

WATER PERMIT NO. 6154-3

Name of Applicant: Susan Mollison

Address: 101 Wood River Quay, Pierre SD 57501

Phone: 605 224-0173

Amount of Water Claimed: 78 acre-feet

Total Acres: NA

Source of Water Supply: dry draw

Water to be used for: recreation, fish & wildlife propagation, livestock water

County: Hughes

Type of Waste Disposal System: NA

Location: 3 miles west of Canning

PRIORITY

Date Received: 11-10-99

Fee: \$150

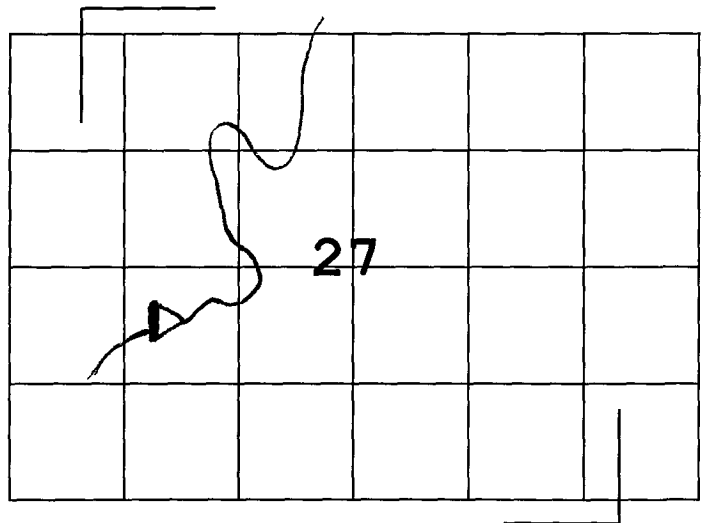
Corrected Application Received:

Period of Annual Use: January 1 – December 31

Remarks:

Diversion Point: NW ¼ SW ¼ Sec 27-T111N-R77W

Water Impounded: NW ¼ SW ¼ Sec 27-T111N-R77W



Depth of Well: NA

Well Driller:

Remarks:

Type of Map: plat

Prepared by: Dave Konechne, ASCS

Reviewed and the Number Assigned on: 11-10-1999

By: **Karen Schlaak**

Notice of Hearing - date to intervene: _____

SOUTH DAKOTA
WATER PERMIT NO. 6154-3

Date of first receipt of application November 10, 1999.

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 6154 to Susan Mollison, 101 Wood River Quay, Pierre SD 57501 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. 6154-3 authorizes impoundment of 78 acre-feet of water from runoff in a dam located in the NW ¼ SW ¼ Section 27 with water impounded in the NW ¼ SW ¼ Section 27; all in T111N-R77W.
2. The water appropriated shall be used for the purpose of supplying water for recreation, fish & wildlife propagation and livestock 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. 6154-3 is December 27, 1999.
5. The date from which applicant may claim right is November 10, 1999.
6. One-fifth of the construction is to be completed on or before June 27, 2001.
7. All construction is to be completed on or before December 27, 2004.
8. Water is to be put to beneficial use on or before December 27, 2008.
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. 6154-3 authorizes a dam with storage capacity of 78 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: _____

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

JAN 7 2000

date



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>6154-3</u>	(office use only) Hydrologic Unit <u>10140103</u>
	Basin <u>Missouri River</u>	
	Newspaper <u>Capital Journal, Pierre, SD</u>	



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

Check use(s) of water:

☐ Municipal	☐ Suburban Housing	☒ Recreational	☐ Institutional
☐ Rural Water System	☐ Commercial	☒ Fish & Wildlife	☐ Geothermal Heat
☐ Domestic (over 18 gpm)	☐ Industrial	☒ Other <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 Susan Mollison Phone 224-0173
(check one) Owner ☐ Tenant/lessee ☐
Mailing Address 101 Wood River Quay, Pierre State SD 57501
(Street, RR. or Box) (Zip Code)
- Amount of water claimed _____ *CFS or _____ **GPM 78 ***AF
(*Cubic Feet per Second) (**Gallons per Minute) (**Acre Feet - storage capacity of dam/dugout or annual use if applicable)
- Source of water supply dam on a dry draw
- Location of point of diversion (example - 3 wells in SW1/4 NE1/4 section 12-T104N-R53W)
NW1/4 SW1/4 Section 27, T111N R77W
Water Impounded: NW1/4 SW1/4 sec. 27-T111N-R77W County Hughes
- County or counties where water will be used Hughes
- Annual period during which water is to be used January 1 - December 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)
construction of a 78 acre foot dam

STATE OF SOUTH DAKOTA)

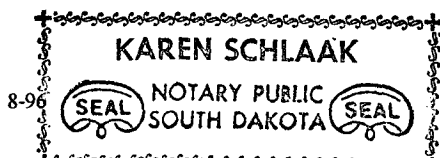
County of Hughes) SS

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, J.B. Mollison, 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.

Signed by J.B. Mollison - husband

Subscribed and sworn to before me this 10th day of November 19 99



KAREN SCHLAACK, Notary Public
My Commission Expires
April 1, 2001

Karen Schlaack
Notary Public

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

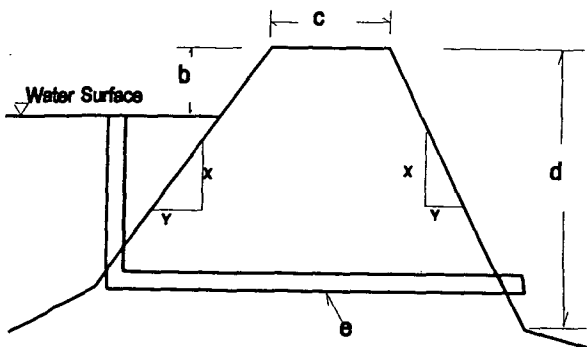
- a) Surface Dimensions _____ Depth _____
- b) Depth to water (ground surface to water level) _____

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:

NRCS - Dave Konechne



- b) Freeboard 7.5
- c) Crest Width 12
Crest Length _____
- d) Height 32
- e) Primary Outlet Capacity 95 cfs
If pipe, diameter 48" Riser / 27" Barrel
- f) Secondary Spillway Capacity 1350 cfs
Spillway Width 100 ft
- g) X & Y Slope _____
Upstream 3 : 1
Downstream 3 : 1
- h) Surface Area of Impoundment 8
- i) Storage 78 Acre Feet
- j) Drainage Area Above Dam 1900 Acres

Water Permit Application No. 6154-3
Susan Morrison

Top of Dam Elev. - 100
2nd Spillway Elev. - 97
P. Spillway Elev. - 92.5
Dis Toe Elev. - 68

Ht = 32 ft.

Cat. 3 - Low Hazard Dam

Normal Storage Capacity - 78 Ac-Ft
Int. Storage Capacity - 113 Ac-Ft
Max Storage Capacity - 140 Ac-Ft

Int. Capacity x Eff Ht = $113 \times \frac{22}{29} = 2486 < 3000$ ∴ 25-yr
Minimum Spillway Design

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

DA = 1900 Ac = 2.97

Slope = 35 ft/mi

SI = 3.16

$$\begin{aligned} Q_{25} &= 83.4 A^{\frac{6}{5}} S^{\frac{4}{5}} S_i^{\frac{1}{5}} \\ &= 83.4 (2.97)^{\frac{6}{5}} (35)^{\frac{4}{5}} (3.16)^{\frac{1}{5}} \\ &= 83.4 (1.92) (4.78) (0.437) \\ &= \underline{335 \text{ cfs}} \end{aligned}$$

$$\begin{aligned} Q_{100} &= 132 A^{\frac{6}{5}} S^{\frac{4}{5}} S_i^{\frac{1}{5}} \\ &= 132 (2.97)^{\frac{6}{5}} (35)^{\frac{4}{5}} (3.16)^{\frac{1}{5}} \\ &= 132 (2.03) (5.13) (0.463) \\ &= \underline{636 \text{ cfs}} \end{aligned}$$

Secondary Spillway Flow

$$\begin{aligned} Q &= C L H^{\frac{3}{2}} \quad C = 2.6 \quad L = 100 \quad H = 3 \\ &= (2.6) (100) (3)^{\frac{3}{2}} \\ &= \underline{1350 \text{ cfs}} \end{aligned}$$

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 Rating - OK
7. Spillway Details - OK
8. Specs - Std. NRCS - OK
9. EPP - N/A Cat. 3 - OK

NRCS Annual Yield

DA = 1900 CN = 72 ISO = 2

80% chance = 0.084

$$0.084 \times 1900/\text{yr} = \underline{13 \text{ Ac-Ft.}}$$

50% chance = 0.26

$$0.26 \times 1900/\text{yr} = \underline{42 \text{ Ac-Ft.}}$$

10% chance = 1.4

$$1.4 \times 1900/\text{yr} = \underline{222 \text{ Ac-Ft.}}$$

DAMS2 XEQ 11/03/99 STRUCTURE SITE ANALYSIS COMPUTER PROGRAM
REV 01/01/90 SCS TECHNICAL RELEASE 48, (USER MANUAL) DATED JAN. 1990
TIME 11:47:10

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

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

DAMS2 01/01/90 Jim Mollison Hughes Co. SD
STRUCTURE Mollison No.1 11-3-99 D. Konechne378 Design
70.0 0.0
80.0 15.1
90.0 92.5 60.2 78
95.00 97 95.2 113
100.0 140.2
105. 195.

ENDTABLE
WSDATA 1A101 AC 72 1900 7.35
PDIRECT 1.0 3.0 5.0 4.0 4.0
POOLDATA ELEV 92.5
PSDATA 1 166 27 0.012 70.0
PSINLET ELEV 1.0 12.57 92.5
ESCREST ELEV
ESDATA 28 50 0.03 3 0.035 10
BTMWIDTH FEET 75 100 150
COMMENT
COMMENT
COMMENT This is routing a 5 -yr storm thru the principal spillway
COMMENT and a 25 yr storm thru the emergency spillway
COMMENT
COMMENT
GO, DESIGN L 6 TYPE2 378 24
ENDJOB

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

DAMS2 XEQ 11/03/99
REV 01/01/90 on

Hughes Co. SD

WSID = Jim Moll

This is routing a 5 -yr storm thru the principal spillway
and a 25 yr storm thru the emergency spillway

DAMS2 -----
 XEQ 11/03/99 on Hughes Co. SD WSID= Jim Moll
 REV 01/01/90 o.1 11-3-99 D. Konechne378 Design SUBW= 01
 TIME 11:47:10 SITE = Molli PASS= 1 PAGE= 1

***** BASIC DATA *****
 ARID- SEMIARID CLIMATE AREA DESIGN CLASS A1 =LT 3000

STORM DISTRIBUTION-PSH 24 HOUR TYPE II RAINFALL DISTRIBUTION

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

PRECIP.-	P-PS1 DAY 3.00	P-PS10 DAY 5.00	P-ES 4.00	P-FB 4.00
WSDATA-	CN 72.00	DA-SM 2.97	TC/L 7.35	-/H .00
SITEDATA-	PERM POOL .00	CREST PS 92.50	FP SED .00	QRF .00
	BASEFLOW .00	INITIAL EL .00	EXTRA VOL. .00	
PSDATA-	NO. COND. 1.00	COND L 166.00	D/W 27.00	-/H .00
	PS N .012	KE 1.00	WEIR L 12.57	TW EL 70.00
	2ND STG 92.50	ORF H .00	ORF L .00	START ES .00
CRESTS-	ES1 .00	ES2 .00	ES3 .00	ES4 .00
				ES5 .00
EMG DATA-	SIDE SLOPE 3.00	EXIT N .035	EXIT SLOPE .100	
EMG DATA-	ES TYPE 28	ES LENGTH 50	ES ENTRANCE N .030	
BTM WIDTH-	BW1 75.00	BW2 100.00	BW3 150.00	BW4 .00
				BW5 .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	28	ELEVATION INCREMENT (FT)= 1.000
DISCHARGES-Q1	Q2	Q3
2.177	7.222	14.080
		22.436
Q5	Q6	Q7
31.983	42.623	54.218
		66.737
Q9	Q10	Q11
80.111	94.210	109.077
		124.678

DAMS2 -----
 XEQ 11/03/99 on Hughes Co. SD WSID= Jim Moll
 REV 01/01/90 o.1 11-3-99 D. Konechne378 Design SUBW= 01
 TIME 11:47:10 SITE = Molli PASS= 1 PAGE= 2

CREST PS	92.50 FT	77.7 ACFT	.00 AC	.0 CFS
SED ACCUM	92.50 FT	77.7 ACFT	.00 AC	.0 CFS
2ND STAGE	92.50 FT	77.7 ACFT	.00 AC	.0 CFS
STARTING E	92.50 FT	77.7 ACFT	.00 AC	.0 CFS

SCS-PSH D= 24.00 HR P= 3.00 IN Q= .81 IN DA = 2.97 SM
 TC= 7.35 HR CN= 72.00 VOL= 127.9 ACFT

PEAK = 171.2 CFS, AT 17.1 HRS.

