

WATER PERMIT NO. 7144-3

Name of Applicant: **Donald Quade**

Address: **14647 471st Ave, Twin Brooks SD 57269**

Phone: **605 432-6106**

Amount of Water Claimed: **39 AF**

Total Acres: **NA**

Source of Water Supply: **runoff**

Water to be used for: **fish & wildlife propagation and livestock**

County: **Roberts**

Type of Waste Disposal System: **NA**

Location: **6 miles southwest of Wilmot**

PRIORITY Date Received: **6-10-09**

Application/License Fee: **\$200**

Corrected Application Received:

Period of Annual Use: **January 1 – December 31**

Remarks: **Repair of existing dam**

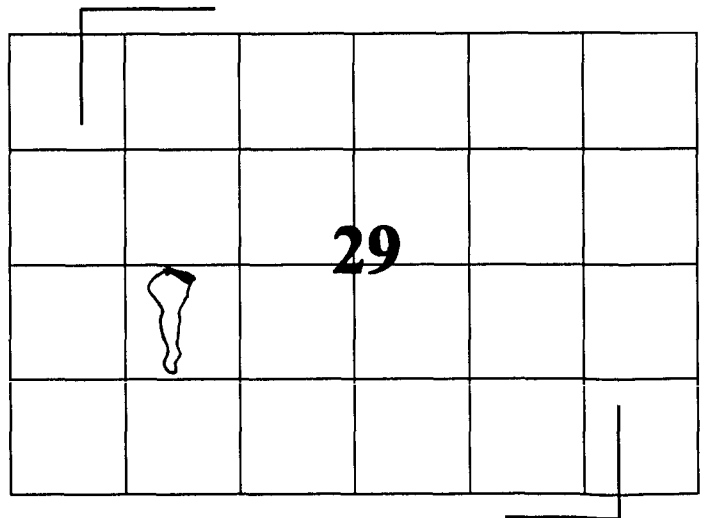
Diversion Point: **NW ¼ SW ¼ Sec 29-T122N-**

R50W

Water Impounded:

~~Land to be Irrigated:~~ **NW ¼ SW ¼ Sec 29-T122N-**

R50W



Depth of Well: **NA**

Well Driller:

Remarks:

Type of Map: **aerial**

Prepared by: **Thomas L Wickstrom, USFWS**

Reviewed and the Number Assigned on: **6-10-09**

By: **Karen Schlaak**

Notice of Hearing - date to intervene: _____

Mail to: Water Rights Program Joe Foss Building 523 E. Capitol Pierre, SD 57501-3181 (605) 773-3352	No. <u>7144-3</u> (office use only) Hydrologic Unit <u>07020001</u>
	Basin <u>Minnesota - Whetstone</u>
	Newspaper <u>Sisseton Courier PO Box 169</u>
	<u>605-698-7642</u> <u>57262</u>

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JUN 10 2009
WATER RIGHTS
PROGRAM

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

Check use(s) of water:

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

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

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

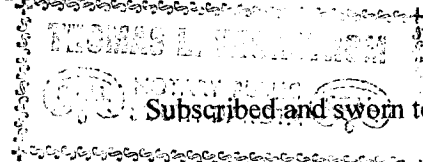
- Name of Applicant Donald Quade Phone (605) 432-6106
(check one) ☐ Owner ☐ Tenant/lessee
Mailing Address 14647 471st Ave. Twin Brooks State SD 57269
(Street, RR, or Box and City) (Zip Code)
- Amount of water claimed _____ *CFS or _____ **GPM 39 ***AF
(*Cubic Feet per Second) (**Gallons per Minute) (**Acre Feet - storage capacity of dam/dugout or annual use if applicable)
- Source of water supply Watershed above embankment
- Location of point of diversion (example - 3 wells in SW1/4 NE1/4 section 12-T104N-R53W) County Roberts
NW1/4SW1/4 Section 29, T. 122 N., R. 50 W. Water Impounded: NW1/4SW1/4 Sec29
T122N R50W
- County or counties where water will be used Roberts
- Annual period during which water is to be used annually Jan 1 - Dec 31
- Give a description of the project. When available include any preliminary engineering report or other reports or information that will help explain the project. (Attach sheet if more space is needed)

See Engineers Sketch Plan

STATE OF SOUTH DAKOTA)
County of Day 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, Donald Quade, 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

X Donald Quade

Subscribed and sworn to before me this

8th

day of JUNE

20 09

X T Wickstrom

THOMAS L. WICKSTROM
Day County, South Dakota
My Commission Expires Dec. 23, 2011

THOMAS L. WICKSTROM
Notary Public
My Commission Expires Dec. 23, 2011

**SOUTH DAKOTA
WATER PERMIT NO. 7144-3**

Date of first receipt of application June 10, 2009.

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 7144-3 to Donald Quade, 14647 471st Ave, Twin Brooks SD 57269 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. 7144-3 authorizes impoundment of 39 acre-feet of water from runoff by reconstructing an existing dam located in the NW ¼ SW ¼ Section 29 with water impounded in the NW ¼ SW ¼ Section 29; all in T122N-R50W.
2. The water appropriated shall be used for the purpose of fish and wildlife propagation and livestock water use and may not exceed the amount of water needed for beneficial use.
3. The water is to be used during the following described annual period: January 1 – December 31.
4. The date of approval of Permit No. 7144-3 is August 7, 2009.
5. The date from which applicant may claim right is June 10, 2009.
6. One-fifth of the construction is to be completed on or before February 7, 2011.
7. All construction is to be completed on or before August 7, 2014.
8. Water is to be put to beneficial use on or before August 7, 2018.
9. Water rights obtained in compliance with the laws of the State of South Dakota may not be unlawfully impaired by this appropriation.

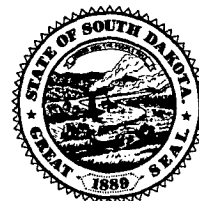
QUALIFICATIONS

1. Water Permit No. 7144-3 authorizes a dam with a storage capacity of 39.0 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.

WATER MANAGEMENT BOARD

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

AUG 24 2009
date



(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

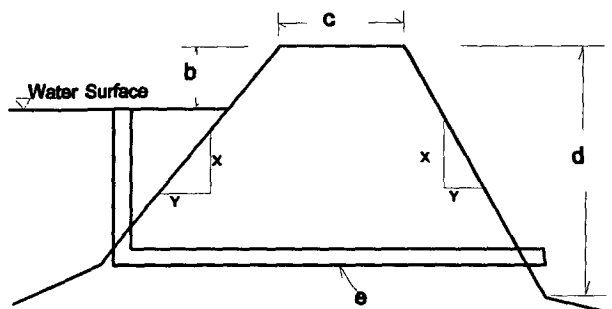
- a) Surface Dimensions _____ Depth _____
- b) Depth to water (ground surface to water level) _____

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:

Konechne Engineering
104 Capitol Hill Drive
Pierre, SD 57501



- b) Freeboard _____ 3 feet
- c) Crest Width _____ 12 feet
Crest Length _____ 311 feet
- d) Height _____ 25.7 feet
- e) Primary Outlet Capacity _____ 12.4 cfs
If pipe, diameter _____ 48"riser w/12"outlet
- f) Secondary Spillway Capacity _____ 184.9 cfs
Spillway Width _____ 20 feet
- g) X & Y Slope _____
Upstream _____ 3:1
Downstream _____ 3:1
- h) Surface Area of Impoundment _____ 3.7 acres
- i) Storage _____ 39.0 Acre Feet
- j) Drainage Area Above Dam _____ 228.0 Acres



Don Quade Roberts County Pond Repair



0.5 0.25 0 Miles

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Legend
FEATURE

Wetland Created

Thomas L. Wickstrom
Fish & Wildlife Biol.
USFWS, Wetland NWR



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WATER RIGHTS PROGRAM

South Dakota Department of Environment and Natural Resources

Date 6/10, 20 09

RECEIVED OF Donald R Quade 14647 471st Ave Milbank SD 57269

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

Fee for Application for Permit No. <u>7144-3</u> to Appropriate Water, to construct and to put water to beneficial use	150	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>7144-3</u>	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	200 00

No. 04155

By

Donald R. Erbe
Chief Engineer

48-12PVC

=====

POND DESIGN

=====

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WATER RIGHTS
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WinPond 1.5.2405.11111

Project ---- : Farm Pond

Description : Repalace existing PE Hood Inlet

State ----- : South Dakota

County ----- : Roberts

Landowner -- : Don Quade

Township --- : 122N

Range ----- : 50W

Section ---- : 29

Tract ----- :

Field ----- :

Designed By : Dave Konechne

Date designed: 5/21/2009

Date printed : 5/21/2009

Approved By : _____

Date : _____

File Name : C:\Documents and Settings\Elaine\...\New.prj

PLANNED IN COOPERATION WITH USDA-NRCS

Office Name
Address1
Address2
City

***** JOB APPROVAL CLASS *****

Hazard Class	Low	A
Effective Height	Feet	23.1
Effective Storage	Ac-Ft	46.7
Overall Height	Feet	25.7
Total Storage	Ac-Ft	58.3
Storage X Effective Height	Ac-Ft Ft	1079
Contributing Drainage Area	Acres	228
Contributing Drainage Area	Square Miles	0.36
Pipe Conduit Capacity	CFS	12.4
Open Channel Spillway Design Flow	CFS	68.7
Peak Inflow Aux Spillway Design Storm	CFS	184.9
Conduit - Inside Diameter	Inches	12

