

WATER PERMIT NO. 1767-1

Name of Applicant: Dale Lundgren

Address: 19587 4 Mile Road, Sturgis SD 57785

Phone: 605 347-3233

Amount of Water Claimed: 99.5 add'l AF

Total Acres: NA

Source of Water Supply: Four Mile Creek

Water to be used for: domestic

County: Meade

Type of Waste Disposal System:

Location: 25 miles northeast of Sturgis

PRIORITY

Date Received: 3-5-02

Fee: \$150

Corrected Application Received: 3-8-02

Period of Annual Use: January 1 – December 31

Remarks: Location Notice No. 2727-1, August 1, 1951 priority date authorized 80.5 AF storage. This application increases storage capacity to 180 AF

Diversion Point: SW ¼ SW ¼ Sec 13-T7N-R8E

Land to be Irrigated: NA

Depth of Well: NA

Well Driller: : NA

Remarks:

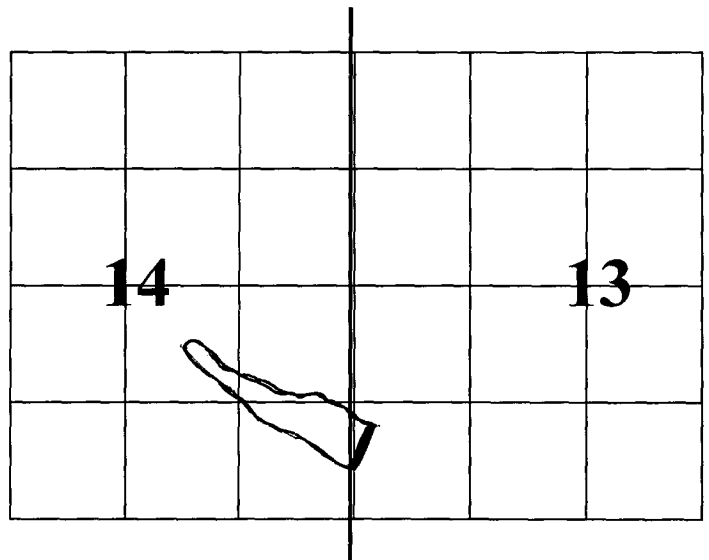
Type of Map: topo

Prepared by: Darrell Vig, NRCS

Reviewed and the Number Assigned on: 3-8-02

By: **Karen Schlaak**

Notice of Hearing - date to intervene: _____



FORM 2: Application for uses other than irrigation
(type or print)

Mail to: Water Rights Program Joe Foss Building 523 E. Capitol Pierre, SD 57501-3181 (605) 773-3352	No. <u>1767-1</u> (office use only) Hydrologic Unit <u>10120202</u>
	Basin <u>Belle Fourche River</u>
	Newspaper <u>Meade Co. Times-Tribune, Sturgis</u>

RECEIVED
MAR - 5 2002
WATER RIGHTS
PROGRAM

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

Check use(s) of water:

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

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

Description of amendment/correction: (i.e. change diversion point(s), add diversion point(s), change use, etc.) To increase existing water right from 80.5 Ac.Ft. to 180 Ac. Ft. Original dam was started in 1951 and fill height and storage were increased in 1962. Location Notice #2727-1

1. Name of Applicant Dale Lundgren Phone 605-347-3233
(check one) ☒ Owner ☐ Tenant/lessee
Mailing Address 19587 4 Mile Road Sturgis State SD 57785
(Street, RR, or Box and City) (Zip Code)
99.5 AF add'l

2. Amount of water claimed 180 *CFS or **GPM ***AF
(*Cubic Feet per Second) (**Gallons per Minute) (**Acre Feet - storage capacity of dam/dugout or annual use if applicable)

3. Source of water supply Empoundment Reservoir Dry Four Mile Creek

4. Location of point of diversion (example - 3 wells in SW1/4 NE1/4 section 12-T104N-R53W) 60 rods north and 8 rods west of the SE corner of section 14 T7N - R8E - SW 1/4 SW 1/4 Sec 13 - T7N - R8E, water
Impounded: SW 1/4 SW 1/4 Sec. 13 + SE 1/4 SE 1/4 N 1/2 SE 1/4 County Meade
Sec 14 - T7N - R8E

5. County or counties where water will be used Meade

6. Annual period during which water is to be used throughout the year Jan 1 - Dec 31

7. 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)

Attached completed engineering plan from 1996 Principal Spillway repair project.

* See attached location notice which was filed 8/1/51.

STATE OF SOUTH DAKOTA)
County of Meade 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, Dale Lundgren, 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 Dale Lundgren

Subscribed and sworn to before me this 14th day of February 2002

Carlene M. Roenck
Notary Public signature
Commission Expires 8/19/04

Supplemental Information

(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 _____

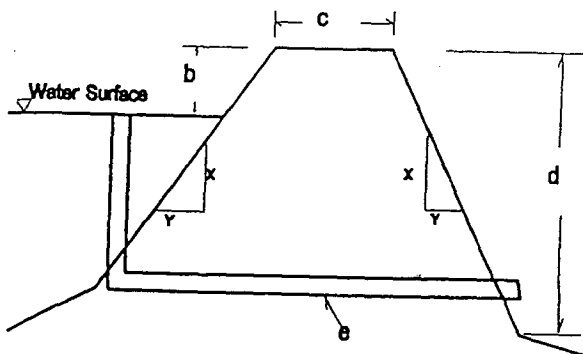
3. Dugout Information

- 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:



- b) Freeboard 5.8
- c) Crest Width 18'
Crest Length 720'
- d) Height 22.1'
- e) Primary Outlet Capacity 211 cfs
If pipe, diameter 48" barrel & 72" riser
- f) Secondary Spillway Capacity 1224 cfs
Spillway Width 80'
- g) X & Y Slope _____
Upstream 3:1
Downstream 2:1
- h) Surface Area of Impoundment 29.5 ac.
- i) Storage 180 Acre Feet
- j) Drainage Area Above Dam 1,952 Acres

**SOUTH DAKOTA
WATER PERMIT NO. 1767-1**

Date of first receipt of application March 5, 2002.

Date of return to applicant for corrections, amendments or changes March 6, 2002.

Date of receipt of corrected application March 8, 2002.

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 1767-1 to Dale Lundgren, 19587 4 Mile Road, Sturgis SD 57785 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. 1767-1 authorizes impoundment of an additional 99.5 acre-feet of water from Dry Fourmile Creek in an existing dam located in the SW $\frac{1}{4}$ SW $\frac{1}{4}$ Section 13-T7N-R8E. Location Notice No. 2727-1, with an August 1, 1951 priority date, authorized a dam with a storage capacity of 80.5 acre-feet. Since that time, the storage capacity of the dam has been increased for total storage capacity of 180 acre-feet. Water is impounded in the SW $\frac{1}{4}$ SW $\frac{1}{4}$ Section 13 and SE $\frac{1}{4}$ SE $\frac{1}{4}$, N $\frac{1}{2}$ SE $\frac{1}{4}$ Section 14; all in T7N-R8E. This permit authorizes impoundment of sufficient water to maintain water to the outlet elevation.
2. The water appropriated shall be used for the purpose of domestic use and livestock water purposes 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. 1767-1 is April 15, 2002.
5. The date from which applicant may claim right is March 5, 2002 (99.5 acre-feet) and August 1, 1951 (80.5 acre-feet).
6. One-fifth of the construction is to be completed on or before October 15, 2004.
7. All construction is to be completed on or before April 15, 2007.
8. Water is to be put to beneficial use on or before April 15, 2011.
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. 1767-1 and Location Notice No. 2727-1, combined, authorize a dam with a storage capacity of 180 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.

WATER MANAGEMENT BOARD

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

MAY 31 2002

date



RECEIPT

Water Rights Program

South Dakota Department of Environment and Natural Resources

417109

Pierre, March 5, 2002

RECEIVED OF Dale or Janice Lundgren, 19587 4 Mile Rd., Sturgis, SD 5778-9715
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 _____	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. _____	50	00
Fee for Filing Transfer Form _____		
Fee for Filing Extension Request _____		
Fee for _____		