ROUTED RESULTS - HYD TYPE EMAX VOL-MAX AMAX QMAX
 SCS-PSH 97.31 FT 116.0 ACFT .00 AC 89.1 CFS

PS STORAGE 38.3 ACFT BETWEEN ES CREST AND SED ACCUM ELEVATIONS

DRAWDOWN (DDT) TEST 92.50 FT 77.7 ACFT .00 CFS
 CONTROL IS .000 DETENTION STORAGE

TIME = 1.37 DAYS, TO .0 CFS (LIMIT = 10.00 DAYS)

RATING TABLE DEVELOPED, SITE = Molli
 BY PROGRAM FOR PS AND EMG SPILLWAYS

RATING TABLE NUMBER 1

	ELEV FEET	Q-TOTAL CFS	Q-PS CFS	VOLUME AC-FT	AREA ACRE
1	92.50	.00	.00	77.70	.00
2	92.92	10.47	10.47	80.62	.00
3	93.33	29.63	29.63	83.53	.00
4	93.75	54.43	54.43	86.45	.00
5	94.17	83.79	83.79	89.36	.00
6	95.52	86.11	86.11	99.88	.00
7	96.87	88.37	88.37	112.07	.00
8	98.23	90.57	90.57	124.26	.00
9	99.58	92.71	92.71	136.45	.00
10	100.94	94.81	94.81	150.47	.00
11	102.29	96.86	96.86	165.31	.00
12	103.65	98.87	98.87	180.16	.00
13	105.00	100.84	100.84	195.00	.00

FULL CONDUIT FLOW, ELEV = 94.17 FT

DAMS2 -----
 XEQ 11/03/99 on Hughes Co. SD WSID= Jim Moll
 REV 01/01/90 0.1 11-3-99 D. Konechne378 Design SUBW= 01
 TIME 11:47:10 SITE = Molli PASS= 1 PAGE= 3

ES CREST 97.31 FT 116.0 ACFT .00 AC 89.1 CFS
 PS STORAGE 38.3 ACFT BETWEEN ES CREST AND SED ACCUM ELEVATIONS

STARTING E 92.50 FT 77.7 ACFT .00 AC .0 CFS

ELEVATION OF LOW POINT IS ZERO. NO CRITERIA CHECK MADE FOR
 STRUCTURE CLASSIFICATION

SCS-ESH D= 6.00 HR P= 4.00 IN Q= 1.46 IN DA = 2.97 SM
 TC= 7.35 HR CN= 72.00 VOL= 231.2 ACFT

PEAK = 410.5 CFS, AT 7.9 HRS.

***** WARNING - TR-60 REQUIRES AN INCREASE IN RAINFALL AMOUNT COMPATIBLE
 WITH INCREASE IN EMERGENCY STORM DURATION WHEN TC EXCEEDS 6-HRS.

SCS-FBH D= 6.00 HR P= 4.00 IN Q= 1.46 IN DA = 2.97 SM
 TC= 7.35 HR CN= 72.00 VOL= 231.2 ACFT

PEAK = 410.5 CFS, AT 7.9 HRS.

 RATING TABLE DEVELOPED, SITE = Molli
 BY PROGRAM FOR PS AND EMG SPILLWAYS

RATING TABLE NUMBER 2

	ELEV FEET	Q-TOTAL CFS	Q-PS CFS	VOLUME AC-FT	AREA ACRE
1	92.50	.00	.00	77.70	.00
2	92.92	10.47	10.47	80.62	.00
3	93.33	29.63	29.63	83.53	.00
4	93.75	54.43	54.43	86.45	.00
5	94.17	83.79	83.79	89.36	.00
6	94.56	84.47	84.47	92.12	.00
7	94.95	85.15	85.15	94.87	.00
8	95.35	85.82	85.82	98.32	.00
9	95.74	86.48	86.48	101.86	.00
10	96.13	87.14	87.14	105.41	.00
11	96.53	87.79	87.79	108.95	.00
12	96.92	88.44	88.44	112.49	.00
13	97.31	89.09	89.09	116.03	.00
14	97.70	153.14	89.71	119.49	.00
15	98.08	218.02	90.33	122.95	.00
16	98.77	440.38	91.44	129.17	.00
17	99.62	830.50	92.77	136.78	.00
18	101.16	1831.44	95.15	152.88	.00
19	103.08	3549.77	98.04	173.94	.00
20	105.00	5746.55	100.84	195.00	.00

FULL CONDUIT FLOW, ELEV = 94.17 FT

ROUTED RESULTS	BTM WIDTH FT	MAX ELEV FT	VOL-MAX ACFT	AREA-MAX AC	EMG. HP FT	VOL-ES ACFT
SCS-ESH	75.0	98.66	128.2	.0	1.35	12.2

PEAK - CFS	Q-PS	Q-ES	Q-TOT
DISCHARGE =	91.3	313.7	405.0

	CRITICAL DEPTH	CRITICAL VELOCITY	CRITICAL SLOPE-S/C	25% OF S/C
EMERGENCY	FT	FT/SEC	FT/FT	FT/FT
SPILLWAY----	.81	5.02	.019	.026

	DURATION	ATTACK	SUMMATION
	FLOW	OE/B	VEL**2 DELTA T
EMERGENCY	HRS	ACFT/FT	(FT/SEC)**2 HRS
SPILLWAY----	7.9	1.4	300.1

***** MESSAGE - ES378 CRITERIA USED BUT EMERGENCY SPILLWAY NOT BASED ON RETARDANCE.

EXIT CHANNEL FLOW SUPERCRITICAL: MAX VELOCITY= 8.28 FT/SEC
EXIT SLOPE = .100 FT/FT
FLOW DEPTH = .495

DRAWDOWN USING FREEBOARD STORM FOLLOWS, STARTING AT ELEVATION 97.31 FT.

DRAWDOWN (DDT) TEST 92.50 FT 77.7 ACFT .00 CFS
CONTROL IS .000 DETENTION STORAGE

TIME = 1.29 DAYS, TO .0 CFS (LIMIT = 10.00 DAYS)

ROUTED RESULTS	BTM WIDTH FT	MAX ELEV FT	VOL-MAX ACFT	AREA-MAX AC	EMG. HP FT	VOL-ES ACFT
SCS-FBH	75.0	98.66	128.2	.0	1.35	12.2

PEAK - CFS	Q-PS	Q-ES	Q-TOT
DISCHARGE =	91.3	313.7	405.0

	CRITICAL DEPTH	CRITICAL VELOCITY	CRITICAL SLOPE-S/C	25% OF S/C
EMERGENCY	FT	FT/SEC	FT/FT	FT/FT
SPILLWAY----	.81	5.02	.019	.026

	DURATION	ATTACK	SUMMATION
	FLOW	OE/B	VEL**2 DELTA T
EMERGENCY	HRS	ACFT/FT	(FT/SEC)**2 HRS
SPILLWAY----	7.9	1.4	300.1

***** MESSAGE - ES378 CRITERIA USED BUT EMERGENCY SPILLWAY NOT BASED ON RETARDANCE.

EXIT CHANNEL FLOW SUPERCRITICAL: MAX VELOCITY= 8.28 FT/SEC
EXIT SLOPE = .100 FT/FT
FLOW DEPTH = .495

***** ES378 RUN - MINIMUM FLOW IN EMG. SPILLWAY FROM TR60
USING FORMULA WITHOUT 200 CFS MINIMUM LIMIT. *****

ROUTED RESULTS	BTM WIDTH FT	MAX ELEV FT	VOL-MAX ACFT	AREA-MAX AC	EMG. HP FT	VOL-ES ACFT
MINIMUM ES	75.0	98.90	130.3	.0	1.58	14.2

PEAK - CFS	Q-PS	Q-ES	Q-TOT
DISCHARGE =	91.6	405.3	496.9

	CRITICAL DEPTH	CRITICAL VELOCITY	CRITICAL SLOPE-S/C	25% OF S/C
EMERGENCY	FT	FT/SEC	FT/FT	FT/FT
SPILLWAY----	.95	5.45	.018	.025

***** ES378 RUN - MINIMUM DEPTH, CREST EMG TO TOP OF DAM IS 2.00 FT

NEW TOP OF DAM ELEVATION = 99.31

ROUTED RESULTS	BTM WIDTH FT	MAX ELEV FT	VOL-MAX ACFT	AREA-MAX AC	EMG. HP FT	VOL-ES ACFT
MINIMUM ES	75.0	99.31	134.0	.0	2.00	18.0
PEAK - CFS DISCHARGES =		Q-PS 92.3	Q-ES 597.2	Q-TOT 689.5		
		CRITICAL DEPTH FT	CRITICAL VELOCITY FT/SEC	CRITICAL SLOPE-S/C FT/FT	25% OF S/C FT/FT	
EMERGENCY SPILLWAY----		1.23	6.15	.017	.023	

***** ES378 RUN - MINIMUM DEPTH, DESIGN FLOW TO TOP OF DAM, REQUIRED FOR THIS PASS. NEW TOP OF DAM ELEVATION = 99.66

ROUTED RESULTS	BTM WIDTH FT	MAX ELEV FT	VOL-MAX ACFT	AREA-MAX AC	EMG. HP FT	VOL-ES ACFT
MINIMUM ES	75.0	99.66	137.2	.0	2.36	21.2
PEAK - CFS DISCHARGES =		Q-PS 92.9	Q-ES 766.6	Q-TOT 859.5		
		CRITICAL DEPTH FT	CRITICAL VELOCITY FT/SEC	CRITICAL SLOPE-S/C FT/FT	25% OF S/C FT/FT	
EMERGENCY SPILLWAY----		1.45	6.66	.016	.022	

RATING TABLE DEVELOPED, SITE = Molli
BY PROGRAM FOR PS AND EMG SPILLWAYS

RATING TABLE NUMBER 3

	ELEV FEET	Q-TOTAL CFS	Q-PS CFS	VOLUME AC-FT	AREA ACRE
1	92.50	.00	.00	77.70	.00
2	92.92	10.47	10.47	80.62	.00
3	93.33	29.63	29.63	83.53	.00
4	93.75	54.43	54.43	86.45	.00
5	94.17	83.79	83.79	89.36	.00
6	94.56	84.47	84.47	92.12	.00
7	94.95	85.15	85.15	94.87	.00
8	95.35	85.82	85.82	98.32	.00
9	95.74	86.48	86.48	101.86	.00
10	96.13	87.14	87.14	105.41	.00
11	96.53	87.79	87.79	108.95	.00
12	96.92	88.44	88.44	112.49	.00
13	97.31	89.09	89.09	116.03	.00
14	97.70	174.06	89.71	119.49	.00
15	98.08	259.84	90.33	122.95	.00
16	98.77	552.84	91.44	129.17	.00
17	99.62	1063.43	92.77	136.78	.00
18	101.16	2359.45	95.15	152.88	.00
19	103.08	4552.55	98.04	173.94	.00
20	105.00	7316.46	100.84	195.00	.00