48-12PVC

Conduit Material
Inlet Type
Job Approval Class
INVENTORY SIZE DAM

SDR
Drop

***** ELEVATION-STORAGE INPUT DATA *****

ELEV (ft)	POOL AREA (acres)	INT.STORAGE (ac.ft.)	ACCUM.STORAGE (ac.ft.)
69.0	0.00		0.00
93.0	4.20	50.40	50.40
95.0	5.30	9.50	59.90
98.0	6.95	18.38	78.28

***** STORAGE VOLUMES *****

	ELEVATION (ft)	AREA (acres)	STORAGE (ac.ft.)
Inlet (Princ. spillway)	90.0	3.68	38.59
Aux. spillway	92.1	4.04	46.69
Max. water	93.7	4.57	53.33
Settled top of fill	94.7	5.14	58.33
Sediment - above inlet			0.00
- below inlet			0.00
Inlet to Aux.			8.10
Aux. to max. water			6.64

RUNOFF CURVE NUMBER DETERMINATION

Acres & (curve numbers) for
Hydrologic Soil Group

COVER DESCRIPTION

A B C D

ACCUMULATED: 228.00 Acres

WEIGHTED CURVE NUMBER: 75.0

***** HYDROLOGIC DATA *****

Rainfall distr. type ---- :	II		
Drainage area, acres ---- :	228.0	Watershed slope, % :	4.1
Runoff curve number ---- :	75	Flow length, ft. - :	6019
Time of concentration, hrs :	1.28		
(min.: 76.60)			
----- spillway -----			
	Principal	Auxiliary	
Design frequency, yrs.: :	2	25	
24 hr. Rainfall, in. : :	2.4	4.3	
Runoff, in. ---- :	0.6	1.9	
Peak inflow, cfs ---- :	49.92	184.93	
Peak outflow, cfs --- :	12.41	68.66 A.S.	
		13.50 P.S.	

48-12PVC

***** PRINCIPAL SPILLWAY TRIALS *****

Inlet type: Drop Inlet Elevation: 90.0

	TRIAL 1	TRIAL 2	TRIAL 3
CONDUIT: Type -----	SDR		
Diameter, in. --	12.00		
Height, in. ----			
Width, in. ----			
Manning's n ----	0.011		
Inlet ext., ft. --	0.0		
Length, ft. ----	106.0		
Entrance Coefficient, Ke	1.000		
RISER : Type -----	RC		
Diameter, in. --	48.00		
Length, in. ----			
Width, in. ----			
Weir length, in.	150.80		
Crest radius, in.			
Invert elevation -----	82.00		
Auxiliary elevation -----	92.1		
STORAGE (ac.ft.):			
Temporary (PS-AS) ----	8.10		
Total at Auxiliary ---	46.69		
Effective height, ft. ---	23.1		
Height x storage -----	1079		
Drawdown time, days-hrs.	0-2.0		
Trial used -----	1		

CONDUIT TYPES ----- : SDR-26 - PVC SDR-26 Pipe

***** AUXILIARY SPILLWAY DETAILS *****

Discharge determination: Qe values from ASFILE

Auxiliary elev. :	92.1	Retardance ----- :	B
Bottom width, ft. :	20	Level sect. length, ft.:	25
Flow depth, ft. - :	1.57	Side slope ratio, n:1 :	3.00
EXIT CHANNEL -			
Max. Vel., fps - :	5.0	Retardance ----- :	B
Flow, cfs ----- :	68.66	Exit slope, % --- Min.:	4
		Max.:	15
Settled fill elev.:	94.7	Drawdown time, days-hrs:	0-16.5
Channel elev. --- :	69.0	Overall height, ft. -- :	25.7
(downstream toe)			

***** CONDUIT DETAIL *****

Inlet Type -----	DROP
Conduit Type -----	SDR-26 - PVC SDR-26 Pipe
Diameter, in. -----	12.00
Inlet extension, ft --	0.0
Length, lin. ft. -----	0.0 Extends 6.0 ft. beyond dnstr.toe
Length, lin. ft. -----	106.0 Pipe length used in routing
Slope, % -----	11.5
Max.fill over pipe, ft.	14.5
Horizontal Distances (ft.)	
Upstrm: edge of top width to inlet end of pipe :	13.2

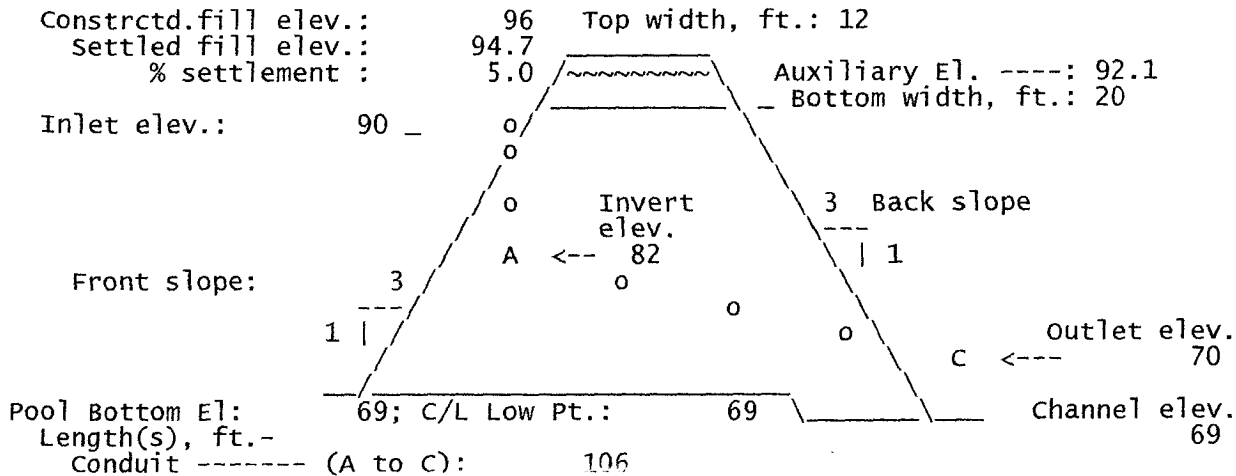
48-12PVC

Dnstrm: edge of top width to toe -----	73.2
--	------

***** DESIGN ELEVATIONS (at principal spillway) *****

Inlet type: DROP

NOT TO SCALE



***** SUMMARY *****

Inlet type: DROP

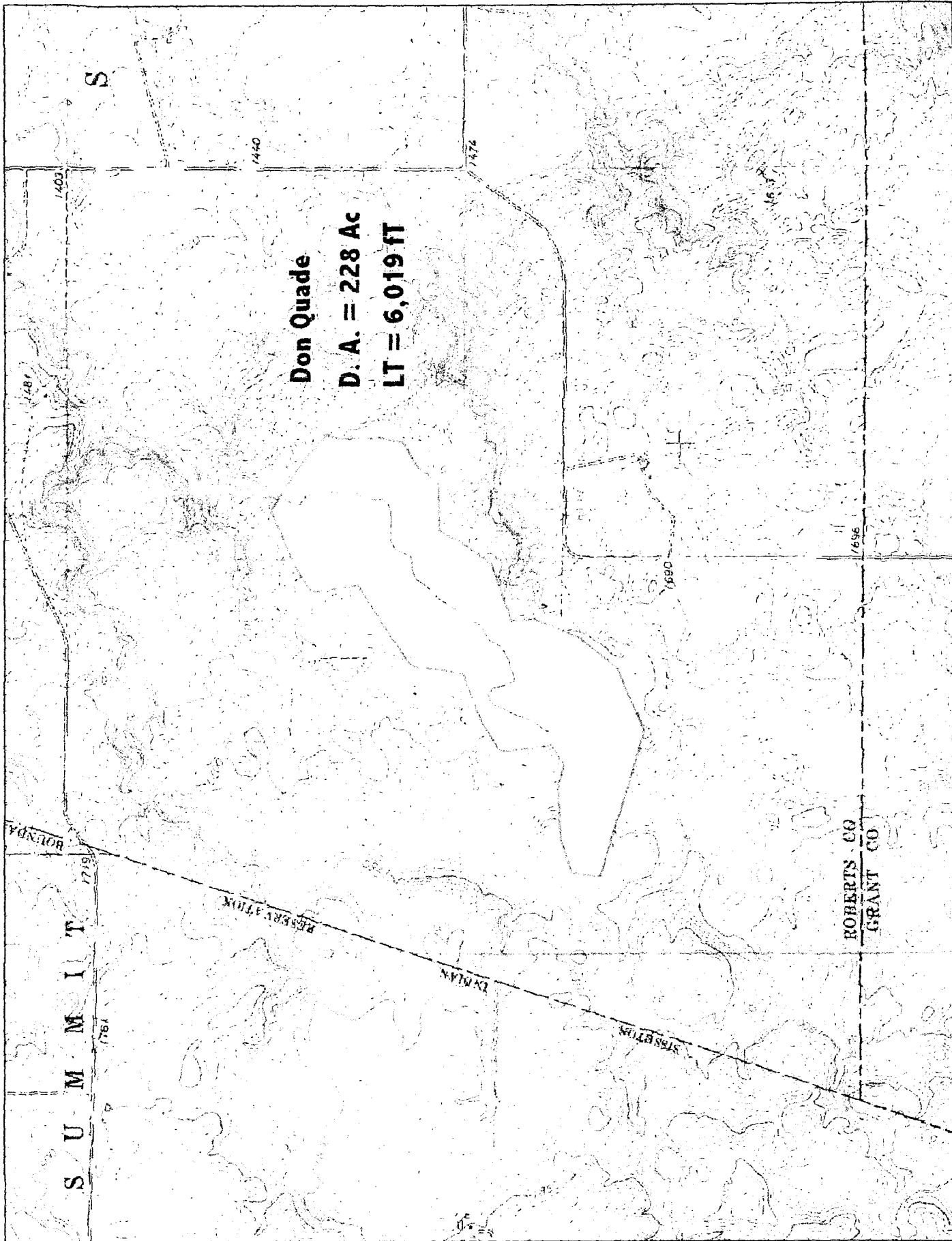
Inlet Elevation:

90

CONDUIT: Type -----	SDR-26 - PVC SDR-26 Pipe
Diameter, in. ----	12
Length, lin. ft.-	106 Extends 6 ft. beyond dnstr.toe
RISER : Type -----	RC - Reinforced Concrete
Diameter, in. ----	48
Height, ft. -----	8 = Inlet elev. - Invert elev.
AUX. : Elevation -----	92.1
Bottom width, ft.	20
Hp, flow depth, ft.	1.57
Exit slope, % min.	4
max.	15
Effective height, ft. ----	23.1 = AS elev. - low pt. on C/L
Height x storage -----	1079
Overall height, ft. -----	25.7 = stld. fill elev - chan. elev
NOTE -----	***** INVENTORY SIZE DAM

***** PROJECT DEFAULTS *****

Design based on -----	Settled slopes
Berms settled -----	False
Auxiliary spillway to Top of Dam: -----	2.0 (ft)
Freeboard -----	1.0 (ft)
Minimum bottom width -----	10.0 (ft)
Maximum bottom width -----	150 (ft)
Feet above inlet (Drawdown) -----	1.0 (ft)
Percent or storage drained (Drawdown) -----	85.0 (ft)
Minimum flow (Drawdown) -----	0.1 (cfs)
Orifice Coefficient -----	0.71 (ft)
Full Pipe Flow Required? -----	Yes



Don Quade
D. A. = 228 Ac
LT = 6,019 ft

Don Quade

Sec 29, T122N, R50 W

<u>Grid Line</u>	<u>Length</u>
1	0.6
2	0.9
3	2.0
4	1.6
5	2.0
6	1.1
A	0.2
B	1.8
C	2.3
D	1.6
E	2.8

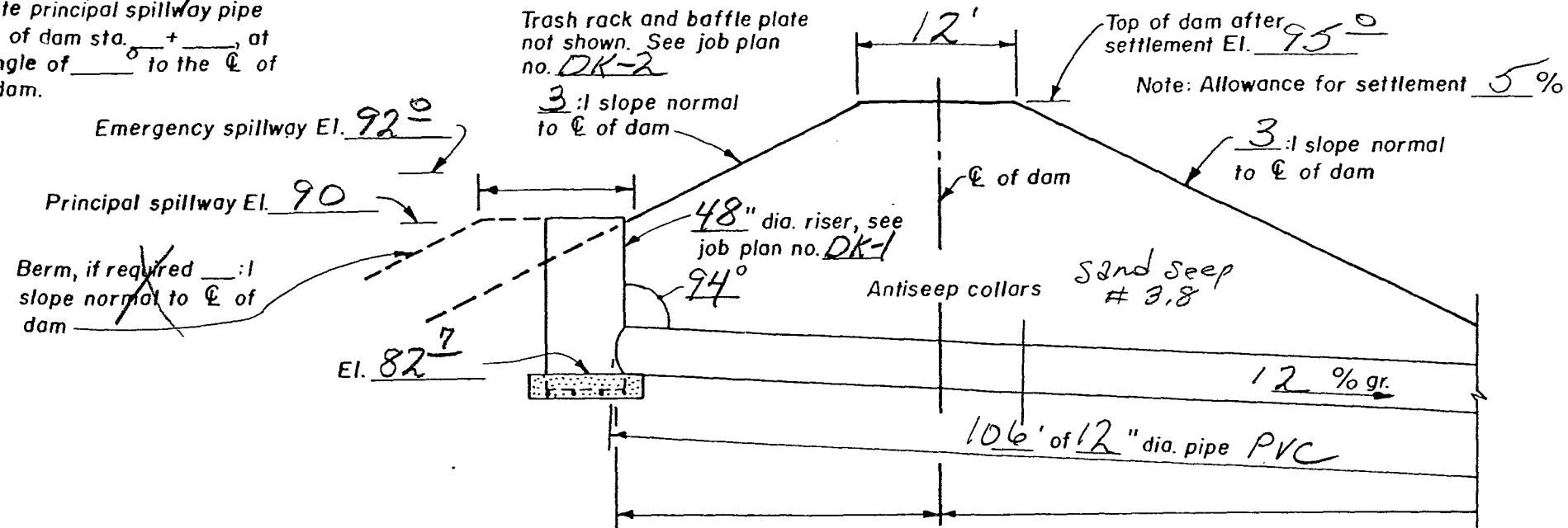
$$16.9 \times 1000 \frac{ft}{mi} = 16,900$$

<u>Contour</u>	<u>Grid Crossing</u>
1600	0
1620	2
1640	4
1660	2
1680	4
1700	3
1720	1
1740	1
1760	5
	<u>22</u>

$$S = \frac{1.571(20)(22)}{16,900} = 0.041 \times 100 = 4.1\%$$

$$CN = 75$$

As directed by technician
Locate principal spillway pipe
at ℓ of dam sta. _____, at
an angle of _____ to the ℓ of
the dam.



CROSS SECTION OF DAM ALONG ℓ OF PRINCIPAL SPILLWAY
(Not to scale)

SPECIFICATION NOTES

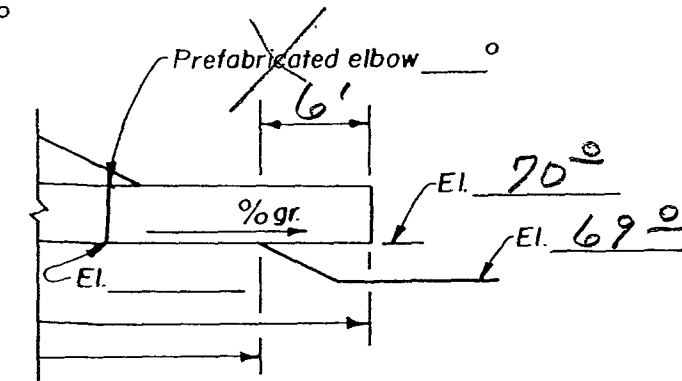
1. ELBOW, IF REQUIRED, MAY BE FABRICATED BY CONTINUOUS WELDING SEPERATE PIPE SECTIONS OR BY FABRICATING A CONTINUOUS WELDED JOINT ON THE UPSTREAM END OF LAST SECTION OF PIPE.
2. PIPE WALL THICKNESS SHALL BE _____ GAGE OR _____ INCHES.