(Any Other Work Provided by Law)	Total	200 00

By

Darland Erbe
Chief Engineer
gm

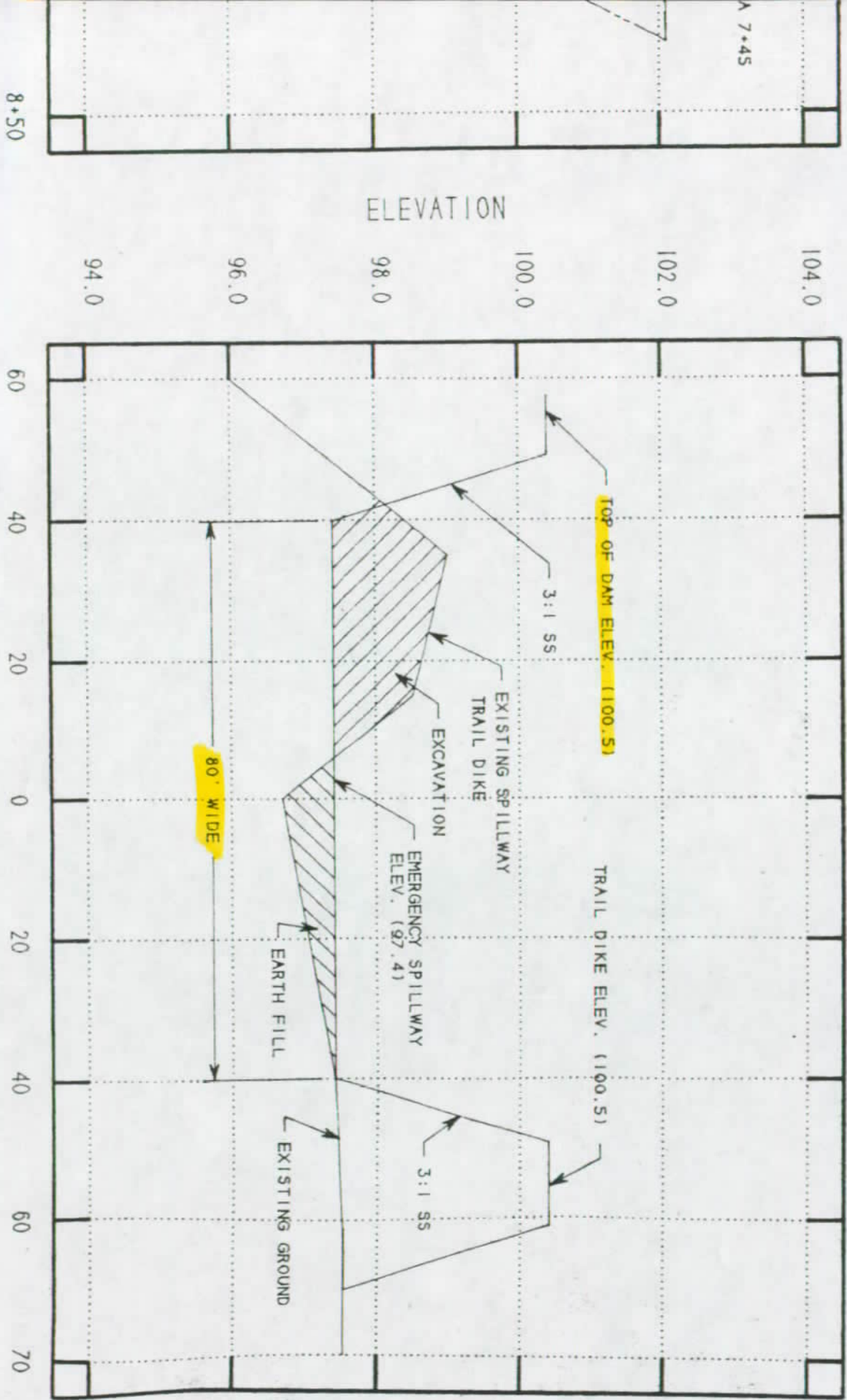
R 8 E

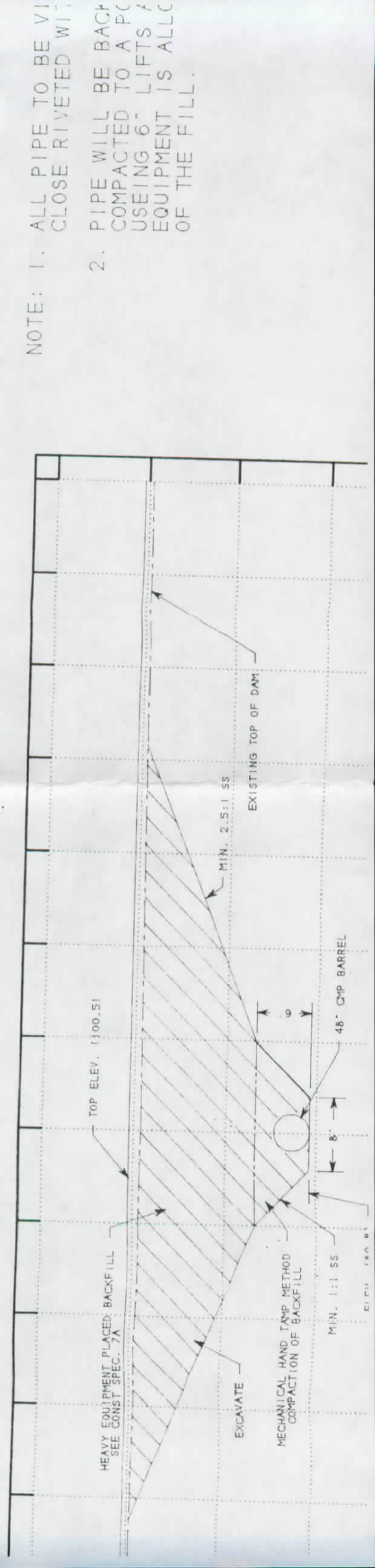
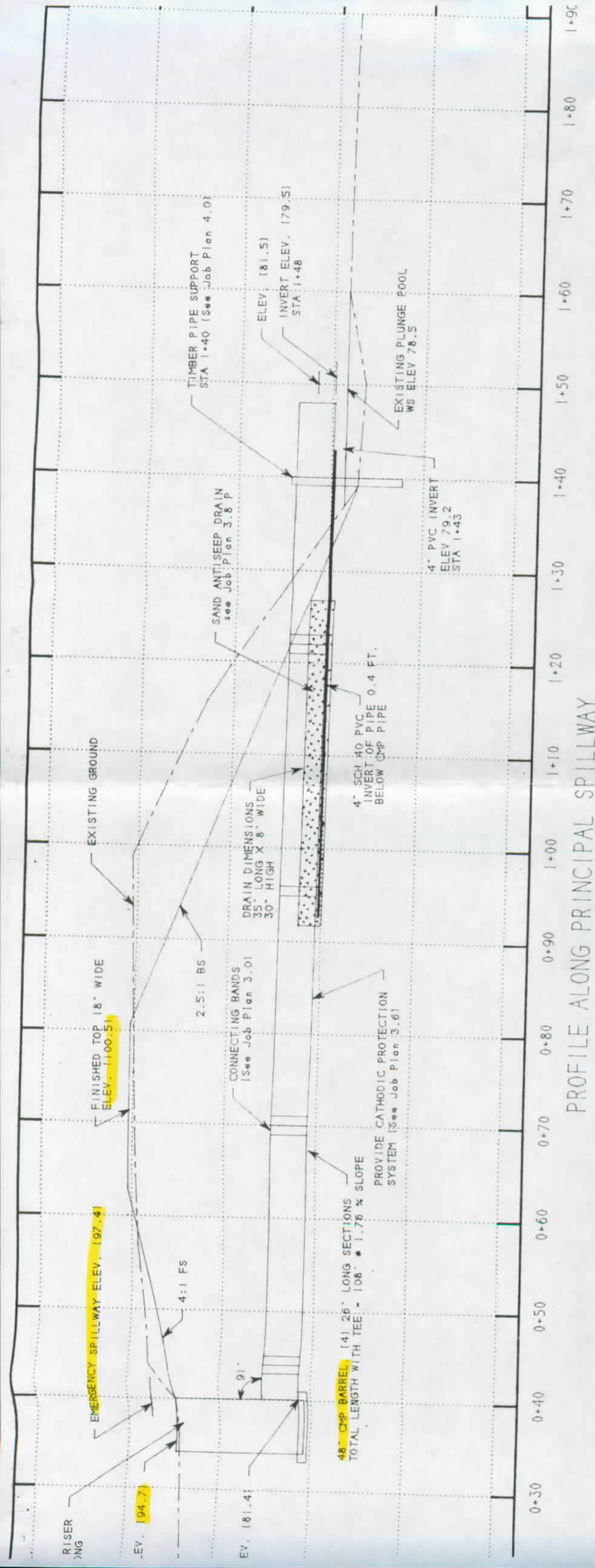
T 7 N



1767-1

CROSSSECTION AT CREST OF EMERGENCY SPILLWAY

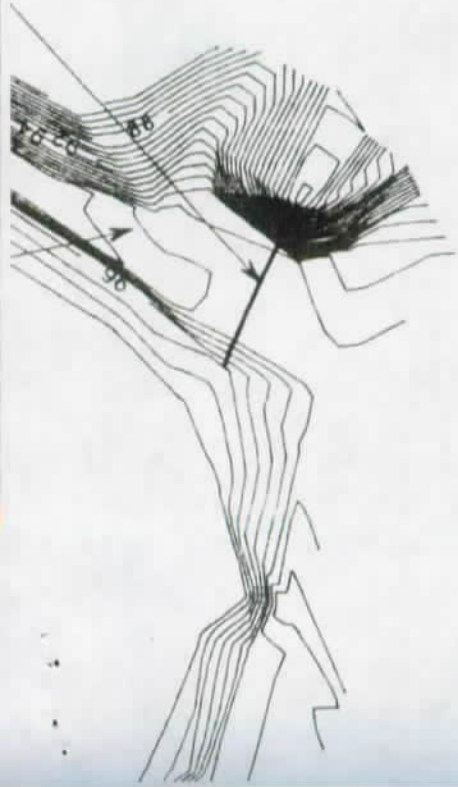




NOTE: 1. ALL PIPE TO BE VIBRO-PILED WITH CLOSE RIVETED JOINTS.

2. PIPE WILL BE BACKFILLED WITH 1/2" SAND AND COMPACTED TO A PC OF 95% USING 6" LIFTS AND EQUIPMENT IS ALLOWED OF THE FILL.

EXISTING EXISTING SPILLWAY
PIPE TO BE REMOVED AND REPLACED
EXCAVATE AS NEEDED
(See Cross-sections Sheet 2 of 9)



PLAN VIEW

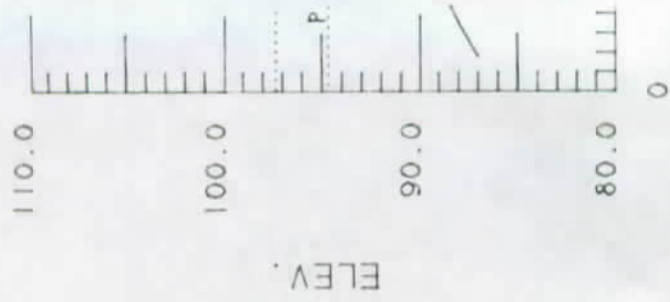
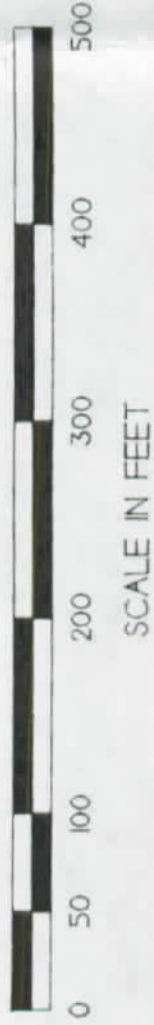


TABLE OF QUANTITIES

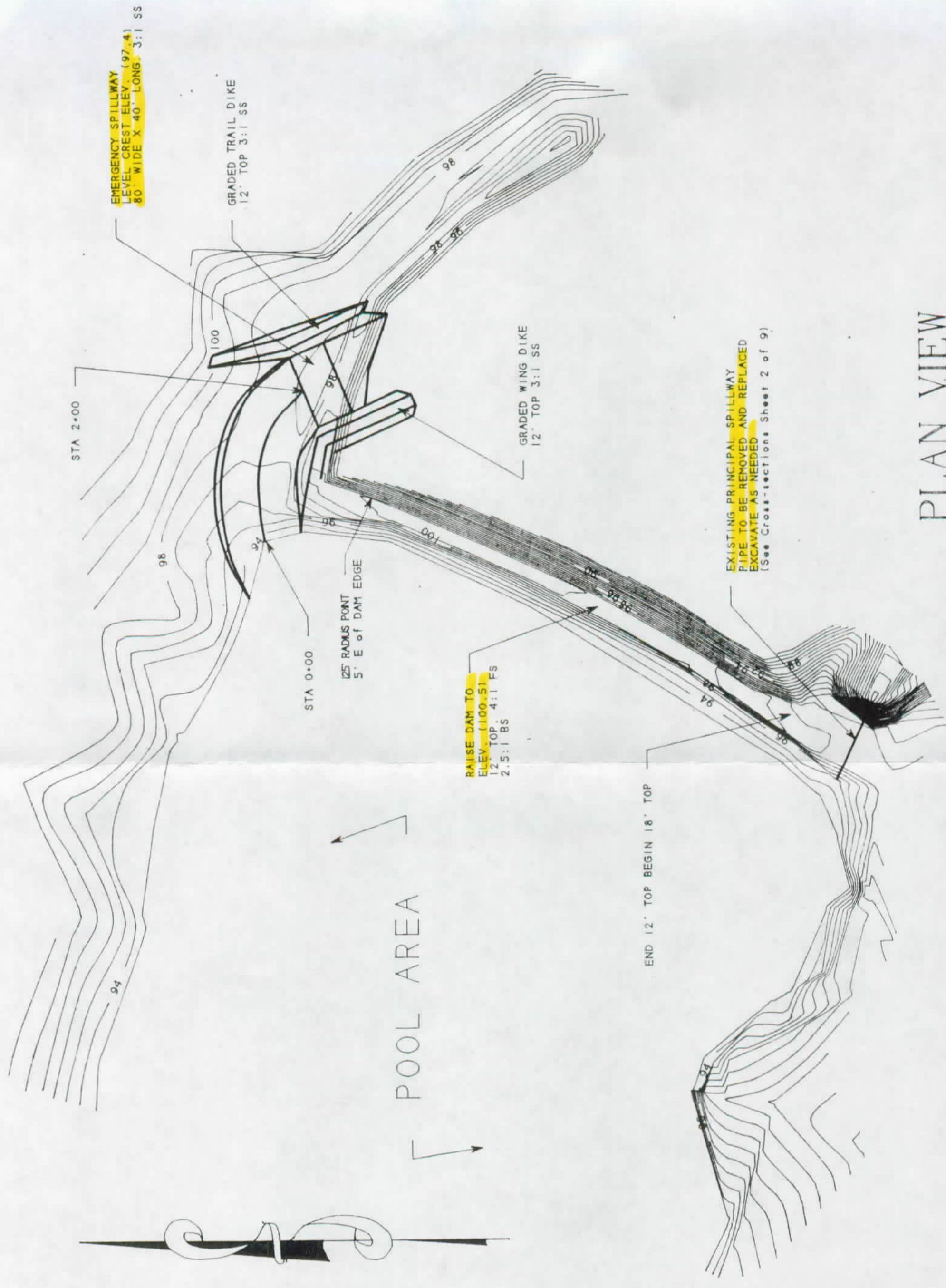
ITEM OR MATERIAL	UNIT	QUANTITIES	BUILT
1. 72" RISER W 48" STUB (4' long) (Annuone) VINYL COATED. CLOSED RIVET W/ CAULKED SEAMS (14 ga. w/ 1/2" Corrugations)	lf.	14	
2. 48" BARREL. VINYL COATED. W/ CAULKED SEAMS (14 ga. w/ 3" X 1" CORRUGATIONS) (HELICAL)	lf.	104	
3. 48" X 24" WIDE CONNECTION BANDS	ea.	4	
4. TRASH RACK AND BAFFLE (See Job Plan 6.4 for Table of Quantities)	ea.	1	
5. SAND ANTISEEP COLLAR FILTER SAND (See Job Plan 3.8 for Gradation)	cy.	81.20	
4" SCH 40 SOLID PVC	lf.	48.15	
4" SCH 40 PERFORATED PVC	lf.	27.95	
4" SCH 40 PVC TEE	ea.	1	
6. CATHODIC PROTECTION SYSTEM (See Job Plan 3.6 for Table of Quantities)	ea.	1	
7. TIMBER PIPE SUPPORT (See Job Plan 4.0 for Table of Quantities)	cy.	2.4	
8. CONCRETE FOR RISER BASE REINFORCING STEEL #4 REBAR	lbs.	75	
10. PIPE INSTALLATION (w/ 2500cy ex. & 2000 cy fill)	Lump	sum	
11. EARTHFILL	cy.	500	
12. EXCAVATION EMERGENCY SPILLWAY	cy.	500	
13. STRIPPING	cy.	250	
14. SEEDING	ac.	0.6	
15. STRUCTURE REMOVAL (CMP PIPE)	Lump	sum	