FULL CONDUIT FLOW, ELEV = 94.17 FT

ROUTED RESULTS	BTM WIDTH FT	MAX ELEV FT	VOL-MAX ACFT	AREA-MAX AC	EMG. HP FT	VOL-ES ACFT
SCS-ESH	100.0	98.43	126.1	.0	1.12	10.1
PEAK - CFS		Q-PS	Q-ES	Q-TOT		

DISCHARGE	=	90.9	316.9	407.8	
		CRITICAL	CRITICAL	CRITICAL	25% OF
		DEPTH	VELOCITY	SLOPE-S/C	S/C
EMERGENCY		FT	FT/SEC	FT/FT	FT/FT
SPILLWAY----		.67	4.62	.021	.028
		DURATION	ATTACK	SUMMATION	
		FLOW	OE/B	VEL**2 DELTA T	
EMERGENCY		HRS	ACFT/FT	(FT/SEC)**2 HRS	
SPILLWAY----		7.6	1.1	242.5	

***** MESSAGE - ES378 CRITERIA USED BUT EMERGENCY SPILLWAY NOT BASED ON RETARDANCE.

EXIT CHANNEL FLOW SUPERCRITICAL: MAX VELOCITY= 7.46 FT/SEC
 EXIT SLOPE = .100 FT/FT
 FLOW DEPTH = .420

DRAWDOWN USING FREEBOARD STORM FOLLOWS, STARTING AT ELEVATION 97.31 FT.

DRAWDOWN (DDT) TEST 92.50 FT 77.7 ACFT .00 CFS
 CONTROL IS .000 DETENTION STORAGE

TIME = 1.25 DAYS, TO .0 CFS (LIMIT = 10.00 DAYS)

ROUTED	BTM WIDTH	MAX ELEV	VOL-MAX	AREA-MAX	EMG. HP	VOL-ES
RESULTS	FT	FT	ACFT	AC	FT	ACFT
SCS-FBH	100.0	98.43	126.1	.0	1.12	10.1

PEAK - CFS	Q-PS	Q-ES	Q-TOT
DISCHARGE =	90.9	316.9	407.8

	CRITICAL	CRITICAL	CRITICAL	25% OF
	DEPTH	VELOCITY	SLOPE-S/C	S/C
EMERGENCY	FT	FT/SEC	FT/FT	FT/FT
SPILLWAY----	.67	4.62	.021	.028

	DURATION	ATTACK	SUMMATION
	FLOW	OE/B	VEL**2 DELTA T
EMERGENCY	HRS	ACFT/FT	(FT/SEC)**2 HRS
SPILLWAY----	7.6	1.1	242.5

***** MESSAGE - ES378 CRITERIA USED BUT EMERGENCY SPILLWAY NOT BASED ON RETARDANCE.

EXIT CHANNEL FLOW SUPERCRITICAL: MAX VELOCITY= 7.46 FT/SEC
 EXIT SLOPE = .100 FT/FT
 FLOW DEPTH = .420

***** ES378 RUN - MINIMUM FLOW IN EMG. SPILLWAY FROM TR60
 USING FORMULA WITHOUT 200 CFS MINIMUM LIMIT. *****

ROUTED	BTM WIDTH	MAX ELEV	VOL-MAX	AREA-MAX	EMG. HP	VOL-ES
RESULTS	FT	FT	ACFT	AC	FT	ACFT
MINIMUM ES	100.0	98.64	128.0	.0	1.33	11.9

PEAK - CFS	Q-PS	Q-ES	Q-TOT
DISCHARGE =	91.2	405.3	496.5

	CRITICAL	CRITICAL	CRITICAL	25% OF
	DEPTH	VELOCITY	SLOPE-S/C	S/C
EMERGENCY	FT	FT/SEC	FT/FT	FT/FT
SPILLWAY----	.79	5.00	.020	.026

***** ES378 RUN - MINIMUM DEPTH, CREST EMG TO TOP OF DAM IS 2.00 FT
 NEW TOP OF DAM ELEVATION = 99.31

ROUTED RESULTS	BTM WIDTH	MAX ELEV	VOL-MAX	AREA-MAX	EMG. HP	VOL-ES
MINIMUM ES	FT	FT	ACFT	AC	FT	ACFT
	100.0	99.31	134.0	.0	2.00	18.0
PEAK - CFS		Q-PS	Q-ES	Q-TOT		
DISCHARGES =		92.3	786.6	878.9		
		CRITICAL DEPTH	CRITICAL VELOCITY	CRITICAL SLOPE-S/C	25% OF S/C	
EMERGENCY		FT	FT/SEC	FT/FT	FT/FT	
SPILLWAY----		1.23	6.18	.017	.023	

***** ES378 RUN - MINIMUM DEPTH, DESIGN FLOW TO TOP OF DAM, REQUIRED
 FOR THIS PASS. NEW TOP OF DAM ELEVATION = 99.43

ROUTED RESULTS	BTM WIDTH	MAX ELEV	VOL-MAX	AREA-MAX	EMG. HP	VOL-ES
MINIMUM ES	FT	FT	ACFT	AC	FT	ACFT
	100.0	99.43	135.1	.0	2.12	19.1
PEAK - CFS		Q-PS	Q-ES	Q-TOT		
DISCHARGES =		92.5	857.6	950.1		
		CRITICAL DEPTH	CRITICAL VELOCITY	CRITICAL SLOPE-S/C	25% OF S/C	
EMERGENCY		FT	FT/SEC	FT/FT	FT/FT	
SPILLWAY----		1.30	6.35	.017	.022	

 RATING TABLE DEVELOPED, SITE = Molli
 BY PROGRAM FOR PS AND EMG SPILLWAYS

RATING TABLE NUMBER 4

	ELEV	Q-TOTAL	Q-PS	VOLUME	AREA
	FEET	CFS	CFS	AC-FT	ACRE
1	92.50	.00	.00	77.70	.00
2	92.92	10.47	10.47	80.62	.00
3	93.33	29.63	29.63	83.53	.00
4	93.75	54.43	54.43	86.45	.00
5	94.17	83.79	83.79	89.36	.00
6	94.56	84.47	84.47	92.12	.00
7	94.95	85.15	85.15	94.87	.00
8	95.35	85.82	85.82	98.32	.00
9	95.74	86.48	86.48	101.86	.00
10	96.13	87.14	87.14	105.41	.00
11	96.53	87.79	87.79	108.95	.00
12	96.92	88.44	88.44	112.49	.00
13	97.31	89.09	89.09	116.03	.00
14	97.70	215.88	89.71	119.49	.00
15	98.08	343.49	90.33	122.95	.00
16	98.77	777.76	91.44	129.17	.00
17	99.62	1529.30	92.77	136.78	.00
18	101.16	3415.48	95.15	152.88	.00
19	103.08	6558.10	98.04	173.94	.00
20	105.00	10456.30	100.84	195.00	.00

FULL CONDUIT FLOW, ELEV = 94.17 FT

ROUTED RESULTS	BTM WIDTH	MAX ELEV	VOL-MAX	AREA-MAX	EMG. HP	VOL-ES
SCS-ESH	FT	FT	ACFT	AC	FT	ACFT
	150.0	98.19	123.9	.0	.87	7.9

PEAK - CFS	Q-PS	Q-ES	Q-TOT	
DISCHARGE =	90.5	319.6	410.1	
	CRITICAL DEPTH	CRITICAL VELOCITY	CRITICAL SLOPE-S/C	25% OF S/C
EMERGENCY	FT	FT/SEC	FT/FT	FT/FT
SPILLWAY----	.52	4.07	.022	.030
	DURATION FLOW	ATTACK OE/B	SUMMATION VEL**2 DELTA T	
EMERGENCY	HRS	ACFT/FT	(FT/SEC)**2 HRS	
SPILLWAY----	7.3	.7	173.3	

***** MESSAGE - ES378 CRITERIA USED BUT EMERGENCY SPILLWAY NOT BASED ON RETARDANCE.

EXIT CHANNEL FLOW SUPERCRITICAL: MAX VELOCITY= 6.39 FT/SEC
EXIT SLOPE = .100 FT/FT
FLOW DEPTH = .331

DRAWDOWN USING FREEBOARD STORM FOLLOWS, STARTING AT ELEVATION 97.31 FT.

DRAWDOWN (DDT) TEST 92.50 FT 77.7 ACFT .00 CFS
CONTROL IS .000 DETENTION STORAGE

TIME = 1.22 DAYS, TO .0 CFS (LIMIT = 10.00 DAYS)

ROUTED RESULTS	BTM WIDTH	MAX ELEV	VOL-MAX	AREA-MAX	EMG. HP	VOL-ES
SCS-FBH	FT	FT	ACFT	AC	FT	ACFT
	150.0	98.19	123.9	.0	.87	7.9

PEAK - CFS	Q-PS	Q-ES	Q-TOT
DISCHARGE =	90.5	319.6	410.1

	CRITICAL DEPTH	CRITICAL VELOCITY	CRITICAL SLOPE-S/C	25% OF S/C
EMERGENCY	FT	FT/SEC	FT/FT	FT/FT
SPILLWAY----	.52	4.07	.022	.030

	DURATION FLOW	ATTACK OE/B	SUMMATION VEL**2 DELTA T
EMERGENCY	HRS	ACFT/FT	(FT/SEC)**2 HRS
SPILLWAY----	7.3	.7	173.3

***** MESSAGE - ES378 CRITERIA USED BUT EMERGENCY SPILLWAY NOT BASED ON RETARDANCE.

EXIT CHANNEL FLOW SUPERCRITICAL: MAX VELOCITY= 6.39 FT/SEC
EXIT SLOPE = .100 FT/FT
FLOW DEPTH = .331

***** ES378 RUN - MINIMUM FLOW IN EMG. SPILLWAY FROM TR60
USING FORMULA WITHOUT 200 CFS MINIMUM LIMIT. *****

ROUTED RESULTS	BTM WIDTH	MAX ELEV	VOL-MAX	AREA-MAX	EMG. HP	VOL-ES
MINIMUM ES	FT	FT	ACFT	AC	FT	ACFT
	150.0	98.33	125.1	.0	1.01	9.1

PEAK - CFS	Q-PS	Q-ES	Q-TOT
DISCHARGE =	90.7	405.3	496.0

	CRITICAL DEPTH	CRITICAL VELOCITY	CRITICAL SLOPE-S/C	25% OF S/C
--	----------------	-------------------	--------------------	------------

EMERGENCY	FT	FT/SEC	FT/FT	FT/FT
SPILLWAY----	.61	4.40	.021	.029

***** ES378 RUN - MINIMUM DEPTH, CREST EMG TO TOP OF DAM IS 2.00 FT
 NEW TOP OF DAM ELEVATION = 99.31

ROUTED	BTM WIDTH	MAX ELEV	VOL-MAX	AREA-MAX	EMG. HP	VOL-ES
RESULTS	FT	FT	ACFT	AC	FT	ACFT
MINIMUM ES	150.0	99.31	134.0	.0	2.00	18.0

PEAK - CFS	Q-PS	Q-ES	Q-TOT
DISCHARGES =	92.3	1165.4	1257.6

	CRITICAL	CRITICAL	CRITICAL	25% OF
	DEPTH	VELOCITY	SLOPE-S/C	S/C
EMERGENCY	FT	FT/SEC	FT/FT	FT/FT
SPILLWAY----	1.22	6.20	.017	.023