PVC - SDR-26

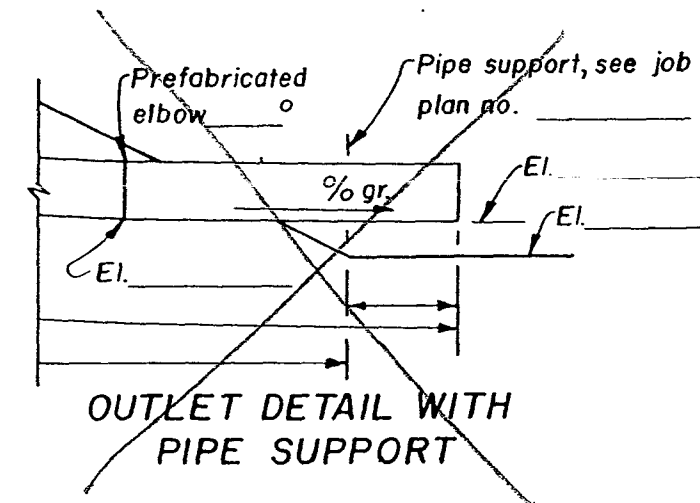
TABLE OF QUANTITIES

ITEM	UNIT	QUANTITY

APPLICABLE STANDARD S.C.S. SPECIFICATIONS



OUTLET DETAIL WITHOUT
PIPE SUPPORT



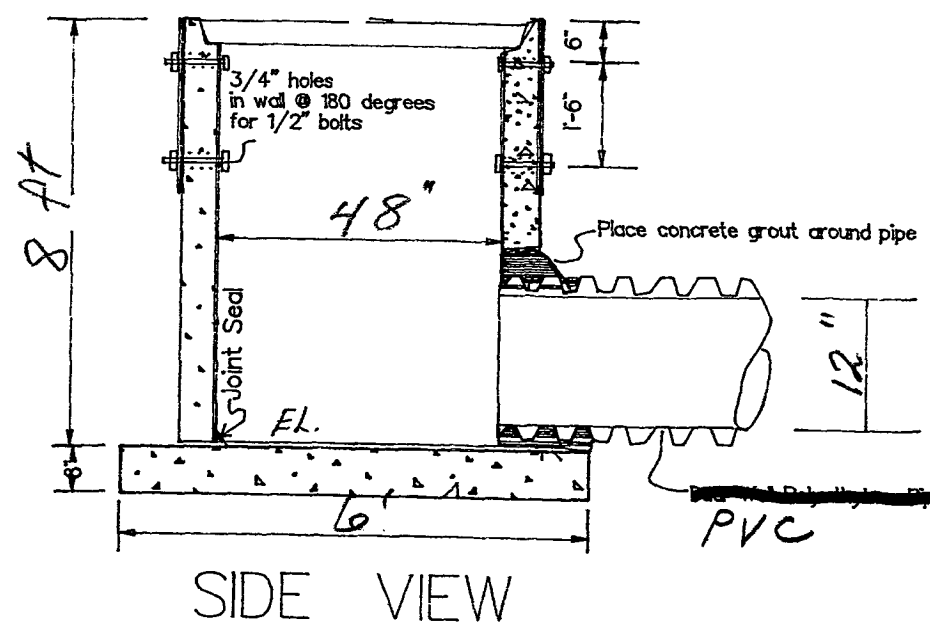
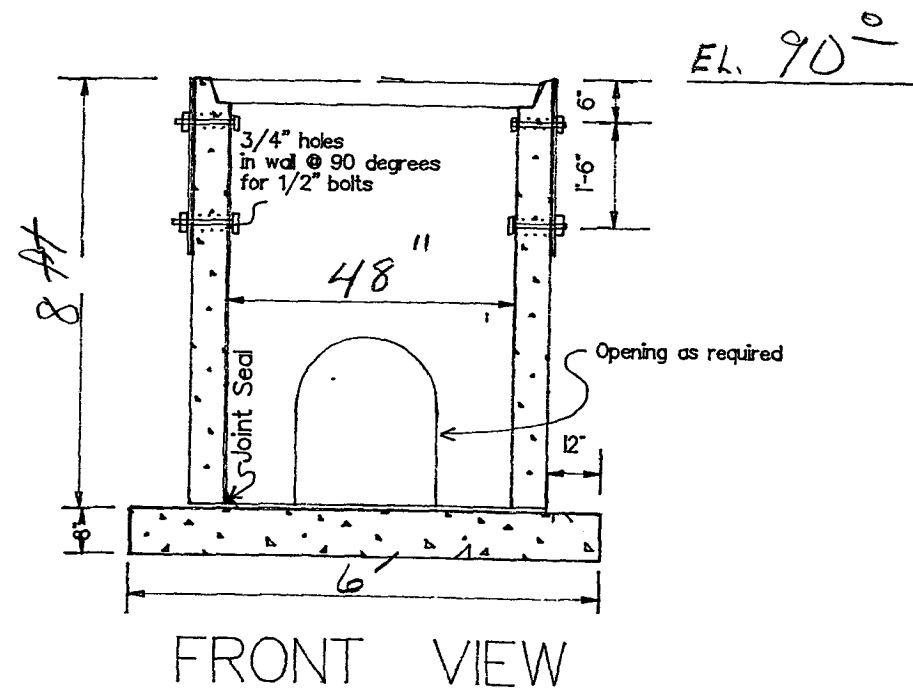
OUTLET DETAIL WITH
PIPE SUPPORT

Sec. _____, T. _____, R. _____
County _____

LOCATION

CORRUGATED METAL PIPE DROP INLET PRINCIPAL SPILLWAY

OPERATOR <u>Don Quade</u>	
CONSERVATION DISTRICT _____	
U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	
Designed _____	Date _____
Drawn _____	Approved by _____
Traced _____	Title _____
Checked _____	Sheet _____
	Drawing No. _____



CONSTRUCTION NOTES:

- 1- Reinforced concrete pipe shall meet ASTM C-478.
- 2- ~~Reinforced concrete pipe shall be equal to~~ **PVC - SDR-35 or SDR-26**
- 3- Provide holes in concrete pipe for lifting lugs.
- 4- Alternative to concrete base is poured in place concrete base

STEEL SCHEDULE

RISER DIA. IN.	BAR SIZE	MARK	TYPE	NO. REQ'D.	LENGTH FT.-IN.	TOTAL LENGTH FT.-IN.	TOTAL WT. LB.	C IN.	L FT.-IN.
48	4	1	STR.	12	5-6	66-0	44	6	6-0

TABLE OF QUANTITIES

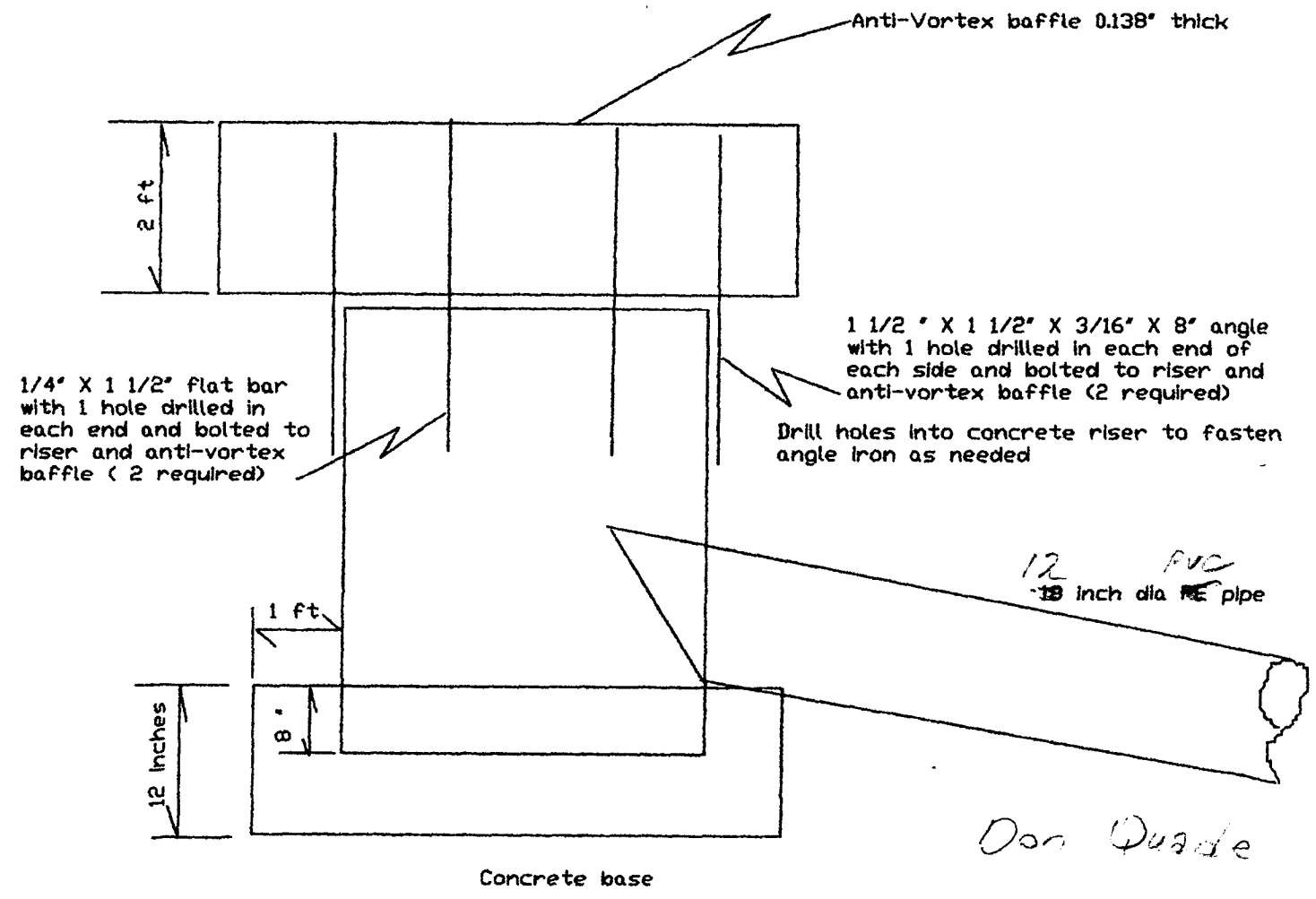
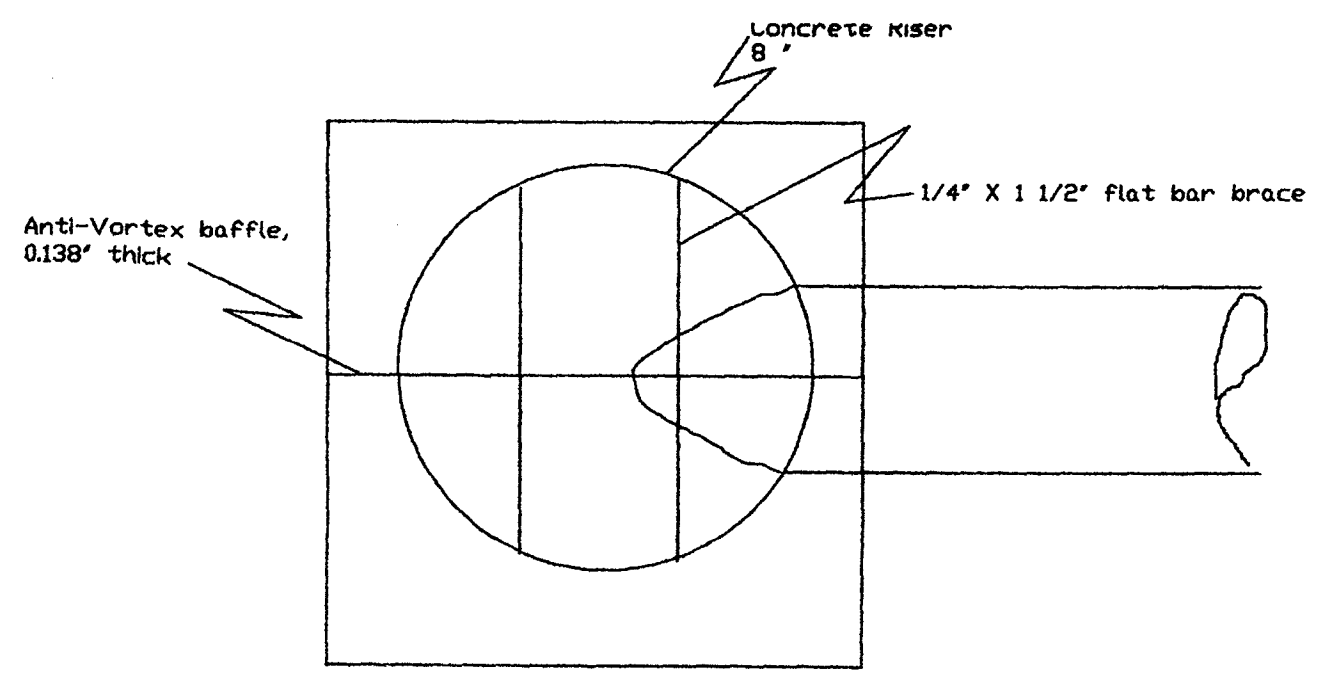
ITEM	UNIT	QUANTITY
CONCRETE	CU. YD.	1.3
REINFORCING STEEL	LB.	44