SOUTH DAKOTA CONSTRUCTION AND MATERIAL SPECIFICATIONS

SD-3 STRUCTURE REMOVAL
SD-4 STRIPPING
SD-5 EXCAVATION
SD-7A EARTHFILL-CLASS A- (Controlled Compaction)
SD-9 DRAIN FILL & FILTER
SD-12B CONCRETE FOR MINOR STRUCTURES
SD-13 STEEL REINFORCEMENT
SD-15 CORRUGATED METAL PIPE CONDUITS
SD-16 TIMBER FABRICATION AND INSTALLATION
SD-28C SEEDING
SD-31 CATHODIC PROTECTION
SD-50 ZINC-COATED IRON AND STEEL CORRUGATED PIPE
SD-55 PLASTIC PIPE

n No. 5.3)
n No. 6.4)

FICATIONS



PLAN VIEW



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

March 6, 2002

Darrell Vig
Natural Resources Conservation Service
2202 West Main St
Sturgis SD 57785

Dear Mr. Vig:

In reference to your phone conversation with Tim Schaal, enclosed is a topo map for the Dale Lundgren water permit application.

Please sign and return the map. If you have any questions, please contact me.

Sincerely,

Karen Schlaak

Karen Schlaak
Water Right Program
605 773-3352

enclosure

File No. XXX

Water Rights Division -DENR
Conversation or File Documentation

NAME OF PERSON OR FILE: Dale Lundgren Water Permit Application

ADDRESS: 19587 4 Mile Rd., Sturgis, SD 57785

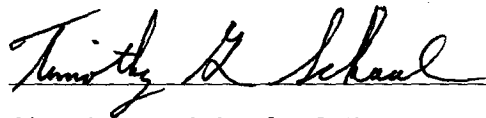
COUNTY: Meade

DATE: March 6, 2002

TELEPHONE: XXXXXXX

RE: Location of diversion point

I talked to Darrell Vig, from the NRCS in Sturgis, today about the diversion point description on Dale Lundgren's Water Permit Application. The description on the application (60 rods north and 8 rods west of the SE corner of Sec. 14-T7N-R8E) came from the original Location Notice. The dam was rebuilt and increased since then and now the description of the diversion point should be the SW 1/4 SW 1/4 Sec. 13-T7N-R8E with water impounded in the SW 1/4 SW 1/4 Sec. 13 and SE 1/4 SE 1/4 and N 1/2 SE 1/4 of Sec. 14-T7N-R8E. Mr. Vig agreed with this.

A handwritten signature in cursive script, reading "Timothy G. Schaal", written in dark ink.

Timothy G. Schaal, P.E.
Natural Resources Engineer Specialist
Water Rights Program

Feb. 15, 2002

Tim Schaal
Water Rights Program, DENR
Joe Foss Bldg.
523 East Capitol
Pierre, SD 57501-3181

RECEIVED
MAR - 5 2002
WATER RIGHTS
PROGRAM

Dear Mr. Schaal,

Enclosed is a water right application for my dam located in SE ¼ of section 14-T7-R8. As we discussed via phone on Feb. 8, 2002 with Darrell Vig, NRCS, you suggested that I apply for the additional 100 acre feet above the original 80.5 acre feet that was included in the 1951 Location Notice that my father filed when the dam was started. As I understand, that 1951 Location Notice would give me water rights back to that date (vested).

Therefore, I am enclosing a check for \$150 for the 100 Ac. Ft. additional water right plus \$50 for the water right license.

Thanking You,



Dale Lundgren

1DAMS2 XEQ 02/15/95 STRUCTURE SITE ANALYSIS COMPUTER PROGRAM
REV 01/01/90 SCS TECHNICAL RELEASE 48, (USER MANUAL) DATED JAN.
1990

TIME 15:47:03

***** THIS PROGRAM IS IN TEST STATUS *****

***** 80-80 LIST OF INPUT DATA *****

DAMS2 01/01/90 LUNDGREN WILDLIFE POND, MEADE CO. SO.DAK.
STRUCTURE LUNDGREN SE S14 T7N R8W
85.0 0.00
87.0 18.4
92.9 132.0
96.0 218.6
100.0 384.6
101.0 420.0

ENDTABLE

WSDATA 2A201 AC 82.0 1952 3.6
PDIRECT .69 2.95 5.1 3.6 5.88 7.4
POOLDATA ELEV 94.7 94.7 86.8 82.5
PSDATA 1 108 48 .027 81.5
PSINLET ELEV 1 18.85
ESCREST ELEV 97.4
ESDATA 02 200 0.03 3 0.035 10
BTMWIDTH FEET 60 80 100
COMMENT TR60 DAM, SINGLE PURPOSE IRRIGATION
COMMENT STORMS - 15 YR PS (1 DAY AND 10 DAY)
COMMENT 100 YR. 6 HR. EMERGENCY SPILLWAY
COMMENT FREEBOARD- P100+.12(PMP-100) =5.88"
COMMENT
COMMENT 48" BARREL, 108'LONG, 72" RISER
COMMENT ES TYPE 2 PROFILE WITH 30' CREST (-2.0% INLET CHANNEL)
COMMENT THIS DESIGN WILL MEET MEMO 27 CRITERIA FOR HYDROLOGY
GO, DESIGN
ENDJOB

***** MESSAGE - DRAINAGE AREA FROM WSDATA CONTROL BEING CONVERTED FROM
ACRES TO SQUARE MILES FOR COMPUTATION PURPOSES.

1DAMS2 XEQ 02/15/95
REV 01/01/90 ILDLIFE POND, MEADE CO. SO.DAK. WSID =
LUNDGREN

TR60 DAM, SINGLE PURPOSE IRRIGATION

STORMS - 15 YR PS (1 DAY AND 10 DAY)

100 YR. 6 HR. EMERGENCY SPILLWAY

FREEBOARD- P100+.12(PMP-100) =5.88"

48" BARREL, 108'LONG, 72" RISER

ES TYPE 2 PROFILE WITH 30' CREST (-2.0% INLET CHANNEL)

THIS DESIGN WILL MEET MEMO 27 CRITERIA FOR HYDROLOGY

1DAMS2 -----

XEQ 02/15/95 ILDLIFE POND, MEADE CO. SO.DAK. WSID=
LUNDGREN
REV 01/01/90 SE S14 T7N R8W SUBW=
01
TIME 15:47:03 SITE = LUNDG PASS= 1 PAGE=
1

***** BASIC DATA

HUMID- SUBHUMID CLIMATE AREA DESIGN CLASS A2
=3000 - 30000

STORM DISTRIBUTION PSH..10 DAY SCS DESIGN STORM (CHAPTER 21, NEH4 & SCS TR-60)

STORM DISTRIBUTION USED FOR EMERGENCY SPILLWAY IS;
SCS DESIGN STORM RAINFALL DISTRIBUTION. (CHAPTER 21 NEH4 AND SCS TR-60)

PRECIP.-	P-PS1 DAY 2.95	P-PS10 DAY 5.10	P-ES 3.60	P-FB 5.88
WSDATA-	CN 82.00	DA-SM 3.05	TC/L 3.60	-/H .00
SITEDATA-	PERM POOL 94.70	CREST PS 94.70	FP SED 86.80	ORF .00
	BASEFLOW .00	INITIAL EL .00	EXTRA VOL. .00	
PSDATA-	NO. COND. 1.00	COND L 108.00	D/W 48.00	-/H .00
	PS N .027	KE 1.00	WEIR L 18.85	TW EL 81.50
	2ND STG .00	ORF H .00	ORF L .00	START ES .00
CRESTS- ES5	ES1 .00	ES2 97.40	ES3 .00	ES4 .00
.00				
EMG DATA-	SIDE SLOPE 3.00	EXIT N .035	EXIT SLOPE .100	
EMG DATA-	ES TYPE 2	ES LENGTH 200	ES ENTRANCE N .030	
BTM WIDTH- BW5	BW1 60.00	BW2 80.00	BW3 100.00	BW4 .00
.00				

***** NOTE - THIS IS ONLY A PRELIMINARY EMG RATING CURVE OF
DISCHARGE/FT
OF WIDTH AND DOES NOT INCLUDE SIDESLOPE CORRECTION OR
REVISED RATING USING ACTUAL EMG. CONFIGURATION.