DAMS2.....JOB NO. 1 COMPLETE

Jim Moll on Hughes Co. SD

0 SUBWATERSHED(S) ANALYZED

1 STRUCTURE(S) ANALYZED

7 HYDROGRAPHS ROUTED AT LOWEST SITE

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

DAMS2.....COMPUTATIONS COMPLETE

SUMMARY TABLE 1

DAMS2 VERSION 01/01/90

WATERSHED ID	RUN DATE	RUN TIME
-----	-----	-----
Jim Moll	11/03/99	11:47:10

>>>	SITE ID	SUBWS ID	SUBWS DA (SQ MI)	CURVE NO.	TC (HRS)	TOTAL DA (SQ MI)	TYPE DESIGN	STRUC CLASS	<<<
	-----	-----	-----	-----	-----	-----	-----	-----	
	Molli	01	2.97	72.	7.35	2.97	378CR	A1	

PASS NO.	DIA/ WIDTH (IN/FT)	ES CREST ELEV (FT)	BTM WIDTH (FT)	MAX HP (FT)	MAX ELEV (FT)	YARDAGE EMB (CY)	OE/B* (AF/FT)	EXIT* VELOCITY (FT/SEC)	TYPE HYD
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1	27.0	97.31	75.00	2.36	99.66	0.	1.4	8.28	MINIMUM ES
1	27.0	97.31	100.00	2.12	99.43	0.	1.1	7.46	MINIMUM ES
1	27.0	97.31	150.00	2.00	99.31	0.	.7	6.39	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
Jim Moll FILES

INPUT = d:\dams2\data\crow.dat
OUTPUT = d:\dams2\data\crow.dat

DATED 11/03/99 11:47:10

STRUCTURAL DESIGN AND INSTALLATION

Diagram illustrating the construction of a concrete cradle for a manhole. The cradle is a square structure with a circular opening. The opening has a diameter of 41 inches. The cradle is made of concrete and is surrounded by densely compacted backfill. The cradle is labeled "CONCRETE CRADLE CLASS A". The diagram shows dimensions for the cradle and the backfill. The cradle has a width of $1.25 B_c$ and a height of $B_c + 8'' \text{ min.}$. The backfill has a height of 12 inches minimum. The cradle is made of concrete and is surrounded by densely compacted backfill. The cradle is labeled "CONCRETE CRADLE CLASS A".

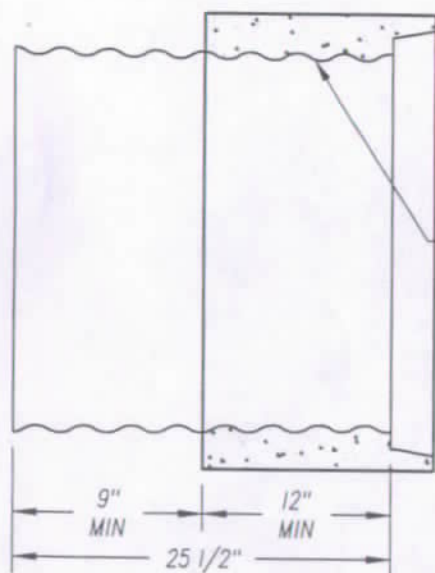
Diagram illustrating the cross-section of a circular foundation for Class B Granular Foundation. The diagram shows a central core of diameter B_c , surrounded by a layer of compacted granular material of thickness d . The total width of the foundation is 12 inches minimum. The diagram is labeled "GRANULAR FOUNDATION CLASS B".

The diagram illustrates a cross-section of a Class C Granular Foundation. It features a central circular area labeled B_c , which is surrounded by a ring of 'LIGHTLY COMPACTED FILL MATERIAL'. This ring is further enclosed by a layer of 'COMPACTED GRANULAR MATERIAL OR DENSELY COMPACTED FILL MATERIAL'. The entire foundation is situated on a 'GRANULAR FOUNDATION CLASS C' base. Dimensions are indicated: the top layer has a thickness of $\frac{1}{8} H$ with a minimum of 6 inches, and the middle layer has a thickness of $\frac{1}{8} B_c$. A dimension d is also shown at the bottom left.

A schematic diagram of a circular pile foundation. The pile is represented by a central circle with diameter B_c . It is surrounded by a square cross-section of loose fill material. The height of the fill material above the pile is indicated as $\frac{1}{6} H$ and 6 min. . The base of the fill material is labeled "FLAT SUBGRADE CLASS D".

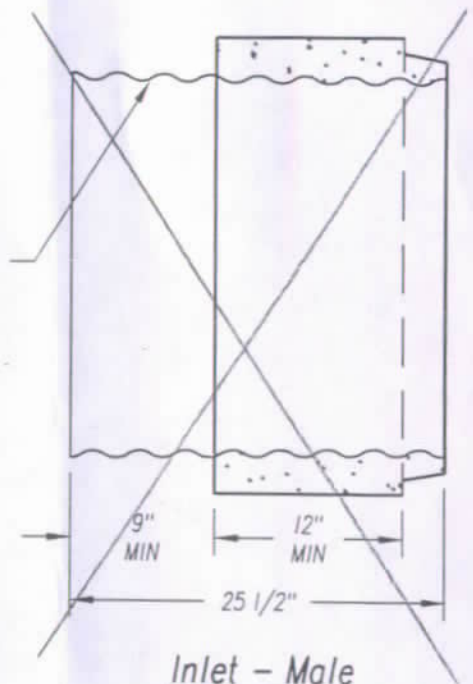
FOUNDATION. Foundations for Class B and Class C beddings should be uniform, yielding material. Rock or other unyielding material must be overexcavated and replaced with compacted foundation material.

B_c = Outside diameter
 H = Backfill cover above pipe
 d = Depth of bedding material under pipe



Outlet - Female

2' Piece of 2 2/3 x 1/2 CMP
of same nominal diameter
as RCP



Inlet - Male

- 1) RCP is class 2 per ASTM C76 / AASHTO M170 .
- 2) Check with manufacturer for transitions with a larger CMP diameter than the nominal RCP diameter.

SOUTH DAKOTA CONCRETE PRODUCTS
PIERRE , SOUTH DAKOTA

RCP TO CMP TRANSITIONS

SCALE none

DATE 3-98

DRAWN CLH

DRAWING NUMBER

RCP 113

STRUCTURE DATA

DRAINAGE AREA	ANNUAL YIELD	PEAK RUNOFF	EMERG. SPLWY. CAPACITY	WATER DEPTH	SURFACE AREA	SEDIMENT STORAGE	TOTAL STORAGE
ACRES	AC. FT.	25-YR.	C.F.S.	FEET	ACRES	AC. FT.	AC. FT.
1900	33	338	338	25	8	34	78

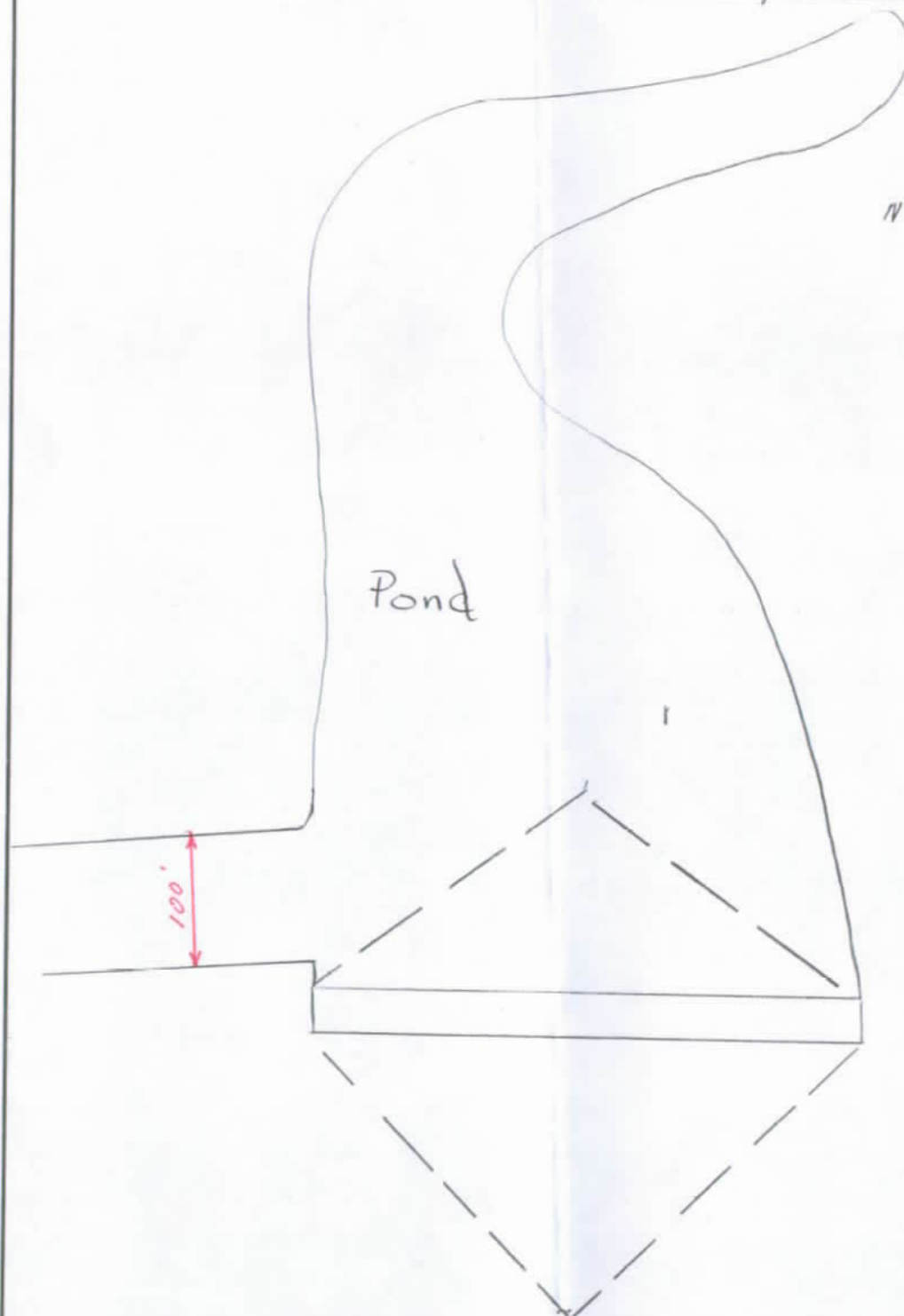


NW SW sec 27 T. 11N R. 77W
Hughes County

LOCATION

TABLE OF QUANTITIES

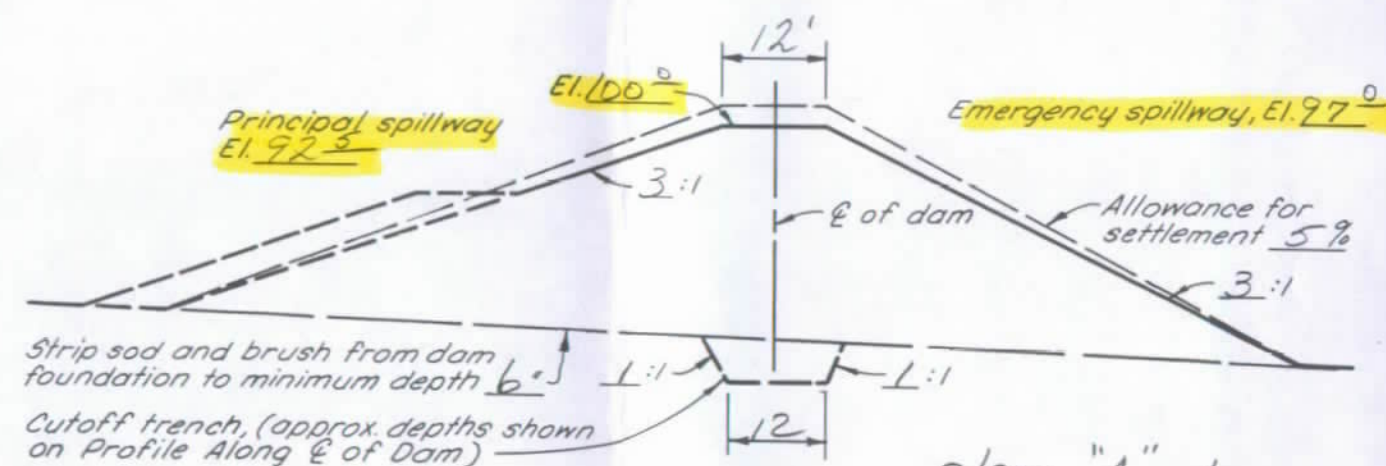
ITEM	UNIT	QUANTITY
Earth Fill (includes stripping & core trench)	cy	16623
Em. Spillway excavation	cy	
8ft-48" dia concrete manhole	ea	1
27" dia concrete pipe	lin ft	144
27" dia concrete transition to 30" CMP	ea	1
30" dia cmp w/ fabricated elbow	lin ft	20
30" dia watertight band	ea	1
concrete (riser base)	cy	1.4
concrete (class A bedding)	cy	28
sand seep collar	cy	10.4
timber pipe support	ea	1
timber trash rack	ea	1