Don Quade

CONCRETE RISER for ~~Reinforced~~ Pipe PVC		
DESIGNED BY <u>D. Quade</u>	APPROVED BY _____	
DRAFTED BY <u>D. Quade</u>	TITLE _____	
DATE _____	SHEET _____ OF _____	DWG NO. _____

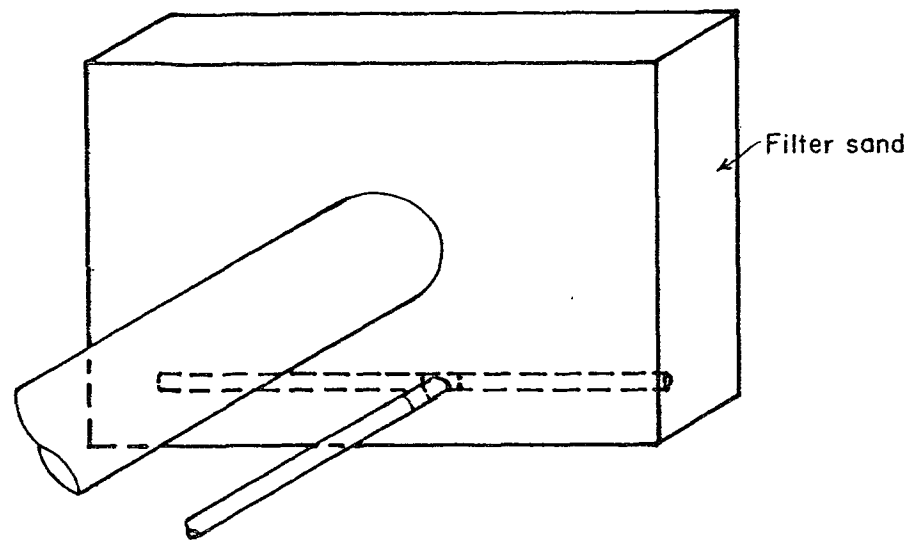
DK-1

Anti-Vortex

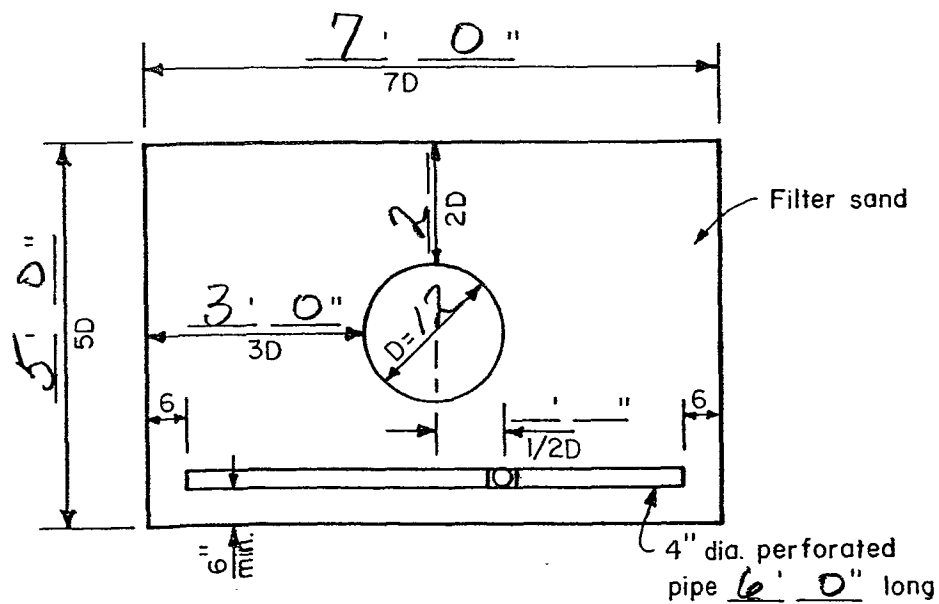


Don Quade

DK-2



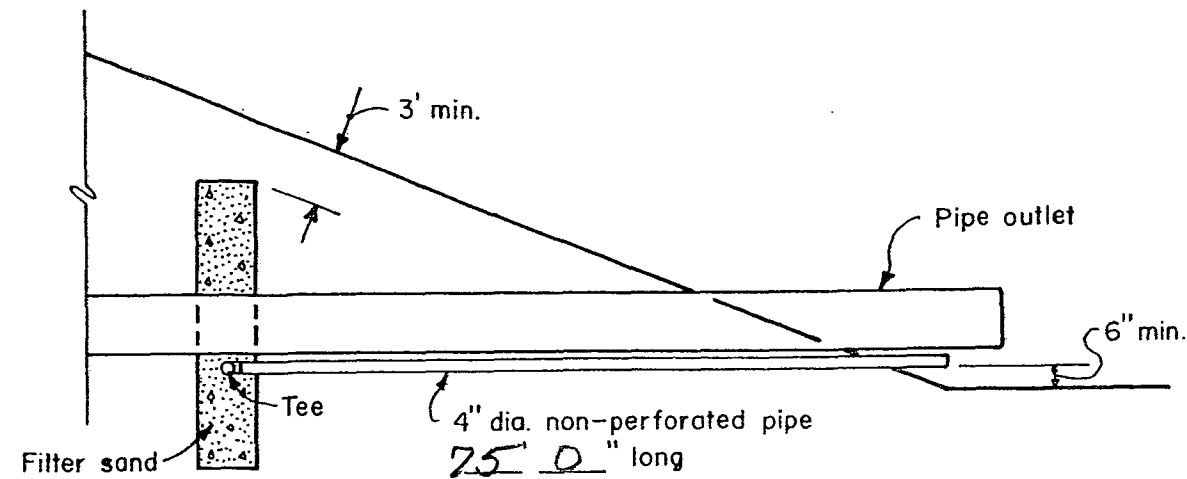
ISOMETRIC VIEW



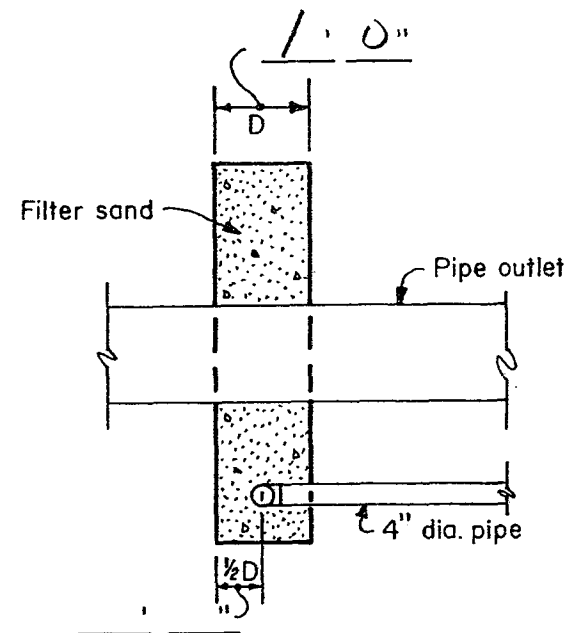
UPSTREAM VIEW

NOTE:

1. THE 4" DIA. PIPE SHALL BE ASTM D1785, SCHEDULE 40, PVC.
2. PROVIDE AN ANIMAL GUARD ON DRAIN OUTLET PIPE. DRILL 2, 1/2" DIA. HOLES, ON $\pm$ 6" FROM END OF PIPE AND PLACE A 3/8" DIA., 5 1/2" LONG GALVANIZED STEEL BOLT THRU THEM AND SECURE WITH A NUT (PLACE BOLT HORIZONTAL).