EMG ID CODE	02	ELEVATION INCREMENT (FT)= 1.000	
DISCHARGES-Q1	Q2	Q3	Q4
2.235	7.110	13.697	21.715
Q5	Q6	Q7	Q8
30.961	41.246	52.503	64.693
Q9	Q10	Q11	Q12
77.745	91.558	106.134	121.449

1DAMS2 -----

XEQ 02/15/95 ILDLIFE POND, MEADE CO. SO.DAK. WSID=
LUNDGREN
REV 01/01/90 SE S14 T7N R8W SUBW=
01
TIME 15:47:03 SITE = LUNDG PASS= 1 PAGE=
2

***** NOTE - MAIN TIME INCREMENT = 1.0481
CHANGED TO 1.0 FOR 10-DAY PS HYDROGRAPH.

PERM POOL	94.70 FT	182.3 ACFT	.00 AC	.0 CFS
CREST PS	94.70 FT	182.3 ACFT	.00 AC	.0 CFS
SED ACCUM	94.70 FT	182.3 ACFT	.00 AC	.0 CFS
STARTING E	94.70 FT	182.3 ACFT	.00 AC	.0 CFS

SCS-PSH	RAINFALL	1 DAY =	2.95 IN	10 DAY =	5.10 IN	DA =
3.05 SM						
	RUNOFF	1 DAY =	1.22 IN	10 DAY =	1.78 IN	

CLIMATIC INDEX = .69 CN 10-DAY = 68.

CHANNEL-LOSS FACTOR = .914

Q.1 PEAK = 460.9 CFS, AT 122.0 HRS.

ROUTED RESULTS - HYD TYPE	EMAX	VOL-MAX	AMAX
QMAX			
SCS-PSH	97.38 FT	275.9 ACFT	.00 AC
193.8 CFS			

PS STORAGE 93.6 ACFT BETWEEN ES CREST AND SED ACCUM
ELEVATIONS

DRAWDOWN (DDT) TEST	95.20 FT	196.3 ACFT	21.79 CFS
CONTROL IS .150 DETENTION STORAGE			

TIME TO DDT TEST DISCHARGE IS .71 DAYS - DRAWDOWN CONTINUING.

TIME = 6.29 DAYS, TO .0 CFS (LIMIT = 10.00 DAYS)

1DAMS2 -----

XEQ 02/15/95 ILDLIFE POND, MEADE CO. SO.DAK. WSID=
LUNDGREN
REV 01/01/90 SE S14 T7N R8W SUBW=
01
TIME 15:47:03 SITE = LUNDG PASS= 1 PAGE=
3

ES CREST 97.38 FT 275.9 ACFT .00 AC 193.8 CFS

PS STORAGE 93.6 ACFT BETWEEN ES CREST AND SED ACCUM
ELEVATIONS

STARTING E 94.70 FT 182.3 ACFT .00 AC .0 CFS

EFFECTIVE HEIGHT(H)= 14.9 FEET, PRODUCT = 4106. (H * STORAGE AT
CREST EMG.)

INPUT DESIGN CLASS = A2 =3000 - 30000

SCS-ESH D= 6.00 HR P= 3.60 IN Q= 1.87 IN DA =
3.05 SM TC= 3.60 HR CN= 82.00 VOL= 303.5 ACFT

Given PEAK = 842.1 CFS, AT 5.1 HRS.

SCS-FBH D= 6.00 HR P= 5.88 IN Q= 3.88 IN DA =
3.05 SM TC= 3.60 HR CN= 82.00 VOL= 630.6 ACFT

PEAK = 1787.9 CFS, AT 4.9 HRS.

ROUTED	BTM WIDTH	MAX ELEV	VOL-MAX	AREA-MAX	EMG. HP	VOL-
ES						
RESULTS	FT	FT	ACFT	AC	FT	ACFT
SCS-ESH	60.0	98.83	335.9	.0	1.45	
60.0						

PEAK - CFS	Q-PS	Q-ES	Q-TOT
DISCHARGE =	202.5	276.6	479.1

	CRITICAL DEPTH	CRITICAL VELOCITY	CRITICAL SLOPE-S/C	25% OF S/C
EMERGENCY	FT	FT/SEC	FT/FT	FT/FT
SPILLWAY----	.86	5.15	.019	.026

	DURATION FLOW	ATTACK OE/B	SUMMATION VEL**2 DELTA T
EMERGENCY	HRS	ACFT/FT	(FT/SEC)**2 HRS
SPILLWAY----	6.8	1.3	283.3

EXIT CHANNEL FLOW SUPERCRITICAL: MAX VELOCITY= 8.57 FT/SEC
EXIT SLOPE = .100 FT/FT

FLOW DEPTH = .524

ROUTED ES RESULTS SCS-FBH 138.2	BTM WIDTH	MAX ELEV	VOL-MAX	AREA-MAX	EMG. HP	VOL-
	FT	FT	ACFT	AC	FT	ACFT
	60.0	100.84	414.2	.0	3.45	

PEAK - CFS	Q-PS	Q-ES	Q-TOT
DISCHARGE =	213.9	1156.5	1370.4

	CRITICAL	CRITICAL	CRITICAL	25% OF
	DEPTH	VELOCITY	SLOPE-S/C	S/C
EMERGENCY	FT	FT/SEC	FT/FT	FT/FT
SPILLWAY----	2.18	7.98	.014	.019

	DURATION	ATTACK	SUMMATION
	FLOW	OE/B	VEL**2 DELTA T
EMERGENCY	HRS	ACFT/FT	(FT/SEC)**2 HRS
SPILLWAY----	9.2	6.2	966.1

EXIT CHANNEL FLOW SUPERCRITICAL: MAX VELOCITY= 14.78 FT/SEC
EXIT SLOPE = .100 FT/FT
FLOW DEPTH = 1.229

ROUTED ES RESULTS SCS-ESH 54.3	BTM WIDTH	MAX ELEV	VOL-MAX	AREA-MAX	EMG. HP	VOL-
	FT	FT	ACFT	AC	FT	ACFT
	80.0	98.69	330.2	.0	1.31	

PEAK - CFS	Q-PS	Q-ES	Q-TOT
DISCHARGE =	201.7	308.5	510.2

	CRITICAL	CRITICAL	CRITICAL	25% OF
	DEPTH	VELOCITY	SLOPE-S/C	S/C
EMERGENCY	FT	FT/SEC	FT/FT	FT/FT
SPILLWAY----	.76	4.90	.020	.027

	DURATION	ATTACK	SUMMATION
	FLOW	OE/B	VEL**2 DELTA T
EMERGENCY	HRS	ACFT/FT	(FT/SEC)**2 HRS
SPILLWAY----	6.4	1.1	238.7

EXIT CHANNEL FLOW SUPERCRITICAL: MAX VELOCITY= 8.03 FT/SEC
EXIT SLOPE = .100 FT/FT
FLOW DEPTH = .472

ROUTED ES RESULTS SCS-FBH 123.6	BTM WIDTH	MAX ELEV	VOL-MAX	AREA-MAX	EMG. HP	VOL-
	FT	FT	ACFT	AC	FT	ACFT
	80.0	100.42	399.6	.0	3.04	

PEAK - CFS	Q-PS	Q-ES	Q-TOT
DISCHARGE =	211.6	1225.0	1436.6

	CRITICAL	CRITICAL	CRITICAL	25% OF
	DEPTH	VELOCITY	SLOPE-S/C	S/C
EMERGENCY	FT	FT/SEC	FT/FT	FT/FT
SPILLWAY----	1.89	7.56	.015	.020

	DURATION	ATTACK	SUMMATION
	FLOW	OE/B	VEL**2 DELTA T
EMERGENCY	HRS	ACFT/FT	(FT/SEC)**2 HRS
SPILLWAY----	8.7	4.8	796.7

EXIT CHANNEL FLOW SUPERCRITICAL: MAX VELOCITY= 13.70 FT/SEC
EXIT SLOPE = .100 FT/FT
FLOW DEPTH = 1.075

ROUTED	BTM WIDTH	MAX ELEV	VOL-MAX	AREA-MAX	EMG. HP	VOL-
ES						
RESULTS	FT	FT	ACFT	AC	FT	ACFT
SCS-ESH	100.0	98.59	325.9	.0	1.20	
50.0						

PEAK - CFS	Q-PS	Q-ES	Q-TOT
DISCHARGE =	201.0	330.2	531.3

	CRITICAL	CRITICAL	CRITICAL	25% OF
	DEPTH	VELOCITY	SLOPE-S/C	S/C
EMERGENCY	FT	FT/SEC	FT/FT	FT/FT
SPILLWAY----	.69	4.67	.020	.028

	DURATION	ATTACK	SUMMATION
	FLOW	OE/B	VEL**2 DELTA T
EMERGENCY	HRS	ACFT/FT	(FT/SEC)**2 HRS
SPILLWAY----	6.1	.9	206.9

EXIT CHANNEL FLOW SUPERCRITICAL: MAX VELOCITY= 7.58 FT/SEC
EXIT SLOPE = .100 FT/FT
FLOW DEPTH = .430

ROUTED	BTM WIDTH	MAX ELEV	VOL-MAX	AREA-MAX	EMG. HP	VOL-
ES						
RESULTS	FT	FT	ACFT	AC	FT	ACFT
SCS-FBH	100.0	100.12	388.7	.0	2.73	
112.8						

PEAK - CFS	Q-PS	Q-ES	Q-TOT
DISCHARGE =	209.9	1256.5	1466.3

	CRITICAL	CRITICAL	CRITICAL	25% OF
	DEPTH	VELOCITY	SLOPE-S/C	S/C
EMERGENCY	FT	FT/SEC	FT/FT	FT/FT
SPILLWAY----	1.67	7.16	.015	.021

	DURATION	ATTACK	SUMMATION
	FLOW	OE/B	VEL**2 DELTA T
EMERGENCY	HRS	ACFT/FT	(FT/SEC)**2 HRS
SPILLWAY----	8.3	3.9	679.8

EXIT CHANNEL FLOW SUPERCRITICAL: MAX VELOCITY= 12.77 FT/SEC
EXIT SLOPE = .100 FT/FT
FLOW DEPTH = .956

ROUTED	BTM WIDTH	MAX ELEV	VOL-MAX	AREA-MAX	EMG. HP	VOL-
ES						
RESULTS	FT	FT	ACFT	AC	FT	ACFT

***** MINIMUM DEPTH IN TR60 IS 3.000 FEET. *****

```
EXIT CHANNEL FLOW SUPERCRITICAL: MAX VELOCITY= 8.54 FT/SEC
                                EXIT SLOPE   = .100 FT/FT
                                FLOW DEPTH    = .522
```

ROUTED ES RESULTS SCS-FBH 138.1	BTM WIDTH FT 60.0	MAX ELEV FT 100.85	VOL-MAX ACFT 414.8	AREA-MAX AC .0	EMG. HP FT 3.45	VOL- ACFT
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PEAK - CFS DISCHARGE =	Q-PS 214.0	Q-ES 1154.8	Q-TOT 1368.8
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	CRITICAL DEPTH FT	CRITICAL VELOCITY FT/SEC	CRITICAL SLOPE-S/C FT/FT	25% OF S/C FT/FT
EMERGENCY SPILLWAY----	2.17	7.98	.014	.019

	DURATION FLOW HRS	ATTACK OE/B ACFT/FT	SUMMATION VEL**2 DELTA T (FT/SEC)**2 HRS
EMERGENCY SPILLWAY----	9.2	6.2	964.4

EXIT CHANNEL FLOW SUPERCRITICAL: MAX VELOCITY= 14.77 FT/SEC
EXIT SLOPE = .100 FT/FT
FLOW DEPTH = 1.228

ROUTED ES RESULTS SCS-ESH 54.1	BTM WIDTH FT 80.0	MAX ELEV FT 98.70	VOL-MAX ACFT 330.8	AREA-MAX AC .0	EMG. HP FT 1.30	VOL- ACFT
--	-------------------------	-------------------------	--------------------------	----------------------	-----------------------	--------------