SKETCH PLAN OF DAM AND RESERVOIR AREA

Approximate scale 1" = _____

REFERENCE: GUIDE PLAN NO. 1.0



TYPICAL CROSS SECTION OF DAM

S.D. CONSTRUCTION AND MATERIAL SPECIFICATIONS:

- SD-4 Stripping SD-5 Excavation
- SD-7s Earth Fill SD-9 Drain Fill
- SD-12B Concrete SD-13 Steel
- SD-15 CMP
- SD-16 Timber Fabrication
- SD-17 Metal Fabrication
- SD-50 CMP
- Reinforced Concrete Pipe

EARTH DAM

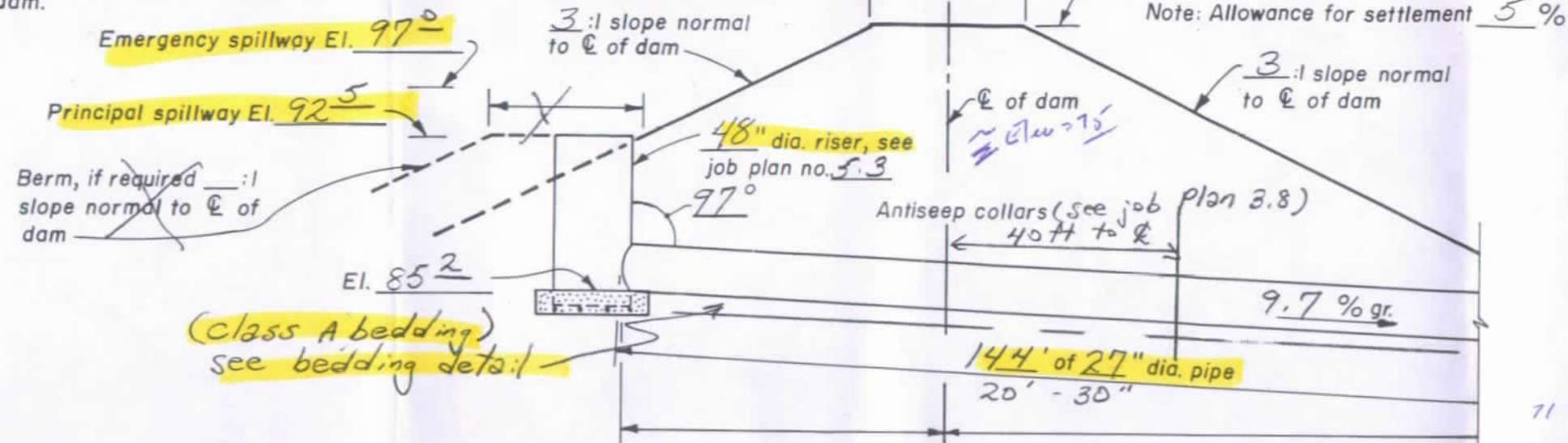
OPERATOR: Jim Morrison
CONSERVATION DISTRICT: Hughes

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Designed: Konechne 10-97 Date: 10-97 Approved: Paul Konechne
Drawn: Ag. Eng. Title: Ag. Eng.
Traced: _____ Sheet: _____ Drawing No.: _____
Checked: _____ No. _____ of _____

JOB PLAN NO. 1.0

Locate principal spillway pipe at $\mathcal{C}$ of dam sta. 0+40 at an angle of 50° to the $\mathcal{C}$ of the dam.



CROSS SECTION OF DAM ALONG $\mathcal{C}$ OF PRINCIPAL SPILLWAY
(Not to scale)

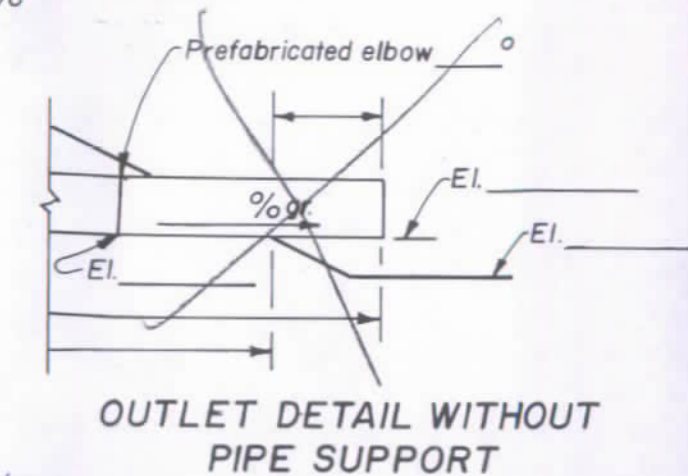
SPECIFICATION NOTES

- ELBOW, IF REQUIRED, MAY BE FABRICATED BY CONTINUOUS WELDING SEPARATE PIPE SECTIONS OR BY FABRICATING A CONTINUOUS WELDED JOINT ON THE UPSTREAM END OF LAST SECTION OF PIPE.
- PIPE WALL THICKNESS SHALL BE 14 GAGE OR 0.079 INCHES.
- Fabricate a 172° elbow on the upstream end of a 20 ft section of spiral CMP.

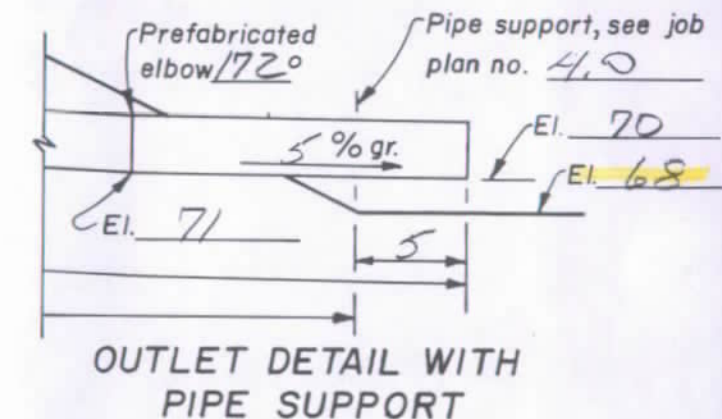
TABLE OF QUANTITIES

ITEM	UNIT	QUANTITY
8 ft concrete manhole-48"	ea	1
27" dia concrete pipe, tongue & groove with rubber gasket for Bur of Rec joint type R-4	lin ft	144

APPLICABLE STANDARD S.C.S. SPECIFICATIONS



71

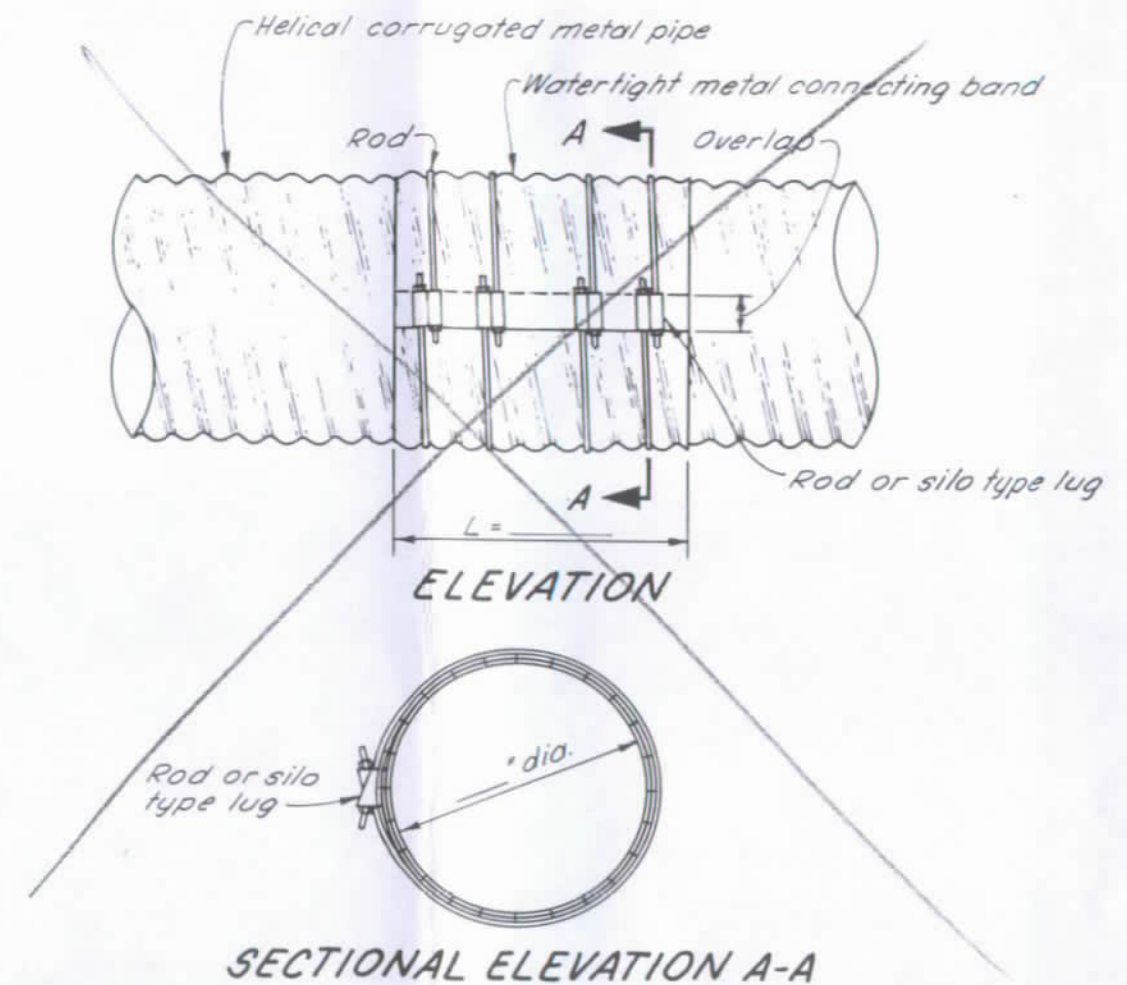
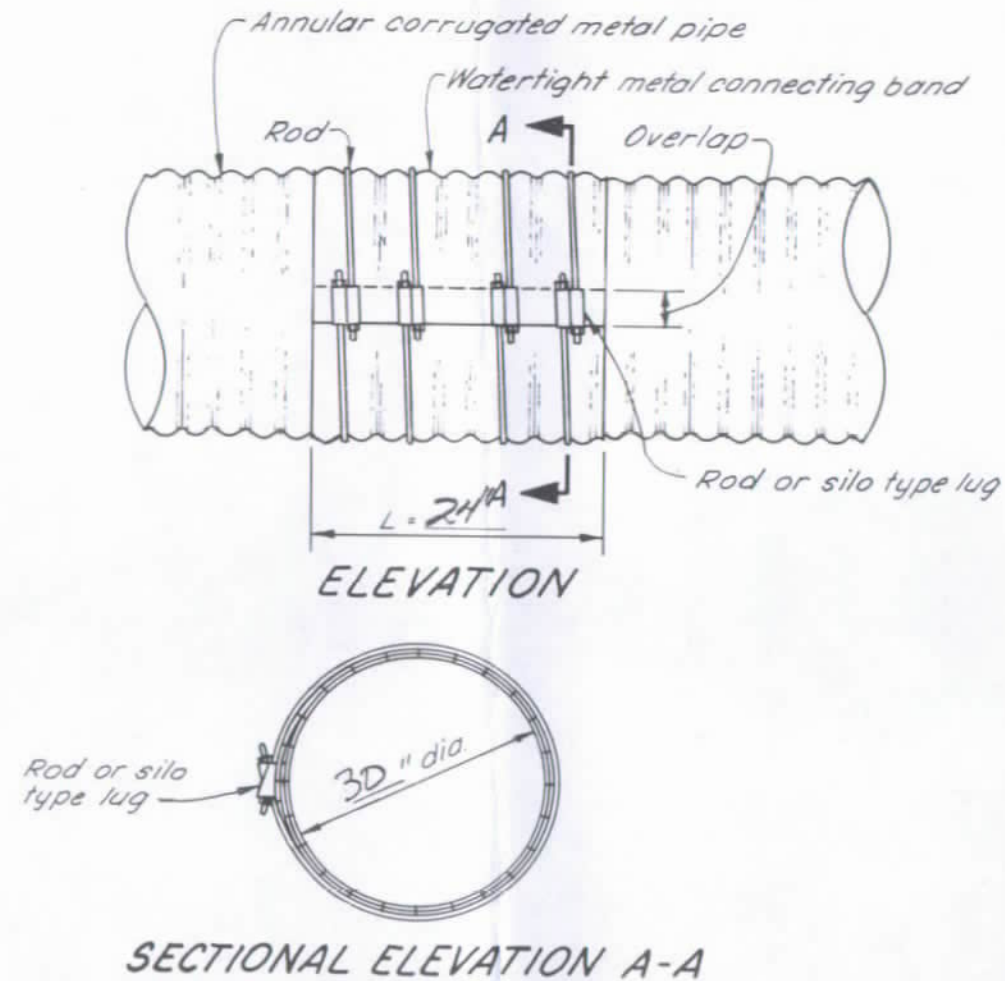