OUTLET DETAIL



SIDE VIEW

FILTER GRADATION	
SIEVE SIZE	PERCENT PASSING
3/8	100
4	95-100
8	80-100
16	50-85
30	25-60
50	10-30
100	2-10

see spec SD-9
1.3 cy

Sec. _____, T. _____, R. _____

_____ County

LOCATION

SAND ANTISEEP COLLAR

OPERATOR Don Quade

CONSERVATION DISTRICT _____

Designed _____	Date _____	Approved by _____
Drawn _____		Title _____
Traced _____		Title _____
Checked _____		Sheet _____
		No. _____
		of _____

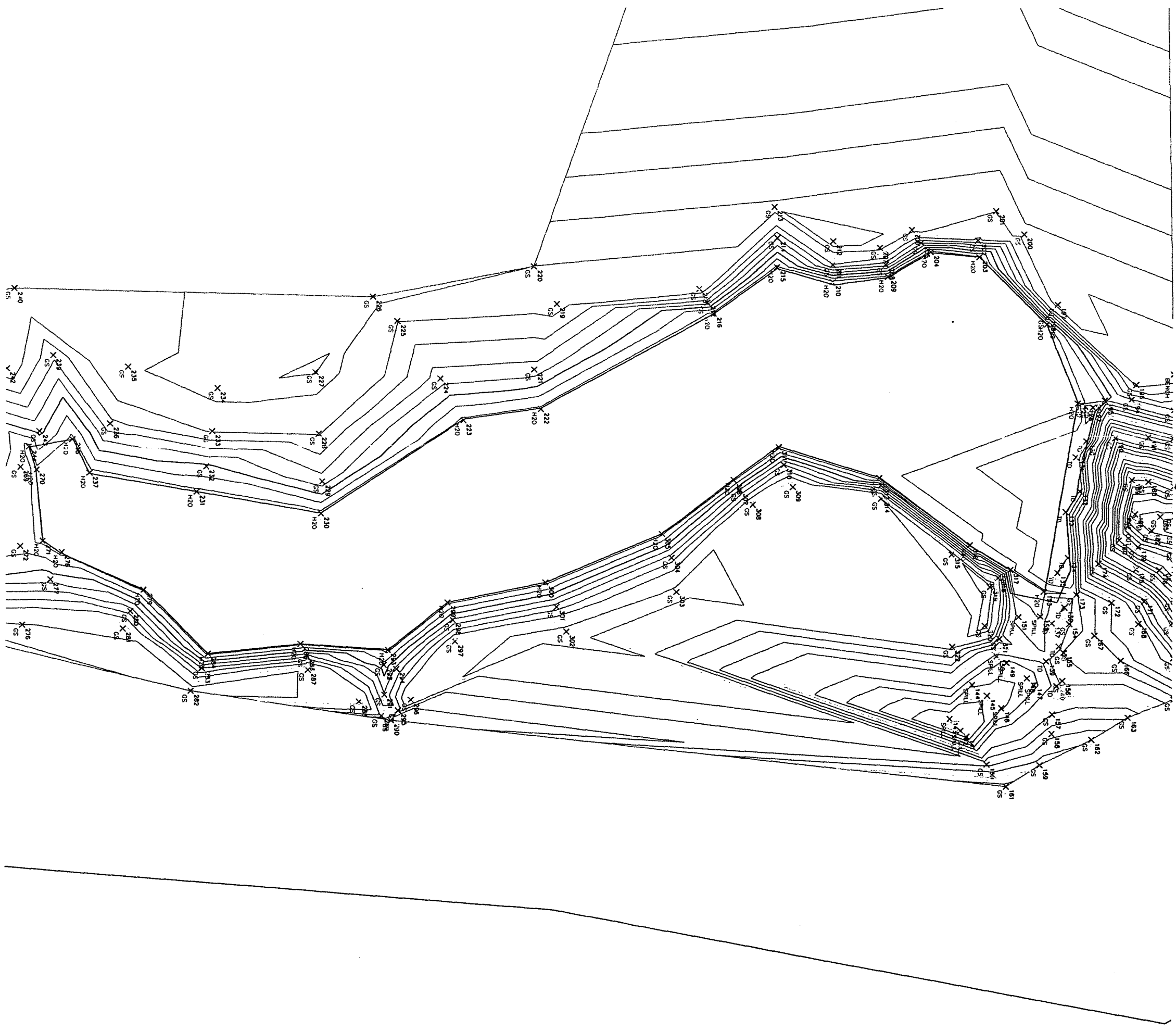
N
↑

Property
Line

Don Quade
Roberts Co.

NUSD Sec 29, 12Q-50
Water @ 92.7 = 4.2 ac

Top Dam @ 95.0 = 5.3 ac



P.S. Review

Water Permit Application No. 7144-3
Donald Quade

Top of Dam Elev. - 95
2nd Spillway Elev. - 92
P. Spillway Elev. - 90
Dis Emb Top Elev. - 69

Cat. 3 - Low Hazard Dam

Ht. = 26 ft

Normal Storage Capacity - 39 Ac-Ft.
Int. Storage Capacity - 47
Max. Storage Capacity - 58

Int Capacity x Eff Ht. = $47 \times 23 = 1081 < 3000 \therefore 25 \text{ yr}$
Minimum Spillway Design

From USGS WRI 80-80 "Tech. for Est. Flood Peaks ... in SD"
DA = 228 Ac = 0.36 mi.² Slope = 120' mi Si = 2.99

$$\begin{aligned} Q_{15} &= 83.4 A^{\cdot 60} S^{\cdot 44} Si^{\cdot 72} \\ &= 83.4 (.36)^{\cdot 6} (120)^{\cdot 44} (2.99)^{\cdot 72} \\ &= 83.4 (.5417) (8.2194) (0.4545) \\ &= \underline{170 \text{ cfs}} \end{aligned}$$

$$\begin{aligned} Q_{100} &= 132 A^{\cdot 65} S^{\cdot 46} Si^{\cdot 67} \\ &= 132 (.36)^{\cdot 65} (120)^{\cdot 46} (2.99)^{\cdot 67} \\ &= 132 (.5148) (8.2194) (0.44801) \\ &= \underline{295 \text{ cfs}} \end{aligned}$$

Secondary Spillway Capacity

$$\begin{aligned} Q &= CLH^{3/2} \quad C = 2.6 \\ &= (2.6)(30)(3)^{1.5} \quad L = 30 \\ &= \underline{405 \text{ cfs}} \quad H = 3 \end{aligned}$$

NRCS Annual Yield

Section 74:02:08:09

DA = 228 CN = 75 ISD = 2 1/2

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. Specs - stb NRCS - OK
9. EPP - Cat. 3 N/A - OK

$$\begin{aligned} 80\% \text{ chance} &= 0.17 \\ 0.17 \times 228^{1/2} &= \underline{3.5 \text{ Ac-Ft}} \end{aligned}$$

$$\begin{aligned} 50\% \text{ chance} &= 0.46 \\ 0.46 \times 228^{1/2} &= \underline{9 \text{ Ac-Ft}} \end{aligned}$$

$$\begin{aligned} 10\% \text{ chance} &= 2.2 \\ 2.2 \times 228^{1/2} &= \underline{42 \text{ Ac-Ft}} \end{aligned}$$



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

**RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 7144-3, Donald Quade**

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. 7144-3, Donald Quade, 14647 471st Avenue, Twin Brook SD 57269.

The Chief Engineer is recommending APPROVAL of Application No. 7144-3 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. 7144-3 authorizes a dam with a storage capacity of 39.0 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.

See report on application for additional information.

Garland Erbele, Chief Engineer
July 9, 2009

REPORT ON
WATER PERMIT APPLICATION NO. 7144-3
Donald Quade
June 12, 2009

Water Permit Application No. 7144-3 has been filed by Donald Quade to impound 39 acre-feet of water from runoff by reconstructing an existing dam located in the NW $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 29-T122N-R50W, in Roberts County. The application also requests impoundment of sufficient water to maintain water to the outlet elevation. The water will be used for fish and wildlife production and livestock water purposes. In 1999, Location Notice No. 75215 was filed for the dam with a storage capacity of 23.5 acre-feet.

Discussion:

The dam will be classified as a small size, Category 3, Low Hazard dam. The dam has been designed by Konechne Engineering. The plans and specifications have been reviewed and will be approved; however, reconstruction of the dam can not begin until Water Permit Application No. 7144-3 is approved.