PEAK - CFS DISCHARGE =	Q-PS 201.7	Q-ES 306.3	Q-TOT 508.0
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	CRITICAL DEPTH FT	CRITICAL VELOCITY FT/SEC	CRITICAL SLOPE-S/C FT/FT	25% OF S/C FT/FT
EMERGENCY SPILLWAY----	.76	4.89	.020	.027

	DURATION FLOW HRS	ATTACK OE/B ACFT/FT	SUMMATION VEL**2 DELTA T (FT/SEC)**2 HRS
EMERGENCY SPILLWAY----	6.4	1.1	236.9

EXIT CHANNEL FLOW SUPERCRITICAL: MAX VELOCITY= 8.01 FT/SEC
EXIT SLOPE = .100 FT/FT
FLOW DEPTH = .470

ROUTED ES RESULTS SCS-FBH 123.4	BTM WIDTH FT 80.0	MAX ELEV FT 100.44	VOL-MAX ACFT 400.1	AREA-MAX AC .0	EMG. HP FT 3.04	VOL- ACFT
---	-------------------------	--------------------------	--------------------------	----------------------	-----------------------	--------------

PEAK - CFS DISCHARGE =	Q-PS 211.7	Q-ES 1223.8	Q-TOT 1435.5
---------------------------	---------------	----------------	-----------------

	CRITICAL DEPTH FT	CRITICAL VELOCITY FT/SEC	CRITICAL SLOPE-S/C FT/FT	25% OF S/C FT/FT
EMERGENCY SPILLWAY----	1.89	7.55	.015	.020

DURATION	ATTACK	SUMMATION
----------	--------	-----------

	FLOW	OE/B	VEL**2 DELTA T
EMERGENCY	HRS	ACFT/FT	(FT/SEC)**2 HRS
SPILLWAY----	8.7	4.8	795.3

EXIT CHANNEL FLOW SUPERCRITICAL: MAX VELOCITY= 13.69 FT/SEC
EXIT SLOPE = .100 FT/FT
FLOW DEPTH = 1.074

ROUTED	BTM WIDTH	MAX ELEV	VOL-MAX	AREA-MAX	EMG. HP	VOL-
ES						
RESULTS	FT	FT	ACFT	AC	FT	ACFT
SCS-ESH	100.0	98.60	326.5	.0	1.20	
49.8						

PEAK - CFS	Q-PS	Q-ES	Q-TOT
DISCHARGE =	201.1	328.1	529.3

	CRITICAL	CRITICAL	CRITICAL	25% OF
	DEPTH	VELOCITY	SLOPE-S/C	S/C
EMERGENCY	FT	FT/SEC	FT/FT	FT/FT
SPILLWAY----	.69	4.67	.020	.028

	DURATION	ATTACK	SUMMATION
	FLOW	OE/B	VEL**2 DELTA T
EMERGENCY	HRS	ACFT/FT	(FT/SEC)**2 HRS
SPILLWAY----	6.1	.9	205.5

EXIT CHANNEL FLOW SUPERCRITICAL: MAX VELOCITY= 7.56 FT/SEC
EXIT SLOPE = .100 FT/FT
FLOW DEPTH = .428

ROUTED	BTM WIDTH	MAX ELEV	VOL-MAX	AREA-MAX	EMG. HP	VOL-
ES						
RESULTS	FT	FT	ACFT	AC	FT	ACFT
SCS-FBH	100.0	100.13	389.3	.0	2.73	
112.6						

PEAK - CFS	Q-PS	Q-ES	Q-TOT
DISCHARGE =	210.0	1257.1	1467.0

	CRITICAL	CRITICAL	CRITICAL	25% OF
	DEPTH	VELOCITY	SLOPE-S/C	S/C
EMERGENCY	FT	FT/SEC	FT/FT	FT/FT
SPILLWAY----	1.67	7.16	.015	.021

	DURATION	ATTACK	SUMMATION
	FLOW	OE/B	VEL**2 DELTA T
EMERGENCY	HRS	ACFT/FT	(FT/SEC)**2 HRS
SPILLWAY----	8.3	3.9	678.6

EXIT CHANNEL FLOW SUPERCRITICAL: MAX VELOCITY= 12.77 FT/SEC
EXIT SLOPE = .100 FT/FT
FLOW DEPTH = .957

ROUTED	BTM WIDTH	MAX ELEV	VOL-MAX	AREA-MAX	EMG. HP	VOL-
ES						
RESULTS	FT	FT	ACFT	AC	FT	ACFT

***** MINIMUM DEPTH IN TR60 IS 3.000 FEET. *****
MINIMUM ES 100.0 100.40 398.8 .0 3.00
122.1

1DAMS2....JOB NO. 1 COMPLETE

LUNDGREN ILDLIFE POND, MEADE CO. SO.DAK.

0 SUBWATERSHED(S) ANALYZED

1 STRUCTURE(S) ANALYZED

13 HYDROGRAPHS ROUTED AT LOWEST SITE

0 TRIALS TO OBTAIN BOTTOM WIDTH FOR SPECIFIED VELOCITY(S)

DAMS2....COMPUTATIONS COMPLETE

1
01/01/90

SUMMARY TABLE 1

DAMS2 VERSION

WATERSHED ID
RUN TIME

RUN DATE

LUNDGREN
15:47:03

02/15/95

>>>	SITE	SUBWS	SUBWS DA	CURVE	TC	TOTAL DA	TYPE	STRUC
<<<	ID	ID	(SQ MI)	NO.	(HRS)	(SQ MI)	DESIGN	CLASS
	LUNDG	01	3.05	82.	3.60	3.05	TR60	A2

PASS	DIA/	ES CREST	BTM	MAX	MAX	YARDAGE	OE/B*	EXIT*
TYPE	NO.	WIDTH	ELEV	WIDTH	HP	ELEV	EMB	VELOCITY
HYD	(IN/FT)	(FT)	(FT)	(FT)	(FT)	(CY)	(AF/FT)	(FT/SEC)

1	48.0	97.38	60.00	3.45	100.84	0.	6.2	14.78
SCS-FBH								
1	48.0	97.38	80.00	3.04	100.42	0.	4.8	13.70
SCS-FBH								
1	48.0	97.38	100.00	3.00	100.38	0.	3.9	12.77
MINIMUM ES								
1	48.0	97.40	60.00	3.45	100.85	0.	6.2	14.77
SCS-FBH								
1	48.0	97.40	80.00	3.04	100.44	0.	4.8	13.69
SCS-FBH								
1	48.0	97.40	100.00	3.00	100.40	0.	3.9	12.77
MINIMUM ES								

* OE/B AND EXIT VELOCITY ARE BASED ON THE ROUTED HYDROGRAPH
AND WILL NOT RELATE TO THE MAX. ELEV. (TOP OF DAM),
WHICH IS SET BY MINIMUM DESIGN CRITERIA.

DAMS2.....SUMMARY TABLE 1 COMPLETED

SCS DAMS2 VERSION 01/01/90
LUNDGREN FILES

INPUT = D:\DAMS2\DATA\LUND2715
OUTPUT = D:\DAMS2\DATA\LUND2715.OUT DATED 02/15/95

15:47:03

Belle Fourche River

2727 -1

My Draw Number

SECRET

PERRE S. DAK

Notary Public

LOCATION NOTICE

Meade

County

Dry Draw Number

Program Year

ACP Farm Serial No.

KNOW ALL MEN BY THESE PRESENTS:

That Carl E. Lundgren
Whose post office is Sturgis South Dakota, a citizen of the
United States, above the age of 21 years, being in possession of the land covered
by the above ACP farm serial number of which the land upon which the works
described below are to be constructed is a part, in Meade County,
South Dakota, availing him self of the right granted him under the
provisions of Section 61.0133 South Dakota Code of 1939 has located and claims
the right to construct a certain dam across a dry draw situated in the S E 1/4
of the S E 1/4 of Section 14 Township 7 N Range 8 E, and has located
and claims the right to construct ditches and flumes for the purpose of directing
flood waters from said dam for irrigation of the land first above described
and for Live Stock Purposes, and claims the right of way across any land for
the purpose of conveying water for said purposes.

Said locator claims for the above purpose 80.5 acre feet of water
annually.

The location of the point of diversion of the reservoir is as follows:

From the southeast corner of Sec. 14, T 7 N, R 8 E, B.H.M., north
60 rods; thence west 8 rods to the point of diversion.

The ditch will run in a direction to and
on said land for a distance of feet.

Said location was made on the 1st day of August 1951
Witness my hand and seal this 1st day of August 1951

Carl E. Lundgren
Locator

Herewith is enclosed one dollar for filing in the State Engineer's Office as
required under Section 55.1806 of the South Dakota Code of 1939.

STATE OF SOUTH DAKOTA,)
County of Meade) ss

On the 1st day of August 1951, before me
Otto H. Langhinrichs, a Notary Public in and for the County and State
aforesaid, personally appeared Carl E. Lundgren to me personally
known to be the person who executed the foregoing instrument and acknowledged
that he executed the same for the use and purposes therein set forth.

Witness my hand and official seal the day and date above written.

My commission expires

Sept. 22 - 1953

Otto H. Langhinrichs
Notary Public

Design Report
Dale Lundgren Dam
Meade County, SD
SE 1/4 S 14, T7N, R8E

Background:

This is a rehabilitation of an existing dam which was originally constructed in 1963. The primary use is for domestic water both for grazing of adjacent rangeland and for water supply at the ranch headquarters. The dam has functioned well through the years providing a dependable supply of water even through drought cycles. The operator believes the original dam was constructed without SCS assistance, and then a few years later SCS assisted with installation of the present principal spillway and other modifications. The operator has requested assistance for replacement of the C.M.P. principal spillway which is now perforated in a number of locations due to corrosion.

Structure Data: (existing)

Drainage Area - 1,952 ac.
Length of Fill - 730 ft.
Height of Fill - 21.5 ft.
Effective Height - 18.5 ft.
Storage - 260 ac-ft.
Storage x Effective Height - 4,810
Principal Spillway - 48" C.M.P. barrel, 60" C.M.P. riser
Cathodic Protection - none
Embankment - 14' top, 3:1, 2:1
Emergency Spillway - vegetated, 40' wide, 500' long
level crest

→ Hazard Class - (a)

Soils Data - valley floor: Stetter, 0-60" CH & MH
abutments: Pierre, 0-34", CH & MH
34-60", CH

Year Constructed - 1963

Present Structure Condition:

The front face of the dam was originally armored with a single layer of hand placed rock approximately 8-12" diameter. This rock is still intact above the principal spillway elevation. The front face is also well vegetated including woody vegetation (willow, ash, and elm) which has established naturally at the high water line (see photos). The general condition of the front slope is remarkably good considering the dam is facing to the northwest directly into the prevailing winds.

The structure was inspected in September 1994 and at that time had cracking along the entire length of the top of the dam. The cracks were estimated at 12-20" deep and were primarily perpendicular to the centerline. This would be typical of dams

constructed of CH-MH soils in western South Dakota. According to the owner the water surface in the reservoir has reached levels within a foot of the top on a number of occasions over the last 31 years. On none of these occasions did the cracking cause any structural problems.

The backslope, downstream toe, and abutment areas of the dam show no indication of sliding, sloughing, piping or seepage. There is a small pocket of hydrophytic vegetation in a depressional area approximately 75 yards downstream of the dam in the old channel remnant. The embankment and foundation appear relatively impermeable.