Sec. _____, T. _____, R. _____
County _____

LOCATION

CORRUGATED METAL PIPE DROP INLET PRINCIPAL SPILLWAY

OPERATOR <u>Jim Morrison</u>	
CONSERVATION DISTRICT <u>Hughes</u>	
U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	
Designed _____	Approved by _____
Drawn _____	Title _____
Traced _____	Title _____
Checked _____	Sheet _____
	Drawing No. _____
	No. _____
	of _____



DIMENSIONS AND QUANTITIES

PIPE DIA. INCHES	MINIMUM "L" INCHES	APPROX. OVERLAP INCHES	NUMBER OF RODS & LUGS	MINIMUM ROD DIA. IN.	NEOPRENE GASKET WIDTH INCHES	ASPHALT MASTIC GAL.
6-18	12	2	2	1/2	12	1/2
21-30	24	3	4	1/2	12	1 1/2
36-48	24	6	4	1/2	12	2

NOTES:

1. WATERTIGHTNESS WILL BE OBTAINED BY USE OF (1) 3/8" THICK NEOPRENE GASKET (WIDTH AS SHOWN) OR (2) ASPHALT MASTIC SEALING MATERIAL TO COVER FULL WIDTH OF BAND.
2. CROSS OUT BAND AND QUANTITIES NOT APPLICABLE.

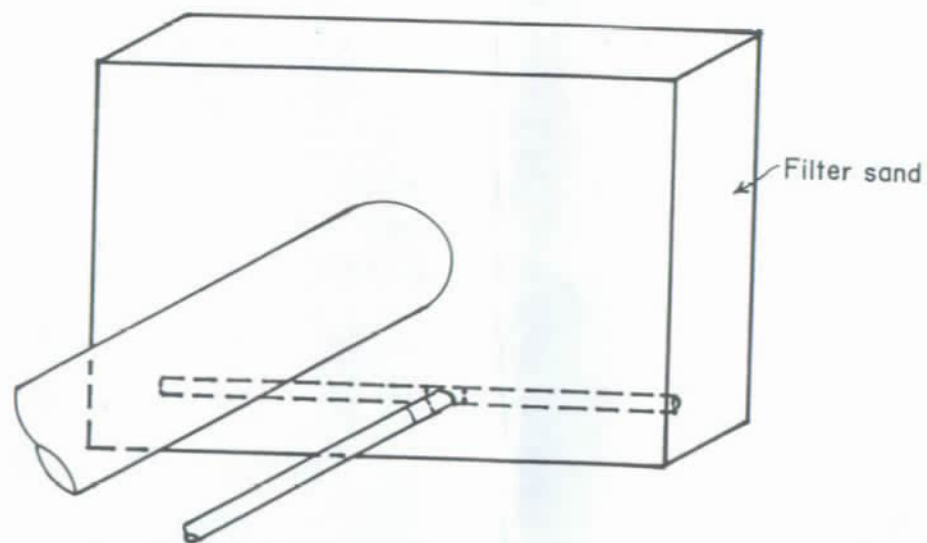
WATERTIGHT CONNECTING BAND FOR ANNULAR AND HELICAL CORRUGATED METAL PIPE

OPERATOR: Jim Morrison
 CONSERVATION DISTRICT: Hughes

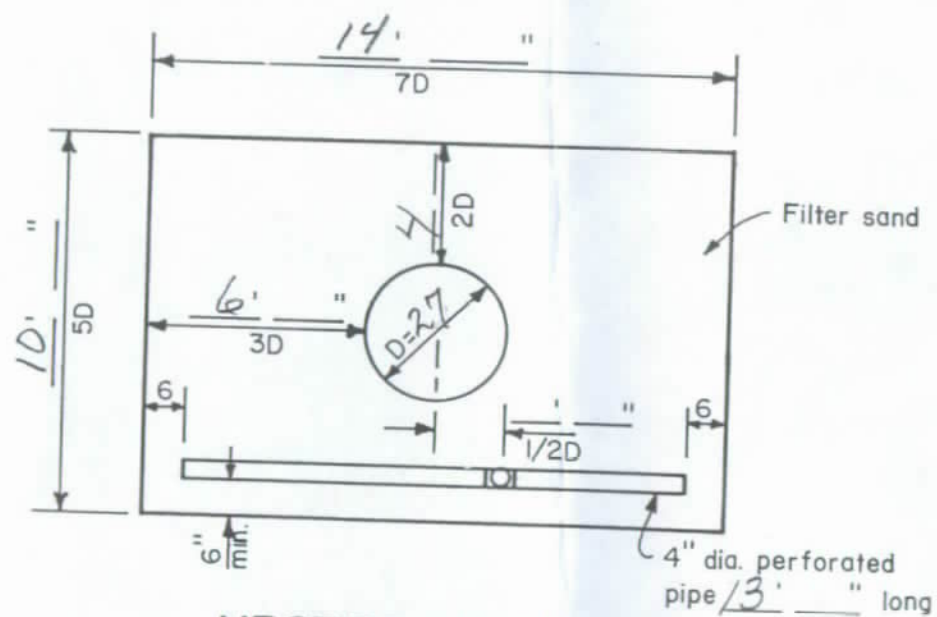
U. S. DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE

Designed	Date	Approved by
Drawn		Title
Traced		Title
Checked		Sheet No.
		Drawing No.

JOB PLAN NO. 3.0



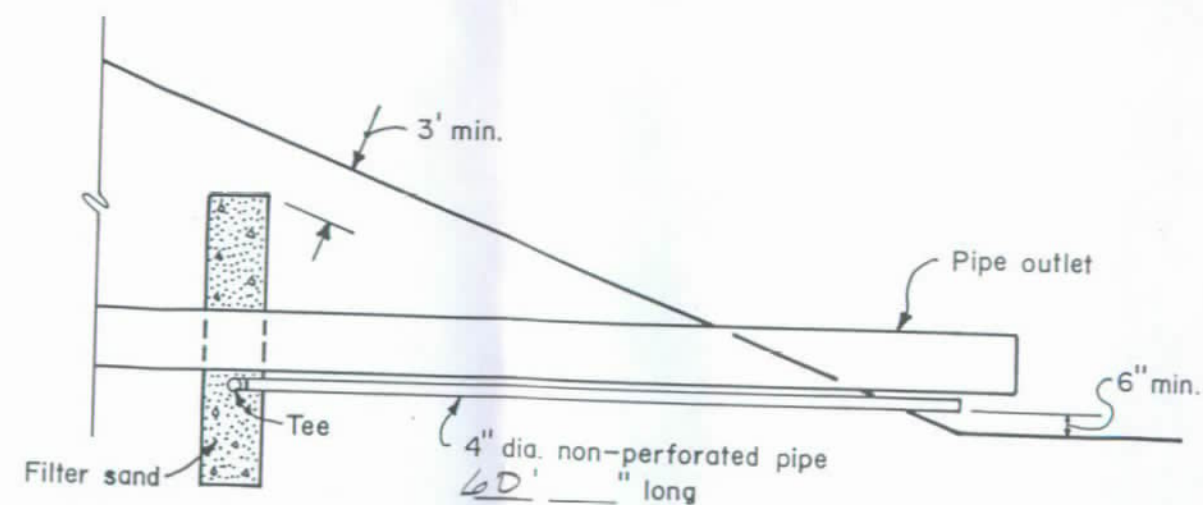
ISOMETRIC VIEW



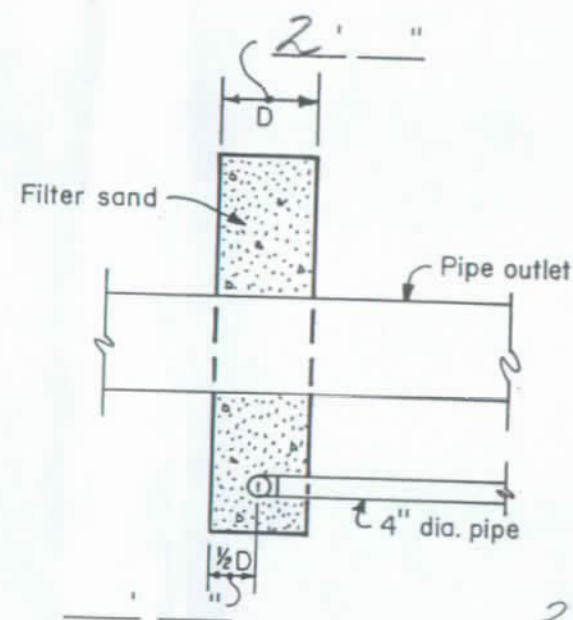
UPSTREAM VIEW

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 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