The reconstructed dam will be 26 feet high with a normal storage capacity of 39 acre-feet with a reservoir level at the primary spillway elevation, and a maximum storage capacity of 58 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 25-year frequency event.

The dam has a drainage area of 228 acres or 0.36 square miles. The dam is designed to have a 48 inch diameter concrete riser with a 12 inch diameter PVC barrel with 5 feet of freeboard as the primary spillway, and a 30 foot wide earthcut secondary spillway with 3.0 feet of freeboard. A 25 year frequency event produces a peak runoff of approximately 170 cfs and a 100 year frequency event produces a peak runoff of approximately 295 cfs. The earthcut spillway will have a capacity of approximately 400 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 3.5 acre-feet. The annual yield with a 50 percent chance of occurrence, or 1 out of 2 years, is expected to be 9 acre-feet and the annual yield with a 10 percent chance, or 1 out of 10 years, is expected to be 42 acre-feet.

The Quade Dam will be located in the NW $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 29-T122N-R50W on an unnamed tributary to the North Fork of the Whetstone River, about 8 miles upstream of the confluence of the unnamed tributary and the North Fork of the Whetstone River. There are no existing Water Permits/Rights filed on the unnamed tributary between the proposed dam and the North Fork of the Whetstone River.

Conclusions:

1. Water Permit Application No. 7144-3 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 domestic use should be a qualification on Water Permit Application No. 7144-3.



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

July 10, 2009

Donald Quade
14647 471st Ave.
Twin Brooks, SD 57269

Dear Mr. Quade:

We have reviewed the plans and specifications for your dam project located in the NW ¼ SW ¼ of Sec. 29-T122N-R50W, in Roberts County. The plans and specifications for your dam are approved. Approval of the plans and specifications does not authorize reconstruction of the dam. The reconstruction of the dam may not begin until Water Permit No. 7144-3 is 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 dam, from the responsibility for operating and maintaining the dam in good repair to ensure the safety of the dam.

The Quade Dam will be classified as a small size Category 3, Low Hazard dam with a dam height of 26 feet and a normal storage capacity of 39 acre-feet and a maximum storage capacity of 58 acre-feet.

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

Sincerely,

A handwritten signature in black ink, appearing to read "Timothy G. Schaal".

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

c: Dave Konechne, Konechne Engineering
Tom Wickstrom, USFWS

RECEIVED

AUG - 5 2009

WATER RIGHTS
PROGRAM

Affidavit of Publication

STATE OF SOUTH DAKOTA }
County of Roberts } ss.

Harley E. Deutsch of said county, being first duly sworn, on oath says, that he is publisher of THE SISSETON COURIER, a weekly newspaper printed and published in Sisseton, in said county of Roberts, and has full and personal knowledge of all the facts herein stated; that said newspaper is a legal newspaper and has a bonafide circulation of at least two hundred copies weekly, and has been published within said county for 52 successive weeks next prior to the publication of the notice herein mentioned, and was and is printed wholly or in part in an office maintained at said place of publication; that the Notice of Notice Of Application No. 7144-3, a printed copy of which, taken from the paper in which the same was published, is attached to this sheet, and is made a part of this affidavit, was published in said newspaper at least once in each week for two successive weeks, on the day of each week on which said newspaper was regularly published, to-wit:

July 21, 2009; _____;
July 28, 2009; _____;
_____; _____;
_____; _____;
_____; _____;

that the full amount of the fee is charged for publication of said Notice insures to the benefit of the publisher of said newspaper; that no agreement or understanding for the division there has been made with any other person, and that no part thereof has been agreed to be paid to any person whomsoever and that the fees charged for the publication there of are \$ 39.71

Harley E. Deutsch

Subscribed and sworn to before me this 28th day of

July, A.D., 2009

Steven M. Pirner

Notary Public, Roberts County, South Dakota
My commission expires February 3, 2010

NOTICE OF APPLICATION NO. 7144-3 TO APPROPRIATE WATER

Notice is given that Donald Quade, 14647 471st Ave., Twin Brooks, SD 57269 has filed an application for a water permit to impound 39 acre-feet of water from runoff by reconstructing an existing dam located in the NW1/4SW1/4 Section 29 with water impounded in the NW1/4SW1/4 Section 29; all in T122N-R50W. This application requests impoundment of sufficient water to maintain water to the outlet elevation. The water is for fish and wildlife propagation and livestock water purposes.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 7144-3 because 1) unappropriated water is available, 2) existing rights will not be unlawfully impaired, 3) it is a beneficial use of water, and 4) it is in the public interest. In accordance with SDCL 46-2A-23, the Chief Engineer will act on this application, as recommended, unless a petition is filed opposing the application or the applicant files a petition contesting the Chief Engineer's recommendation. If a petition opposing the application or contesting the recommendation is filed, then a hearing will be scheduled and the Water Management Board will consider this application. Notice of

the hearing will be given to the applicant and any person filing a petition.

Any person interested in opposing or supporting this application or recommendation must file a written petition with BOTH the applicant and Chief Engineer. The applicant must file a petition if contesting the Chief Engineer's recommendation. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E Capitol, Pierre, SD 57501 (605) 773-3352" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by August 7, 2009.

The petition may be informal, but must include a statement describing the petitioner's interest in the application, the petitioner's reasons for opposing or supporting the application, and the signature and mailing address of the petitioner or the petitioner's legal counsel, if legal counsel is obtained. Contact Eric Gronlund at the above Water Rights Program address to request copies of information pertaining to this application.

Steven M. Pirner, Secretary,
Department of Environment
and Natural Resources

*Published twice at the total approximate cost of \$ 39.71.
(July 21 - 28--2 wks.)



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

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July 10, 2009

Sisseton Courier
PO Box 169
Sisseton SD 57262

ATTENTION: Legal Public Notice

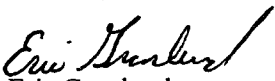
Enclosed is a Notice on Application No. 7144-3 to Appropriate Water to be published twice. Please publish the first notice on July 21, 2009 with the second publication 7 days later. The text of the notice can be e-mailed to your paper by contacting Karen Schlaak at (605) 773-3352.

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 Donald Quade, 14647 471st Ave., Twin Brooks SD 57269 (Ph # 605-432-6106).

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. 7144-3

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

Date _____

We are in receipt of your letter of July 10, 2009 enclosing Notice to Appropriate Water by Application No. 7144-3 which was first published in our issue of _____. **ENCLOSED IS A COPY OF THIS FIRST PUBLICATION.**

Name

Newspaper



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

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

July 10, 2009

Donald Quade
14647 471st Ave
Twin Brooks SD 57269

Dear Mr. Brooks:

Water Permit Application No. 7144-3 for fish and wildlife propagation 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 Sisseton Courier printed at Sisseton SD (Ph # 605-698-7642). 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 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 Notices 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 applications.

Sincerely,

Eric Gronlund
Natural Resources Engineer
(605) 773-3352

enclosures

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

Instruction to Newspaper - Publish first Notice on July 21, 2009 with the second publication 7 days later. The applicant is responsible for payment. The text of the notice can be e-mailed to your paper by contacting Karen Schlaak at (605) 773-3352 or email: Karen.schlaak@state.sd.us.

NOTICE OF APPLICATION NO. 7144-3 to Appropriate Water

Notice is given that Donald Quade, 14647 471st Ave, Twin Brooks SD 57269 has filed an application for a water permit to impound 39 acre-feet of water from runoff by reconstructing an existing dam located in the NW ¼ SW ¼ Section 29 with water impounded in the NW ¼ SW ¼ Section 29; all in T122N-R50W. This application requests impoundment of sufficient water to maintain water to the outlet elevation. The water is for fish and wildlife propagation and livestock water purposes.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 7144-3 because 1) unappropriated water is available, 2) existing rights will not be unlawfully impaired, 3) it is a beneficial use of water, and 4) it is in the public interest. In accordance with SDCL 46-2A-23, the Chief Engineer will act on this application, as recommended, unless a petition is filed opposing the application or the applicant files a petition contesting the Chief Engineer's recommendation. If a petition opposing the application or contesting the recommendation is filed, then a hearing will be scheduled and the Water Management Board will consider this application. Notice of the hearing will be given to the applicant and any person filing a petition.

Any person interested in opposing or supporting this application or recommendation must file a written petition with BOTH the applicant and Chief Engineer. The applicant must file a petition if contesting the Chief Engineer's recommendation. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E Capitol, Pierre SD 57501 (605 773-3352)" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by August 7, 2009.

The petition may be informal, but must include a statement describing the petitioner's interest in the application, the petitioner's reasons for opposing or supporting the application, and the signature and mailing address of the petitioner or the petitioner's legal counsel, if legal counsel is obtained. Contact Eric Gronlund at the above Water Rights Program address to request copies of information pertaining to this application. Steven M. Pirner, Secretary, Department of Environment and Natural Resources.

Published at an approximate cost of _____.



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AUG 24 2009

Donald Quade
14647 471st Ave
Twin Brooks SD 57269

Dear Mr. Quade:

Enclosed is Water Permit No. 7144-3 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

Permit No. 7144-3
Minnesota - Whetstone - 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, **November 20, 2013**, made a thorough examination of the water use system constructed by **Donald Quade of 14647 471st Ave., Twin Brooks, SD 57269** holder of Permit No. **7144-3**, bearing the priority of **June 10, 2009** authorizing the storage of **39** acre-feet of the waters of **runoff** for **fish and wildlife propagation and livestock water** purposes, in **Roberts** County.