The dam was originally constructed with an emergency on the left abutment outletting on the sidehill just downstream from the embankment. This spillway began to erode during the early years when the structure did not have a principal spillway. The erosion eventually necessitated reconstruction of the emergency spillway with a trail dike and level crest approximately 500' long. The emergency spillway averages 40' wide. The outlet is stable with little evidence of erosion on the sidehill and small draw used as an outlet. The spillway capacity was reduced considerably by reconstruction in the present configuration. The dam has never overtopped.

The principal spillway is a 48" C.M.P. barrel with 60" C.M.P. riser, uncoated, and without cathodic protection. It has been in service about 28 years. It has a naturally formed plunge pool which is stable.

The structure is located on Fourmile Creek approximately 6 miles from its confluence with the Belle Fourche River. There are no homes or major works of improvement along Fourmile Creek between the dam and the Belle Fourche River. The structure is classified as Hazard Class a.

Design Considerations:

The owner wants to maintain the pool at the present elevation. Increasing the top elevation of the dam any more than 0.5' would require reworking one of the slopes. Since both of these slopes are stable and in a well vegetated condition, a significant raise in top elevation was not considered a desirable option. Therefore, design alternatives were considered which would meet the design requirements for the structure class and stay within these parameters.

Using TR-60 criteria for a single purpose dam with vegetated E.S. would require a 25 year PSH. The DAMS2 routing for this criteria gave the following options:

1. Raise ES elevation and top of dam 1.3'.
2. Increase size of P.S. barrel to 66".

Using TR-60 criteria for a single purpose irrigation dam with vegetated E.S. would require a PSH equal to half of design life (30 year design life).

The routing for this criteria, using a 15 year PSH and a 48" barrel gave an emergency spillway elevation nearly equal to the existing spillway and a top elevation which would only require earth fill in a few low spots on the existing embankment. This is the design alternative chosen for the plans as submitted. The owner understands this alternative may have a higher maintenance requirement.

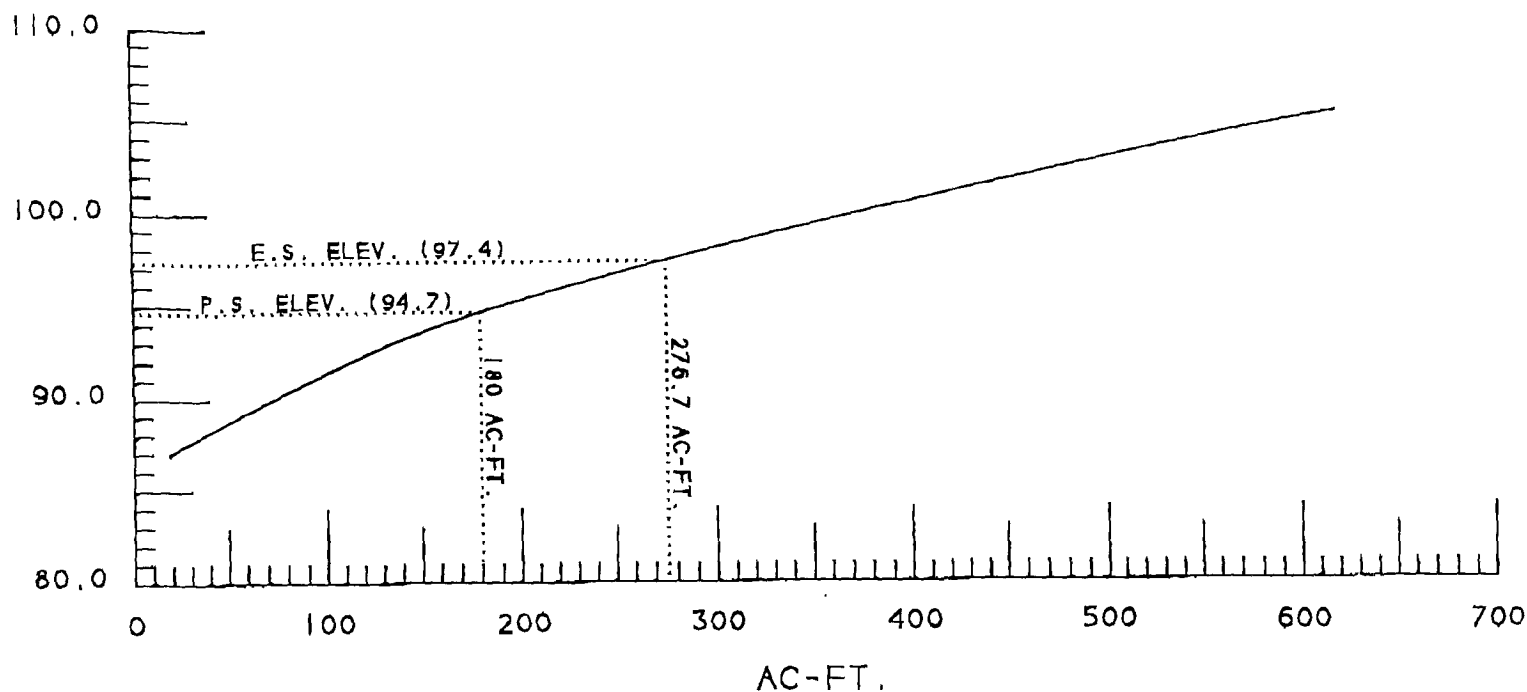
The combination of woody vegetation, grasses, and rock facing have provided effective protection against wave action on the existing structure. The proposed plans will leave this slope protection intact.

Due to the condition of the structure, and the apparent lack of any structural, stability, or seepage problems; no soils investigation was done. Soils resistivity was measured with a single probe meter as 580 ohm/cc.

Structural Data: (proposed)

Drainage Area - 1,952 ac.
Length of Fill - 730 ft.
Height of Fill - 22 ft.
Effective Height - 19 ft.
Storage - 276.7 ac-ft.
Storage x Effective Height - 5,258
Principal Spillway - 48" C.M.P. barrel, 72" C.M.P. riser
Corrosion Protection - vinyl coated C.M.P with Zinc anodes
Embankment - 14' top, 3:1, 2:1 slopes
Emergency Spillway - 80' wide, 40' level crest
Hazard Class - (a)

Steven Quissell
Ag Engineer



STAGE-STORAGE CURVE

DALE LUNDGREN
DAM RESTORATION

MEADE CO. SD - ELK CREEK CD.
SW 1/4 13 & SE 1/4 14 T-7N R-8E



U.S. DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

DESIGNED.....s. quissell & g. miller.....

DRAFTED.....g. miller.....

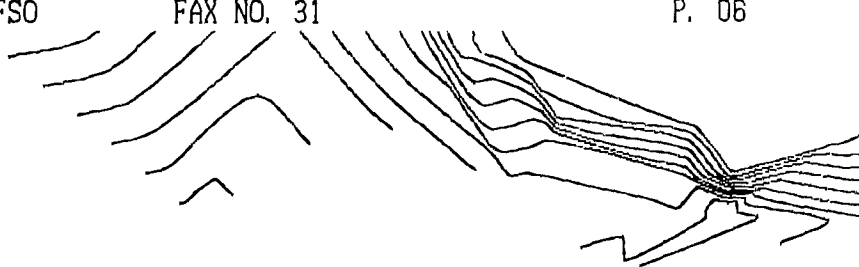
DATE.....2/95.....

APPROVED BY *Dwight H. ...*

TITLE *St. Cons. Engineer*

SHEET 1 OF 9

DWG NO.



STRUCTURE DATA

DRAINAGE AREA - 1952 AC.

LENGTH OF FILL - 730 FT.
HEIGHT OF FILL - 22 FT.
EFFECTIVE HEIGHT - 19 FT.

→ HAZARD CLASS (a)

STORAGE • E.S. ELEV. - 276.7 AC-FT.
STORAGE • TOP OF DAM - 400.0 AC-FT.
STORAGE X EFFECTIVE HEIGHT - 5258

ATTACHMENTS TO PLAN

WATERTIGHT CONNECTING BANDS (Job Plan No. 3.0)
CATHODIC PROTECTION SYSTEM (Job Plan No. 3.6)
SAND ANTISEEP COLLAR (Job Plan No. 3.8)
TIMBER PIPE SUPPORT (Job Plan No. 4.0)
C.M. PIPE RISER WITH FABRICATED TEE (Job Plan No. 5.3)
TRASH RACK AND BAFFLE FOR 72" RISER (Job Plan No. 6.4)
SD-28C SEEDING PLAN
SOUTH DAKOTA CONSTRUCTION AND MATERIAL SPECIFICATIONS

Water Permit Application No. 1767-1
Dale Lundgren

Top of Dam Elev. - 100.57
2nd Spillway Elev. - 97.4
P. Spillway Elev. - 94.7
D/S Toe Elev. - 78.5

Cat. 3 - Low Hazard Dam

Ht. = 22 ft.

Normal Storage Capacity = 180 A.-Ft
Int Storage Capacity = 277
Max Storage Capacity = 400

Int Capacity x Eff Ht. = $277 \times 19 = 5263$ 73000 $\therefore$ 50 year
Minimum Spillway Design

From USGS "WRI 80-80" Tech for Est Flood Peaks ... in SD"

DA = 1952 $A_c = 3.05 \text{ mi}^2$

Slope = 40 ft/mi

$S_x = 1.90$

$$\begin{aligned} Q_{50} &= 106 A^{.63} S^{.45} S_x^{-.69} \\ &= 106 (3.05)^{.63} (40)^{.45} (1.90)^{-.69} \\ &= 106 (2.02) (5.26) (.6422) \\ &= \underline{725 \text{ cfs}} \end{aligned}$$

$$\begin{aligned} Q_{100} &= 132 A^{.65} S^{.46} S_x^{-.67} \\ &= 132 (3.05)^{.65} (40)^{.46} (1.90)^{-.67} \\ &= 132 (2.06) (5.46) (.6505) \\ &= \underline{968 \text{ cfs}} \end{aligned}$$

Secondary Spillway Flow

$$\begin{aligned} Q &= C L H^{3/2} \quad C = 2.6 \\ &= (2.6) (40) (3.1)^{1.5} \quad h = 80 \\ &= \underline{1135 \text{ cfs}} \quad H = 3.1 \end{aligned}$$

NRCS Annual Yield

DA = 1952, CN = 82, ISU = 1 1/2

$$\begin{aligned} 80\% \text{ chance} &= 0.24 \\ 0.24 \times 1952/12 &= \underline{39 \text{ A.-Ft}} \end{aligned}$$

$$\begin{aligned} 50\% \text{ chance} &= 0.60 \\ 0.60 \times 1952/12 &= \underline{98 \text{ A.-Ft}} \end{aligned}$$

$$\begin{aligned} 10\% \text{ chance} &= 2.3 \\ 2.3 \times 1952/12 &= \underline{374 \text{ A.-Ft}} \end{aligned}$$

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 Discharge - OK
7. Spillway Rating - OK
8. Specs - std NRCS - OK
9. CPP - N/A Cat. 3 - OK



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

March 21, 2002

Dale Lundgren
19587 4 Mile Road
Sturgis, SD 57785

Dear Mr. Lundgren:

We have reviewed the plans and specifications for the repair project completed in 1996 for your dam located in the SW 1/4 of Section 13-T7N-R8E, in Meade County. The plans and specifications as submitted 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 dam, from the responsibility for operating and maintaining the dam in good repair to ensure the safety of the dam.

The Lundgren Dam (ID No. SD01061) is classified as a small size, Category 3, Low Hazard dam. The dam height will be changed to 22 feet, the normal storage capacity will be changed to 180 acre-feet and the maximum storage capacity will be changed to 400 acre-feet.