$$\frac{2' \times 14' \times 10'}{27} = 10.4 \text{ cy}$$

Sec. _____, T. _____, R. _____

County _____
LOCATION

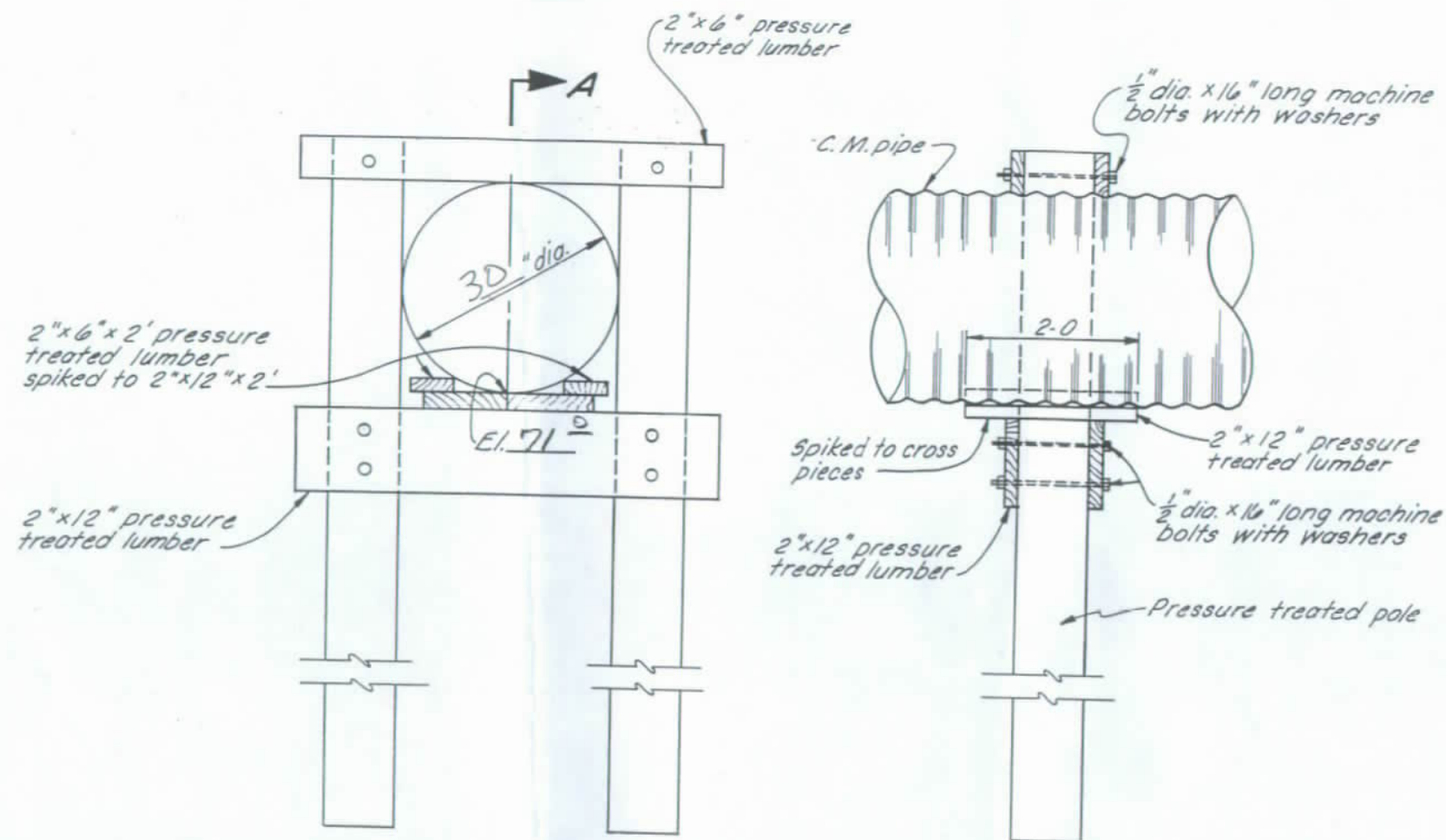
SAND ANTISEEP COLLAR

OPERATOR Jim Mallison

CONSERVATION DISTRICT _____

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

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



ELEVATION

SECTIONAL ELEVATION A-A

TABLE OF QUANTITIES

ITEM	LENGTH FOR 30" DIA. C.M. PIPE	UNIT	QUANTITY
PRESSURE TREATED POLE 10" DIA.	10-0	EACH	2
2" X 12" PRESSURE TREATED LUMBER	4-0	EACH	6
2" X 6" PRESSURE TREATED LUMBER	4-0	EACH	2
2" X 12" PRESSURE TREATED LUMBER	2-0	EACH	3
2" X 6" PRESSURE TREATED LUMBER	2-0	EACH	2
1/2" DIA. MACHINE BOLTS WITH NUTS	1-4	EACH	10
1/2" DIA. WASHERS		EACH	20

NOTES:

- HAND OR MACHINE TAMP BACKFILL THOROUGHLY AROUND FOOTINGS AND COLUMNS.

TIMBER PIPE SUPPORT

OPERATOR: Jim Morrison

CONSERVATION DISTRICT: Hughes

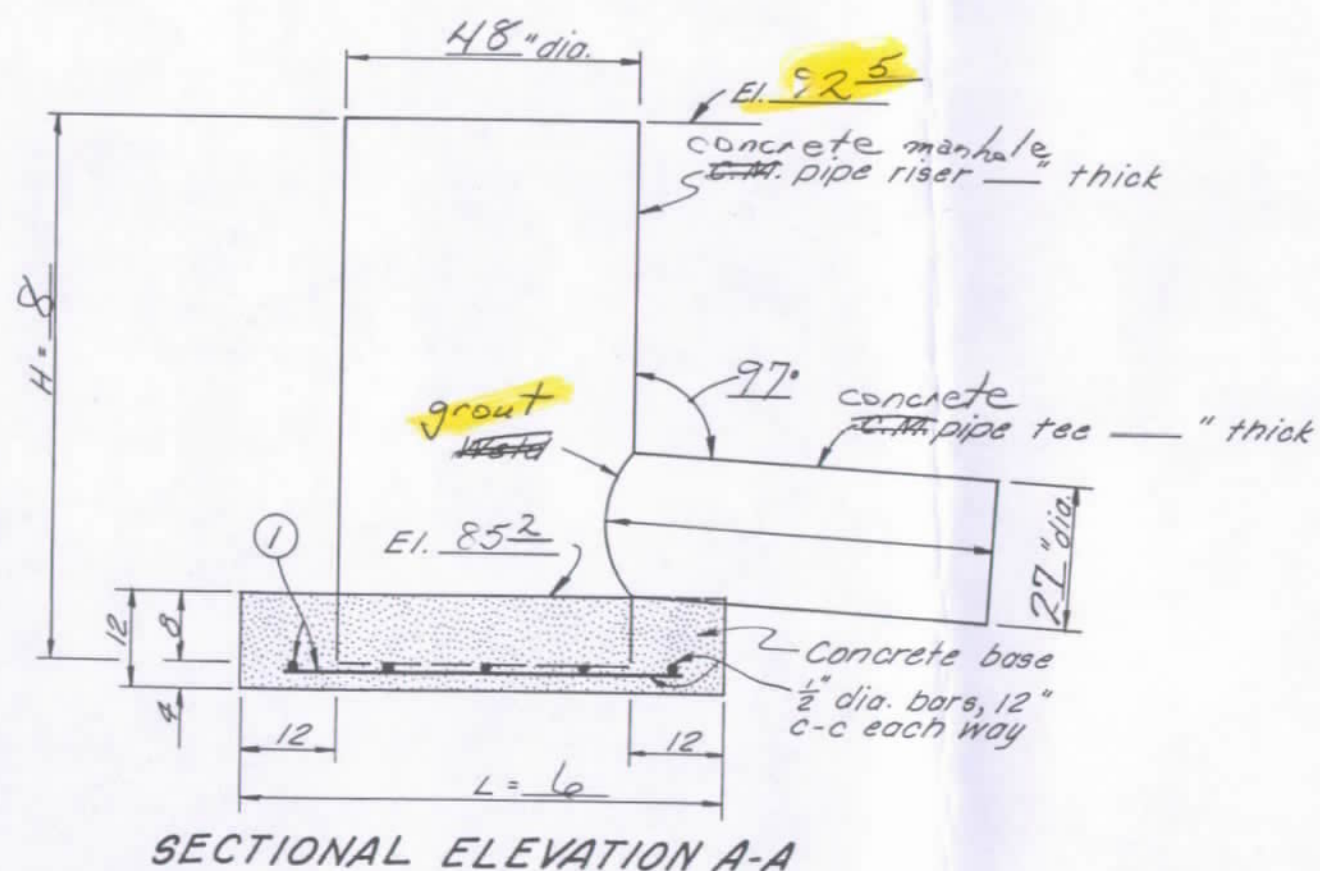
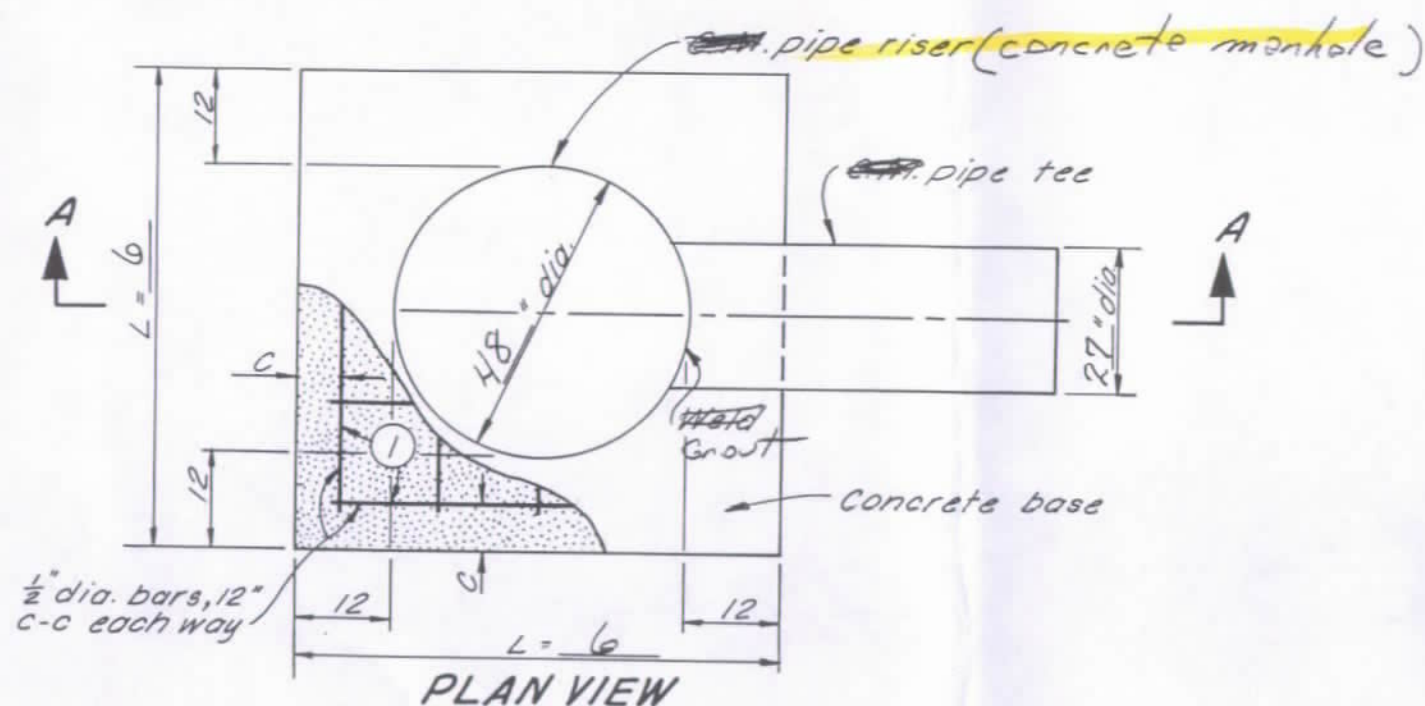
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

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

REFERENCE: GUIDE PLAN NO. 4.0

JOB PLAN NO. 4.0

5, N-29,073.4a



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.	1.4
REINFORCING STEEL	LB.	44