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

A. Works used to divert the water:

A 26 foot high earthen dam with a normal storage capacity of 39 acre-feet of water.

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

N/A

C. Works used to apply water to beneficial use:

A 26 foot high earthen dam with a normal storage capacity of 39 acre-feet of water.

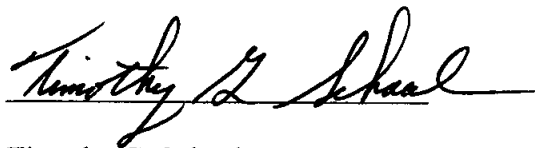
The system is in the following condition good. The point of diversion is located **2550 ft. north & 850 ft. east of the SW corner of Sec. 29-T122N-R50W, NW ¼ SW ¼ (Lat. 45.34809 Long. -96.96135).** The works are capable of storing **39** acre-feet of water which is to be used for **fish and wildlife propagation and livestock water**. Water has been put to beneficial use to the maximum extent as follows:

A 26 foot high earthen dam with a normal storage capacity of 39 acre-feet of water.

and the license should be issued for **39** acre-feet of storage.

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

Exceptions to compliance are: **none** Date Report Completed: **January 13, 2014**



Timothy G. Schaal, P.E.
Engineer IV
SD DENR, Water Rights Program

REPORT ON INSPECTION OF PERMIT NO. 7144-3

DATE OF INSPECTION: November 20, 2013

NAME & ADDRESS OF PERMIT HOLDER: Donald Quade, 14647 471st Ave.,
Twin Brooks, SD 57269

DIVERSION POINT LEGAL LOCATION: 2550 ft. north and 850 ft. east of the
SW corner of Sec. 29-T122N-R50W, NW ¼ SW ¼ (Lat. 45.34809 Long. -96.96135).

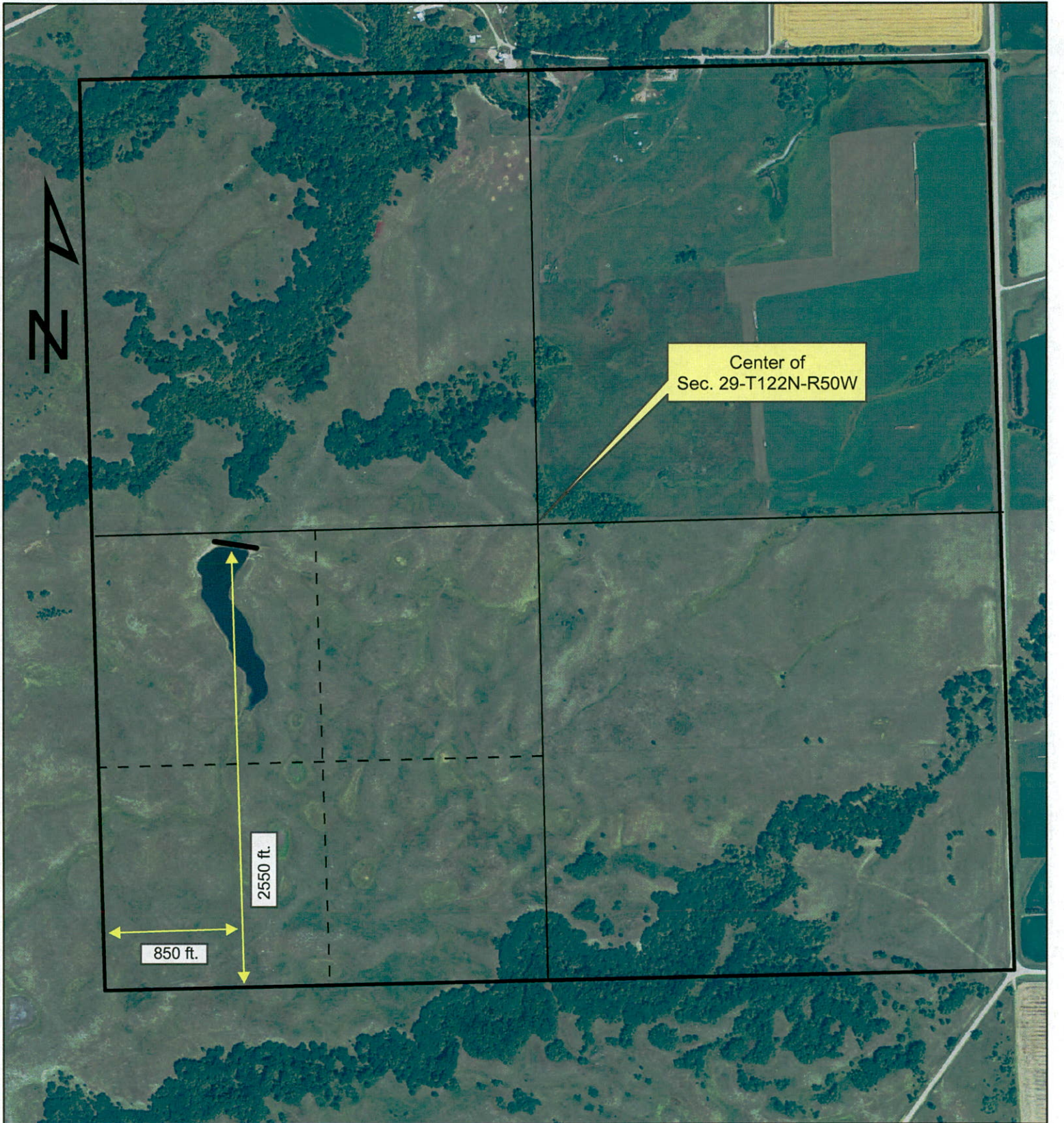
DAM INFORMATION:

- 1) Height to crest 26 feet
- 2) Height to primary spillway 21 feet
- 3) Height to secondary spillway 23 feet
- 4) Crest width 12 feet
- 5) Crest length 311 feet
- 6) Spillway length XXX feet
- 7) Spillway width 30 feet
- 8) Approx. storage (Normal) 39 acre-feet
- 9) Approx. storage (Maximum) 58 acre-feet
- 10) Date constructed: 2009

PERMIT QUALIFICATIONS AND REGULATIONS:

- 1) Soil and water permit lands agree with lands being irrigated and lands listed on permit N/A
- 2) Special qualifications to permit being abided by yes
- 3) All structures, wells and lands on map yes
- 4) Irrigation Questionnaires checked to determine if permit owner started irrigation by the end of construction period N/A

Water Permit Application No. 7144-3



0 0.25 0.5 1 Miles



Timothy G. Schaal

Timothy G. Schaal, P.E.
Engineer IV
SD DENR, Water Rights Program

1/13/14



**DEPARTMENT OF ENVIRONMENT
and NATURAL RESOURCES**

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



7144-3

JAN 29 2014

Donald Quade
14647 471st Ave
Twin Brooks SD 57269

Dear Mr. Quade:

Enclosed is Water License No. 7144-3. 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.

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,

Jeanne Goodman, Chief Engineer
Water Rights Program
(605) 773-3352

enclosures

STATE OF SOUTH DAKOTA

WATER LICENSE NO. 7144-3

(1) Donald Quade, 14647 471st Ave, Twin Brooks SD 57269 made Application No. 7144-3, June 10, 2009 for a water permit to impound 39 acre feet of water from runoff in a dam located in Roberts County, South Dakota and used for fish & wildlife propagation and domestic livestock water purposes. Permit No. 7144-3, with a priority date of June 10, 2009 was approved August 7, 2009 and issued to the applicant for impoundment of water with construction of the storage dam to be completed on or before August 7, 2014 and the application to beneficial use of water on or before August 7, 2018.

(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 storage dam and is entitled to impound 39 acre feet of water beneficial use with sufficient water annually to maintain the water level to the outlet elevation.

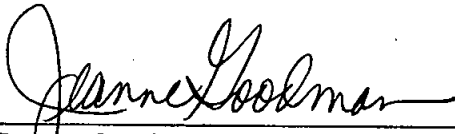
The location of the storage dam (spillway) is 2,550 feet north and 850 feet east of the SW corner of Section 29, T122N, R50W (NW ¼ SW ¼). Water is impounded in the NW ¼ SW ¼ Section 29.

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

(4) Pursuant to South Dakota Water Law 46-5-30.1 Donald Quade, 14647 471st Ave., Twin Brooks SD 57269 the holder and/or owner of Water Right No. 7144-3 is issued a license to impound 39 acre feet water from runoff in a storage dam with a priority date of June 10, 2009 from the location specified in (2) of this license. The water is used for fish and wildlife propagation and domestic livestock watering.

This license is subject to South Dakota Water Law, any limitations or conditions listed in Water Right No. 7144-3 and subject to the following qualifications:

- Water Right No. 7144-3 authorizes a dam with storage capacity of 39 acre feet of water and sufficient water annually to maintain the water level to the outlet elevation.
- Low flows as needed for downstream domestic use, including livestock water and prior water rights must be bypassed.



Jeanne Goodman, Chief Engineer
Water Rights Program
Department of Environment and Natural Resources

JAN 29 2014

date