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

Sincerely,

Gale N. Selken, P.E.
Natural Resources Engineer Director
for Garland Erbele, Chief Engineer
Water Rights Program
(605) 773-3352

c: Darrel Vig, NRCS, Sturgis



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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. 1767-1, Dale Lundgren**

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. 1767-1, Dale Lundgren, 19587 4 Mile Road, Sturgis SD 57785.

The Chief Engineer is recommending APPROVAL of Application No. 1767-1 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. 1767-1 and Location Notice No. 2727-1, combined, authorizes a dam with a storage capacity of 180 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
March 21, 2002

REPORT ON
WATER PERMIT APPLICATION NO. 1767-1
Dale Lundgren
March 18, 2002

Water Permit Application No. 1767-1 has been filed by Dale Lundgren to impound an additional 99.5 acre-feet of water from Dry Four Mile Creek in an existing dam located in the SW 1/4 SW 1/4 of Section 13-T7N-R8E. The dam has a total capacity of 180 acre-feet. The application also requests impoundment of sufficient water to maintain water at the outlet elevation. The water will be used for domestic use and livestock watering purposes.

Discussion:

The Lundgren Dam (ID No. SD01061) was originally constructed in 1951, with Location Notice No. 2727-1 filed on August 1, 1951 for 80.5 acre-feet of water. The dam height and storage capacity were increased in 1962, to the present capacity of 180 acre-feet of water. In 1996, the Natural Resources Conservation Service (NRCS) completed plans for a spillway repair project. The project involved replacing and enlarging the primary spillway structure and leveling the embankment crest. The spillway elevation and storage capacity were not increased.

The dam is classified as a small size, Category 3, Low Hazard dam. The Natural Resources Conservation Service (NRCS) designed the repair project in 1996. The plans and specifications have been reviewed and will be approved. The Lundgren Dam has a current height of 22 feet and a normal storage capacity of 180 acre-feet with a reservoir level at the spillway elevation, and a maximum storage capacity of 400 acre-feet with a reservoir level at the top of dam elevation. A dam of this size and hazard category is required to have a minimum spillway design capable of passing a 50-year frequency event.

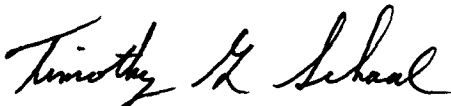
The dam has a drainage area of 1952 acres or 3.05 square miles. A 50-year frequency event for this drainage area produces a peak runoff of approximately 725 cfs. A 100-year frequency event produces a peak of approximately 968 cfs. The dam is designed to have CMP drop inlet primary spillway structure, with a 60 inch riser and 48 inch barrel, with 5.8 feet of available freeboard and a 80 foot wide earthcut secondary spillway with 3.1 feet of available freeboard. The 80 foot wide earthcut secondary spillway has a capacity of approximately 1135 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 39 acre-feet. The annual yield with a 50 percent chance of occurrence, or 1 out of 2 years, is expected to be 98 acre-feet and the annual yield with a 10 percent chance, or 1 out of 10 years, is expected to be 374 acre-feet.

The Lundgren Dam is located in the SW 1/4 SW 1/4 of Section 13-T7N-R8E on Dry Four Mile Creek about one mile upstream of its confluence with Four Mile Creek and six miles upstream of the confluence of Four Mile Creek and the Belle Fourche River. There are no existing Water Permit/Rights located between the proposed dam and the Belle Fourche River.

Conclusions:

1. This is an existing dam that was enlargement in 1962 and repaired in 1996. It has had a storage capacity of 180 acre-feet of water since its enlargement in 1962.
2. Water Permit Application No. 1767-1 should be approved since unappropriated water is available and approval should not have an adverse effect on existing Water Permits/Rights.
3. If approved, the low flow bypass requirement for downstream domestic use should be a qualification on Water Permit Application No. 1767-1.



Timothy G. Schaal, P.E.

Natural Resources Engineer Specialist

Approved by:



Gale N. Selken, P.E.

Natural Resources Engineer Director

AFFIDAVIT OF PUBLICATION

STATE OF SOUTH DAKOTA
COUNTY MEADE

Sharon Allison, Being duly sworn, says: That the Meade County Times and Black Hills Press are and, during all times hereinafter mentioned, are legal newspapers as defined in SDDCL 17-2-2, as amended, published in Sturgis, Meade County, South Dakota, by Country Media, Inc.; that affiant is and, during all of said times, was employed as an accounting clerk by the publisher of such newspaper and has personal knowledge of the facts stated in the affidavit; that the notice, order or advertisement, a copy of which is attached, was published in said newspaper for the issues (s) bearing the following dates:

Mar 27 2002

April 3 2002

_____ 200 _____

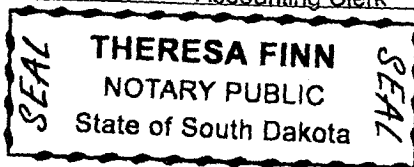
_____ 200 _____

_____ 200 _____

That the full amount of the fee charged for publishing the same, to-wit, the sum of \$ 44.03, insures solely to the benefit of the publisher of said newspaper; that no agreement or understanding for the division of the fees has been made with any person, and that no part of the fee has been agreed to be paid to any other person.

Sharon Allison

Accounting Clerk



Subscribed and sworn before me this

8th day of April 2002

Theresa Finn

Notary Public, South Dakota

My commission expires 11/19/07

Water application

NOTICE OF APPLICATION

NO. 1767-1 to Appropriate Water

Notice is given that Dale Lundgren, 19587 4 Mile Road, Sturgis SD 57785 has filed an application for a water permit to impound an additional 99.5 acre-feet of water from Dry Fourmile Creek in an existing dam located in the SW1/4SW1/4 Section 13-T7N-R8E. Location Notice No. 2727-1, with an August 1, 1951 priority date, authorized a dam with a storage capacity of 80.5 acre-feet. Since that time, the storage capacity of the dam has been increased for total storage capacity of 180 acre-feet. Water is impounded in the SW1/4SW1/4 Section 13 and SE1/4SE1/4, N1/2SE1/4 Section 14; all in T7N-R8E. This application requests impoundment of sufficient water to maintain water to the outlet elevation. The water is for domestic use and livestock water purposes.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 1767-1 because 1) unappropriated water is available, 2) existing rights will not be unlawfully impaired, 3) it is a beneficial use of water, and 4) it is in the public interest. In accordance with SDCL 46-2A-23, the Chief Engineer will act on the application, as recommended, unless a petition is filed opposing the application or the applicant files a petition contesting the Chief Engineer's recommendation. If a petition opposing the application or contesting the recommendation is filed, then a hearing will be scheduled and the Water Management Board will consider the application. Notice of the hearing will be given to the applicant and any person filing a petition.

Any person interested in opposing or supporting this application or recommendation must file a written petition with BOTH the applicant and Chief Engineer. The applicant must file a petition if contesting the Chief Engineer's recommendation. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E Capitol, Pierre SD 57501 (605 773-3352)" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by April 15, 2002.

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. Finer, Secretary, Department of Environment and Natural Resources.

Pub March 27 and April 3, 2002
Meade County Times-Tribune

RECEIVED

APR 12 2002

WATER RIGHTS
PROGRAM

Instruction to Newspaper - Publish first Notice on March 27, 2002 with the second publication 7 days later. The applicant is responsible for payment.

NOTICE OF APPLICATION NO. 1767-1 to Appropriate Water

Notice is given that Dale Lundgren, 19587 4 Mile Road, Sturgis SD 57785 has filed an application for a water permit to impound an additional 99.5 acre-feet of water from Dry Fourmile Creek in an existing dam located in the SW $\frac{1}{4}$ SW $\frac{1}{4}$ Section 13-T7N-R8E. Location Notice No. 2727-1, with an August 1, 1951 priority date, authorized a dam with a storage capacity of 80.5 acre-feet. Since that time, the storage capacity of the dam has been increased for total storage capacity of 180 acre-feet. Water is impounded in the SW $\frac{1}{4}$ SW $\frac{1}{4}$ Section 13 and SE $\frac{1}{4}$ SE $\frac{1}{4}$, N $\frac{1}{2}$ SE $\frac{1}{4}$ Section 14; all in T7N-R8E. This application requests impoundment of sufficient water to maintain water to the outlet elevation. The water is for domestic use and livestock water purposes.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 1767-1 because 1) unappropriated water is available, 2) existing rights will not be unlawfully impaired, 3) it is a beneficial use of water, and 4) it is in the public interest. In accordance with SDCL 46-2A-23, the Chief Engineer will act on the application, as recommended, unless a petition is filed opposing the application or the applicant files a petition contesting the Chief Engineer's recommendation. If a petition opposing the application or contesting the recommendation is filed, then a hearing will be scheduled and the Water Management Board will consider the application. Notice of the hearing will be given to the applicant and any person filing a petition.

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**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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.

March 21, 2002

Dale Lundgren
19587 4 Mile Road
Sturgis, SD 57785

Dear Mr. Lundgren:

Water Permit Application No. 1767-1 for domestic use has been examined and found to comply with the South Dakota Water Laws and applicable rules. A notice of hearing has been sent to the Publisher of the Meade Co. Times-Tribune printed at Sturgis, SD (Ph # 605-347-2503). You will need to contact the newspaper and authorize publication of this notice. For your information, a copy of the notice, the recommendation of the Chief Engineer and a report on the application are enclosed. Please review the notice prior to publication and notify this office, if you have any corrections or questions.

Be sure to contact the above newspaper to authorize publication of your Notice of Hearing and to arrange for payment. Early contact with the paper can eliminate delays. Upon receiving authorization, the publisher has been instructed to publish your notice once each week for two consecutive weeks with the last publication to occur twenty days before the board meeting. The newspaper has also been instructed to send us the Proof of Publication. We must receive Proof of Publication before action can be taken on the application.

Sincerely,

Eric Gronlund
Natural Resources Engineer
(605) 773-3352

enclosures

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



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

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

March 21, 2002

Meade Co. Times-Tribune
PO Box 69
Sturgis, SD 57785-0069

ATTENTION: Legal Public Notice

Enclosed is a Notice of Hearing on Application No. 17671-1 to Appropriate Water to be published twice. Please publish the first notice on March 27, 2002 with the second publication 7 days later.

The applicant must verify to you that the notice is to be published, before you make the first publication **Please BILL the APPLICANT for the cost of publication.** The APPLICANT is Dale Lundgren, 19587 4 Mile Road, Sturgis (Ph # 605-347-3233).

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. 1767-1

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

Date _____

We are in receipt of your letter of March 21, 2002 enclosing Notice of Hearing to Appropriate Water by Application No. 1767-1 which was first published in our issue of _____. **ENCLOSED IS A COPY OF THIS FIRST PUBLICATION.**

Name

Newspaper



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

MAY 31 2002

Dale Lundgren
19587 4 Mile Road
Sturgis, SD 57785

Dear Mr. Lundgren:

Enclosed is Water Permit No. 1767-1 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

Feb. 15, 2002

Tim Schaal
Water Rights Program, DENR
Joe Foss Bldg.
523 East Capitol
Pierre, SD 57501-3181

RECEIVED

JUN 06 2002

WATER RIGHTS
PROGRAM

Dear Mr. Schaal,

Enclosed is a water right application for my dam located in SE ¼ of section 14-T7-R8. As we discussed via phone on Feb. 8, 2002 with Darrell Vig, NRCS, you suggested that I apply for the additional 100 acre feet above the original 80.5 acre feet that was included in the 1951 Location Notice that my father filed when the dam was started. As I understand, that 1951 Location Notice would give me water rights back to that date (vested).

