assure access to the meeting room for the handicapped or to obtain an interpreter for the hearing impaired.



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

February 7, 2012

6633-3
6634-3

P J Werdell & Sons Inc
21711 345th Ave
Ree Heights SD 57371

Dear Sirs:

I am writing to acknowledge receipt of your 2011 irrigation questionnaires.

You may disregard the January 24, 2012, "Notice" concerning reporting requirements for Water Permit Nos. 6633-3 and 6634-3. The information was received in our office prior to the Water Management Board meeting and your name has been deleted from the agenda.

If you have any questions, please contact me.

Sincerely,

A handwritten signature in black ink that reads "Genny McMath". The signature is written in a cursive, flowing style.

Genny McMath
Environmental Scientist
Water Rights Program
(605) 773-3352
email: genny.mcmath@state.sd.us

Report of Examination of Works and/or Application of Water to Beneficial Use For Permit No. 6633-3

I have this day, August 8, 2024, made a thorough examination of the water use system constructed by PJ Werdel & Sons of 21711 345th Ave, Ree Heights, SD 57371 holder of Permit No. 6633-3, bearing the priority of August 24, 2005, authorizing the diversion of 1.89 cu. ft. per second and/or the storage of 273 acre-feet of the waters of surface water for irrigation purposes, in Hand County.

Inspection contact relationship **Kyle Werdel, operator**

A. Works used to divert the water:

Dam Information:

- 1) Height to crest 25 feet
- 2) Height to primary spillway 21 feet
- 3) Height to secondary spillway 23 ft
- 4) Crest width 15 feet
- 5) Crest length 1450 feet
- 6) Spillway length 150 feet
- 7) Spillway width 80 feet
- 8) Approx. storage 273 ac-ft
- 9) Approx. storage to crest 431 ac-ft
- 10) Date constructed: 2009

Pump:

- 1) Make Berkley
- 2) Model BP4EPBM
- 3) Size 8
- 4) Capacity 750 GPM

Motor:

- 1) Make Marathon
- 2) Model No. DM326TTDP82248DL
- 3) Horsepower rating 60 hp

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

- 1) Type PVC
- 2) Size 8 inches
- 3) Length 3550 feet

Comments: none

C. Works used to apply water to beneficial use:

Center pivot:

- 1) Make Valley
- 2) Overall length 1280 feet
- 3) Number of towers 7
- 4) End gun Y
- 5) Capacity 750 GPM

Chemigation Equipment:

- 1) Does chemigate Y
- 2) Main line check valve Y
- 3) Inspection port/air relief Y
- 4) Low pressure drain Y
- 5) Discharge is 20' from source Y
- 6) Interlock type electrical
- 7) Injection pump type piston
- 8) Injection check valve Y
- 9) Injection line check valve or positive displacement pump Y

Comments: none

D. Compliance with Permit Requirements:

- 1) Permit qualifications being abided by Y
- 2) Irrigation Questionnaires checked to determine if permit owner started irrigation by the end of construction period Y

List any extended period of nonuse: none

- 3) Exceptions to compliance are: none

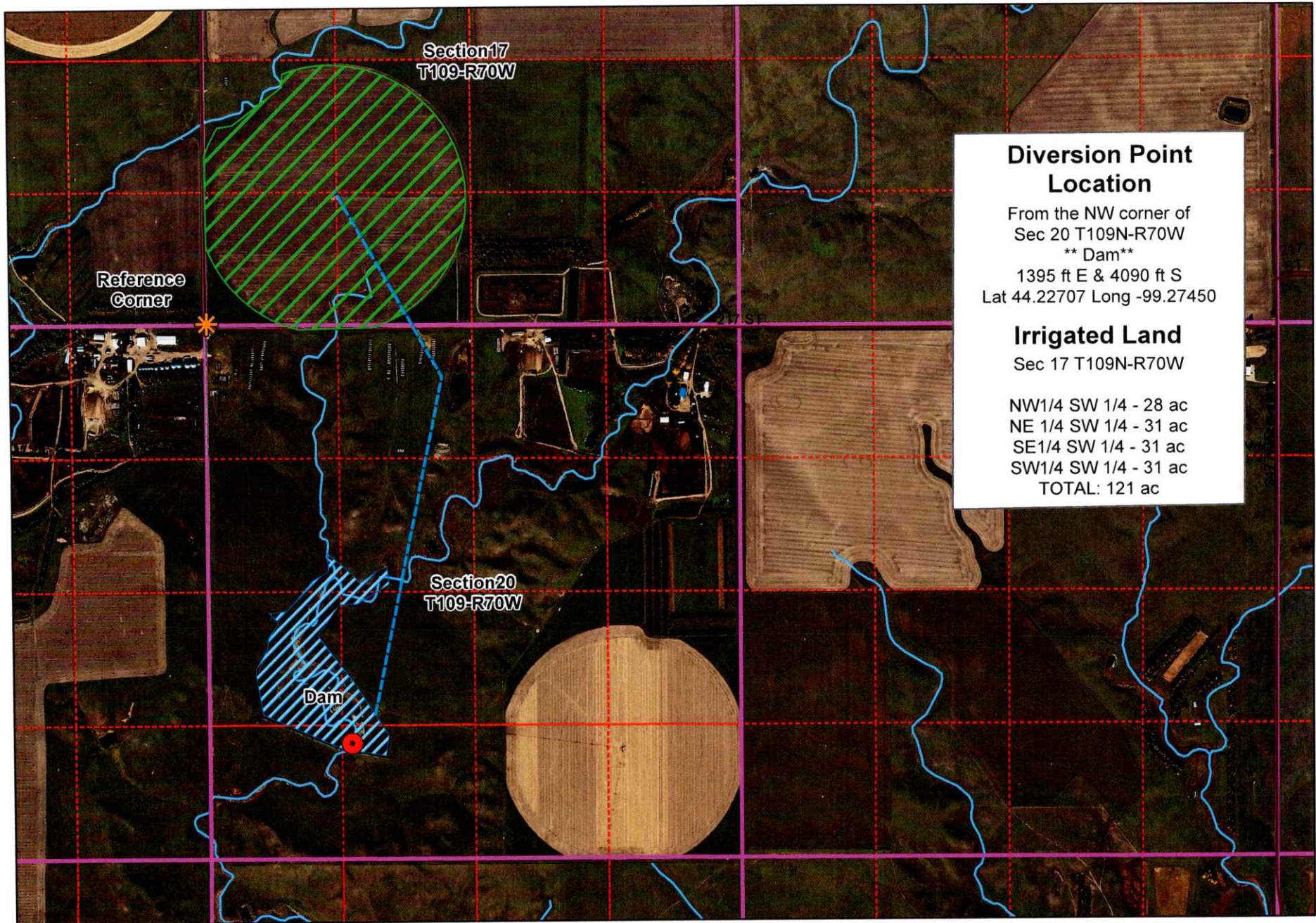
E. Condition and Location:

1. The system is in good condition with the point(s) of diversion located as follows: from the NW corner of Sec 20 T109N-R70W 1395 ft E and 4090 ft S, latitude of 44.22707 and longitude of -99.27450 ,SE ¼ SW¼.
2. The works are capable of diverting and conveying to the place of use 1.67 cu. ft. per second of water and/or storing 273 acre-feet of water which is to be used for irrigation use. Water has been put to beneficial use to the maximum extent as follows: All land is located in Sec 17 T109N-R70W NW ¼ SW ¼ - 28 ac NE ¼ SW ¼ - 31 ac SE ¼ SW ¼ - 31 ac SW ¼ SW ¼ - 31 ac comprising a total of 121 acres of land and the license should be issued for 1.67 cfs and/or 273 acre-feet of storage.
3. All structures, wells and lands on map Y
If no, describe: none

F. Comments or other permit(s) associated with the project: None.

Mark D Rath
Water Right Inspector
DANR, Water Rights Program

Date report completed: 08/29/2024



0.75 0.375 0 0.75 Miles



**DEPARTMENT of AGRICULTURE
and NATURAL RESOURCES**

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

SEP 26 2024

6633-3

PJ Werdel & Sons Inc.
c/o Ed Werdel
21711 345th Ave
Ree Heights SD 57371

Dear Mr. Werdel:

Enclosed is Water License No. 6633-3. 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.

So 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,

Eric Gronlund, Chief Engineer
Water Rights Program
(605) 773-3352

NOTE: Water from the dam may be blended with effluent from a wastewater lagoon located near the cattle feeding operation prior to its application to land.

enclosures

**STATE OF SOUTH DAKOTA
WATER LICENSE NO. 6633-3**

(1) PJ Werdel & Sons Inc., 21711 345th Ave, Ree Heights SD 57371, made Application No. 6633-3, June 17, 2005, for a water permit to divert 1.89 cubic feet of water per second from a dam (273 acre-feet storage capacity) constructed on Sand Creek, Hand County, South Dakota for irrigation purposes. Permit No. 6633-3, with a priority date of August 24, 2005, was approved October 3, 2005, and issued to the applicant for diversion of water with construction of the described water supply system to be completed on or before October 3, 2010, and for the application to beneficial use of water on or before October 3, 2014.

(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 1.67 cubic feet of water per second for beneficial use. The location of the diversion point is:

- 1,395 ft E & 4,090 ft S of the NW corner Section 20, T109N, R70W (SE ¼ SW ¼)
(Latitude 44.22707 & Longitude -99.27450)

(3) The amount of appropriation may not exceed 2 acre-feet annually for each acre of land to which water is actually and beneficially applied for irrigation. The water is to be used during the following described annual period: May 1 – October 31 (irrigation) & January 1 – December 31 (dam).

(4) The permit holder has complied with the provisions of South Dakota State Law relating to the application of water to beneficial use to irrigate to following land:

Section 17, T109N, R70W			
NE ¼ SW ¼	31 acres	SW ¼ SW ¼	31 acres
NW ¼ SW ¼	28 acres	SE ¼ SW ¼	31 acres
TOTAL: 121 acres			

(5) Pursuant to South Dakota Water Law 46-5-30.1 PJ Werdel & Sons Inc., the holder and/or owner of Water Right No. 6633-3 is issued a license to appropriate water, the right to use 1.67 cubic feet of water per second from a dam (273 acre-feet storage capacity) constructed on Sand Creek, with a priority date of August 24, 2005, from the location specified in (2) of this license for irrigation purposes.

This license is subject to South Dakota Water Law, any limitations or conditions listed in Water Right No. 6633-3 and subject to the following qualifications:

1. Water permit No. 6633-3 authorizes a dam with a storage capacity of 273 acre-feet of water and sufficient water annually to maintain the water level to the outlet elevation.
2. Low flows as needed for downstream domestic use, including livestock water and prior water rights must be bypassed.
3. The system shall be designed to prohibit the flow of liquid from the livestock waste pond back towards the irrigation dam. Depending on the design, this may require installation of a check valve or similar device.
4. This Permit is approved subject to the irrigation water use questionnaire being submitted each year.

Eric Gronlund
Eric Gronlund, Chief Engineer
Water Rights Program
Department of Agriculture and Natural Resources

SEP 26 2024
date