Therefore, I am enclosing a check for \$150 for the 100 Ac. Ft. additional water right plus \$50 for the water right license.

Thanking You,

A handwritten signature in cursive script that reads "Dale Lundgren".

Dale Lundgren

June 5, 2002

Garland Erbele, Chief Engineer
Water Rights Program
Joe Foss Building
523 East Capitol
Pierre, SD 57501-3182

RECEIVED

JUN 06 2002

WATER RIGHTS
PROGRAM

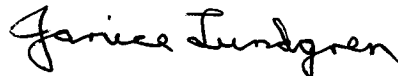
Re: Lundgren Water Permit No. 1767-1

Dear Mr. Erbele:

We received your Water Permit No. 1767-1. As this permit noted it is for a dam that already exists and we are just increasing the acre-feet. This has already been done so I am enclosing the Notice of Completion of Works and Application of Water to Beneficial Use Form 10. I am also enclosing a copy of our letter of February 15, 2002, to Tim Schaal so I believe the \$50.00 fee for the water rights license has already been paid. Therefore please issue our water license.

If you have any questions or need anything further, please advise.

Sincerely,



Janice Lundgren
19587-4 Mile Road
Sturgis, SD 57785-6328
(605) 347-3233

Enclosures.

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

Date June 5, 2002

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

RECEIVED

JUN 06 2002

WATER RIGHTS
PROGRAM

FROM: Dale Lundgren

(name)

19587-4 Mile Road

(address)

Sturgis, SD 57785-6328

(city, state, zip)

(605) 347-3233

(phone)

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

Water Permit No. 1767-1 states that the water use system is to be constructed by
April 15, 2007 , and water is to be put to beneficial use by April 15, 2011 .
(date) (date)

The water use system was completed on March 5, 2002 .
(date)

Applying the water to beneficial use was completed on March 5, 2002 .
(date)

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

Dale Lundgren
(signature)



Report of Examination of Works and/or Application of Water to Beneficial Use For Permit No. 1767-1

I have this day, July 18, 2016, made a thorough examination of the water use system constructed by Dale Lundgren, 19587 4Mile Road, Sturgis, So. Dak. 57785 of Permit No. 1767-1, bearing the priority of 3/5/2002 and 8/1/1951 authorizing the diversion and storage of 180 acre-feet of water of Fourmile Creek, a tributary of the Belle Fourche River for domestic and livestock purposes, in Meade County.

Inspection contact & relationship to permit holder, if applicable:

Dale Lundgren, owner
605-347-3233

A. Dam Information:

- 1) Height to crest 22.0 feet from downstream toe
- 2) Height to primary spillway 16.2 feet from downstream toe
- 3) Height to secondary spillway 18.9 feet from downstream toe
- 4) Crest width 14 feet
- 5) Crest length 730 feet
- 6) Primary Spillway diameter 48 inches
- 7) Secondary Spillway width 80 feet
- 8) Approx. storage to primary spillway 180.0 ac-ft
- 9) Approx. storage to crest 275.9 ac-ft

Date constructed: March 5, 2002

B. Works used to put water to beneficial use:

This is an earth fill embankment utilizing a corrugated metal pipe principal spillway and a vegetated earth emergency spillway. The water impounded in the reservoir is put to beneficial use in-place.

C. Compliance with Permit Requirements:

- 1) Permit qualifications being abided by: Yes

Low flows as needed for downstream domestic use including livestock and prior water rights must be by-passed. A permanent by-pass structure was not installed. Any by-pass of flows if needed will use temporary means.

Irrigation Questionnaires checked to determine if permit owner started irrigation by the end of construction period. N/A

List any extended period of nonuse: **none**

- 2) Exceptions to compliance are: none

E. Condition and Location:

1. The system is in good condition with the point of diversion located as follows:
1,015' N and 21' E of SW corner Section 13 T7N R8E, (44.563910, -103.104719).

The works are capable of diverting to the place of use and storing 180.0 acre-feet of water which is to be used for **domestic and livestock** use. Water has been put to beneficial use to the maximum extent and the license should be issued for **180.0 acre-feet** storage.

2. All structures, wells and lands on map Yes

If no, describe: **xx**

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

Water Permit No. 1767-1 authorized 99.5 acre-feet of water from Fourmile Creek in an existing dam. Location Notice No. 2727-1 with an August 1, 1951 priority date authorized the existing dam with a storage capacity of 80.5 acre-feet. The total storage capacity authorized by 1767-1 is 180 acre-feet. The date which the applicant may claim right is March 5, 2002 for 99.5 acre-feet and August 1, 1951 for 80.5 acre-feet.

Steven Quissell
Water Rights Inspector
DENR, Water Rights Program

Date report completed: 8/15/2016



reservoir pool from south end of embankment



trash rack for principal spillway riser

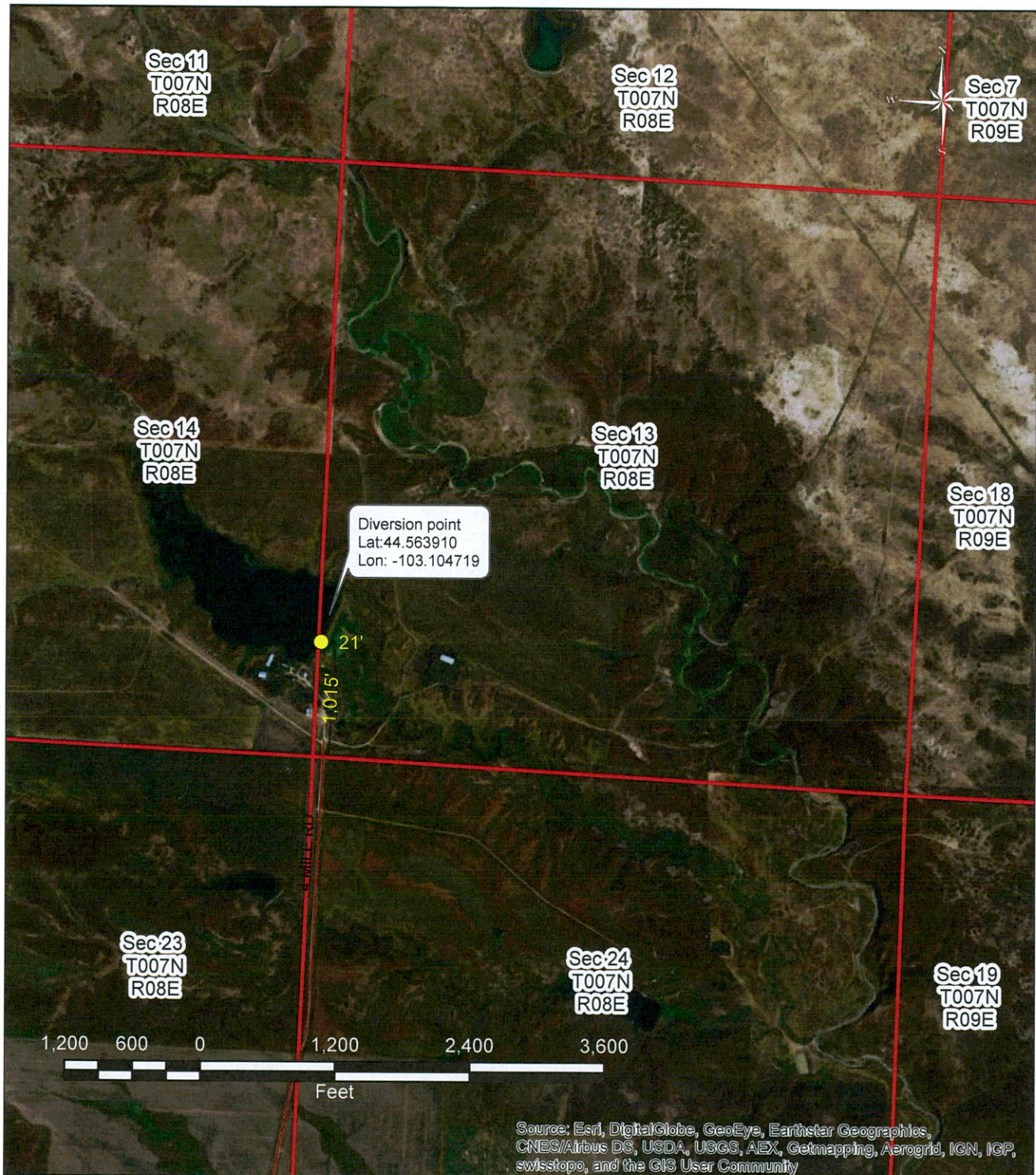


outlet of 48" principal spillway



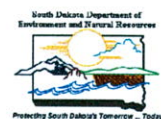
embankment

Water Right #1767-1
Dale Lundgren
7/18/2016



Steven Quissell

Steven Quissell
Water Rights Inspector
DENR Water Rights Program





DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

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

denr.sd.gov

1767-1

OCT 11 2016

Dale Lundgren
19587 4 Mile Rd
Sturgis SD 57785

Dear Mr. Lundgren:

Enclosed is Water License No. 1767-1. This is the final water right document completing your process of obtaining a Water Right. Also, included with your license is a map prepared by the staff engineer who conducted the investigation.

As long as you use the water beneficially, as stated in the Water License, the State Water Laws provide that you have a continuing right to use the water. If you have any questions, please contact our office.

Sincerely,

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

Note: The applicable portions of Location Notice No. 2727-1 are incorporated into Water License No. 1767-1.

enclosures

STATE OF SOUTH DAKOTA

WATER LICENSE NO. 1767-1

(1) Dale Lundgren, 19587 4 Mile Rd, Sturgis SD 57785 made Application No. 1767-1, March 2, 2002 for a water permit to impound an additional 99.5 acre feet of water from Dry Fourmile Creek, Meade County, South Dakota for domestic and livestock watering purposes. Permit No. 1767-1, with priority dates of March 5, 2002 (99.5 acre-feet) and August 1, 1951 (80.5 acre-feet) was approved April 15, 2002 and issued to the applicant for impoundment of water with construction of the described water supply system to be completed on or before April 15, 2007 and for the application to beneficial use of water on or before April 15, 2011.

Location Notice No. 2727-1, with an August 1, 1951 priority date authorizes a dam with a storage capacity of 80.5 acre-feet. The applicable portions of Location Notice No. 2727-1 are incorporated into No. 1767-1.

(2) The water supply system has been completed and water applied to beneficial use in accordance with South Dakota State Law. Pursuant to South Dakota Codified Law 46-5-30.1, the holder and/or owner of Water Right No. 1767-1 is issued a license, bearing priority dates of March 5, 2002 (99.5 acre-feet) and August 1, 1951 (80.5 acre-feet) to impound 180 acre feet of water from Dry Fourmile Creek for domestic and livestock watering purposes.

The location of the storage dam (spillway) is 1,015 feet N and 21 feet E of the SW corner of Section 13-T7N-R8E (SW 1/4 SW 1/4). Water is impounded in the SW 1/4 SW 1/4 Section 13 and portions of the SE 1/4 Section 14; all in T7N-R8E.

(3) This license is subject to South Dakota Water Law, any limitations or conditions listed in Water Permit No. 1767-1, including the following qualifications:

- Water Permit No. 1767-1 and Location Notice No. 2727-1, combined, authorize a dam with a storage capacity of 180 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 by-passed.



Jeanne Goodman, Chief Engineer
Water Rights Program

Department of Environment and Natural Resources

OCT 11 2016
date