NOTE:

G.M. PIPE RISER WITH FABRICATED TEE

OPERATOR: Jim Morrison
 CONSERVATION DISTRICT: _____

U. S. DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE

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

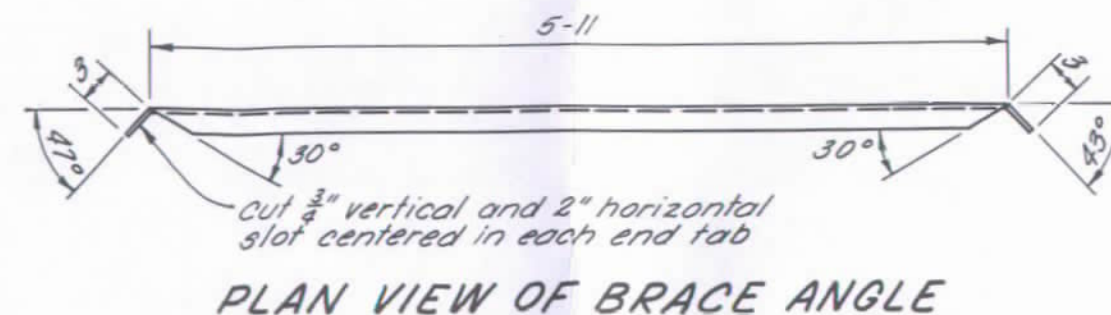
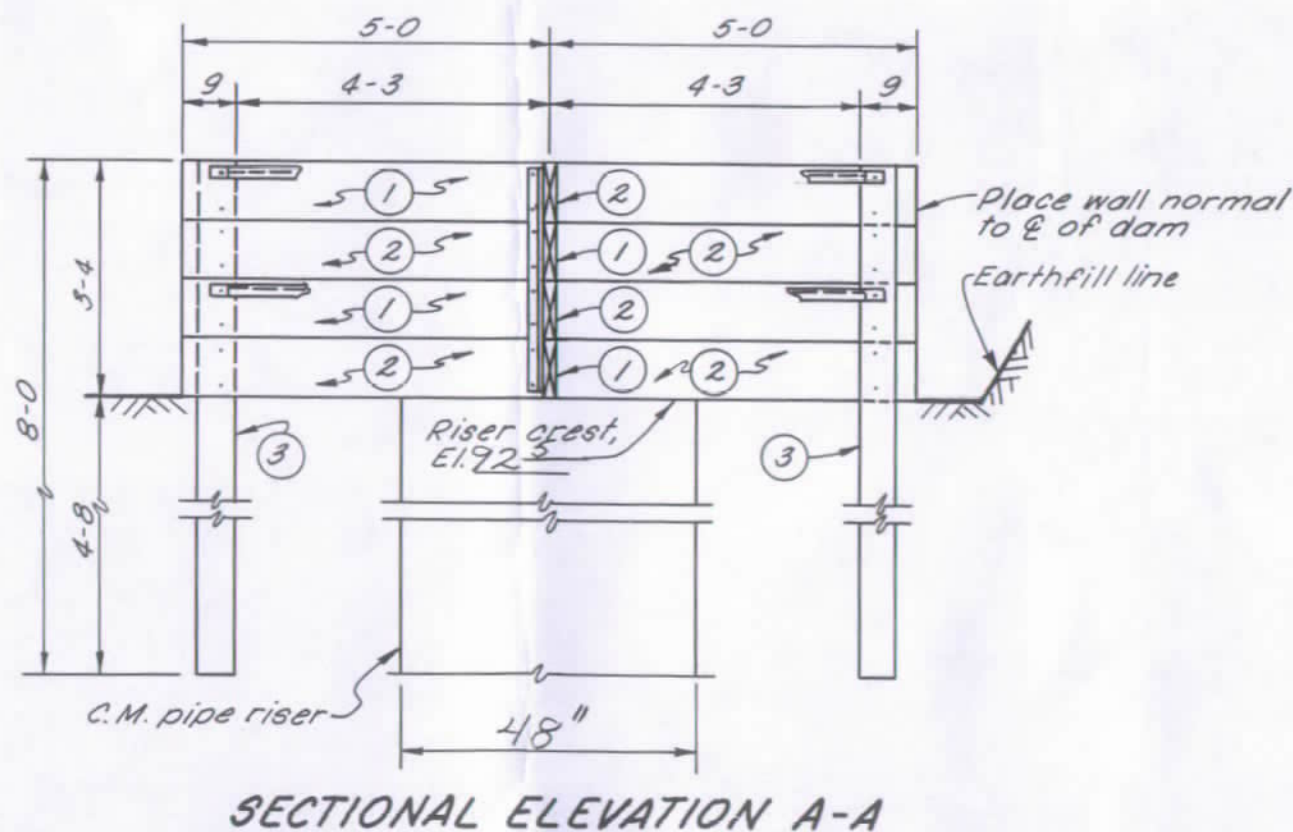
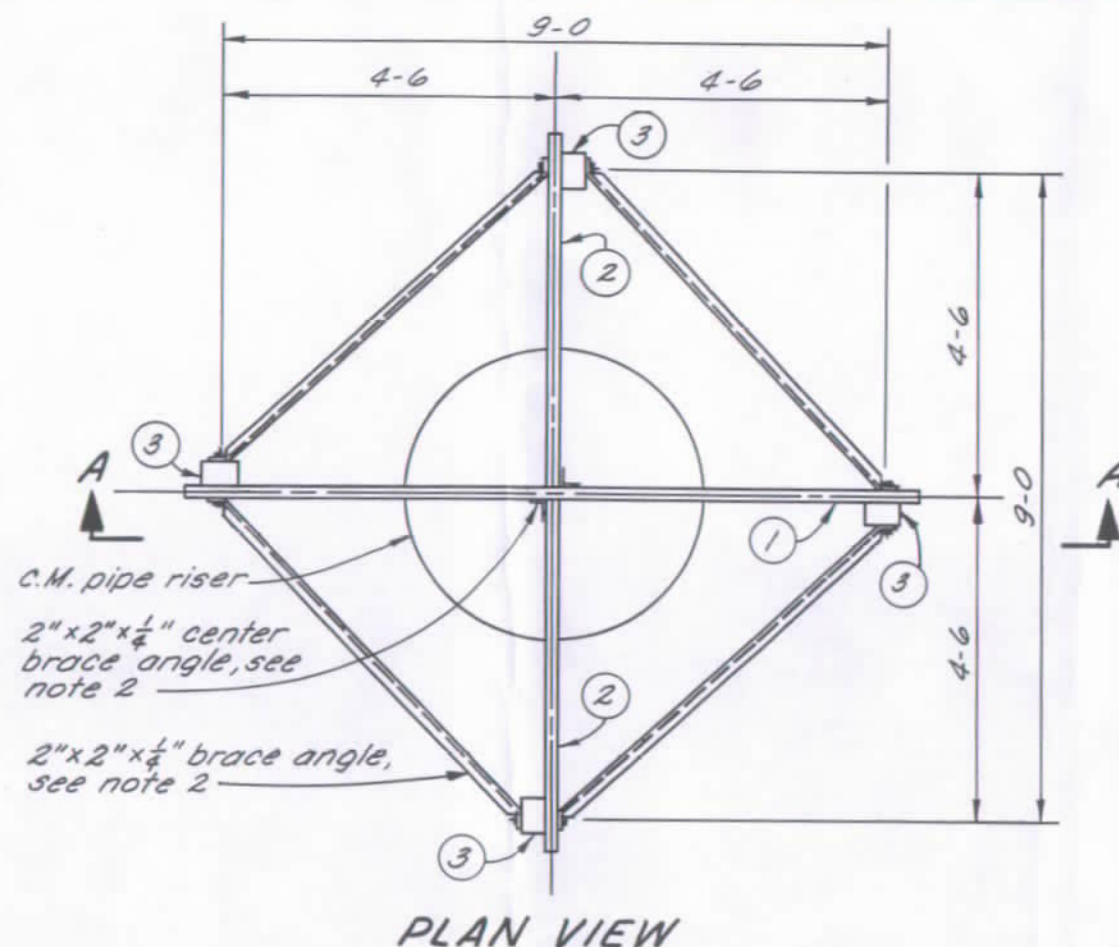


TABLE OF QUANTITIES

ITEM	MARK	NO. REQ'D.	QUANTITY
2" X 10" X 10' PRESSURE TREATED LUMBER	1	4	67 BD.FT.
2" X 10" X 4'-11" PRESSURE TREATED LUMBER	2	8	66 BD.FT.
4" X 6" X 8' PRESSURE TREATED POST	3	4	64 BD.FT.
2" X 2" X 1/4" X 6'-5" STEEL ANGLE		8	164 LB.
2" X 2" X 1/4" X 3'-2" STEEL ANGLE		2	20 LB.
5/8" X 8" STEEL BOLTS, NUTS, 2 WASHERS		32	32 SETS
1/2" X 3" STEEL BOLTS, NUTS, 2 WASHERS		32	32 SETS

NOTES:

1. TO 4" X 6" POSTS (4 REQUIRED) BOLT 2" X 10" BOARDS USING TWO 5/8" X 8" BOLTS PER 2" X 10" BOARD. DO NOT PLACE BOLTS CLOSER THAN 1 1/2" FROM EDGE OF BOARD.
2. FOR CENTER BRACE ANGLES DRILL 8 - 9/16" HOLES 5/8" FROM OUTER EDGE OF EACH LEG OF EACH ANGLE AND CENTERED 5 1/4" APART ALONG THE LEG.
3. ATTACH BRACE ANGLES TO TOP BOLT ON TOP 2" X 10" BOARD AND TO TOP BOLT ON NEXT TO BOTTOM BOARD.

TRASH RACK AND BAFFLE
FOR RISER DIA. 36" THRU 60"

OPERATOR: Jim Morrison
CONSERVATION DISTRICT: Hughes

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Designed.....	Approved by.....
Drawn.....	Title.....
Traced.....	Title.....
Checked.....	Sheet No.....
	Drawing No.....

JOB PLAN NO. 6.4

5, N-29, 073.6-40

RECEIPT

Water Rights Program

South Dakota Department of Environment and Natural Resources

№ 416253

Pierre, November 10, 1999

RECEIVED OF Jim Mollison, 101 Woodriver Quay, Pierre, SD 57501
the following amount in fees for services rendered as provided for by law:

Fee for Application for Permit No. <u>6154-3</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>6154-3</u> _____	50	00
Fee for Filing Transfer Form _____		
Fee for Filing Extension Request _____		
Fee for _____		

(Any Other Work Provided by Law)	Total	200 00

By John Hatch
Chief Engineer

POOLING AGREEMENT

We, the undersigned, hereby agree to pool our resources for the installation of an earthen embankment pond as follows:

1. The pond will be located approximately on NW 1/4, SW 1/4 Section 27 T-111-N, R-77-E, Hughes County, South Dakota.
2. The water from the pond will be shared approximately equally between all participants in this pooling agreement.
3. It is further agreed that this pooling agreement will remain with the land in the event of the sale by all parties. Hereinafter, the term 'Service' shall be the NRCS.
4. We agree to maintain and service the pond as needed to insure that the spillway functions as designed and the earthen embankment width is retained.
5. Any destruction of the spillways or earthen grade whether intentional, through damage from livestock or by acts of nature will be promptly repaired to original design.

OPERATION AND MAINTENANCE PLAN

Pooling Agreement For:

I. Operations

- A. The producers will be responsible for and will utilize water in the pond without cost to the Service in accordance with Federal, State and local laws, and in a manner that will assure that the pond will serve the purpose for which installed as set forth in the Pooling Agreement.

(more)

Name

Name

Date

Date

II. Maintenance

A. The Producers Will:

1. Be responsible for and promptly perform or have performed without cost to the Service, all maintenance of the facility as needed.

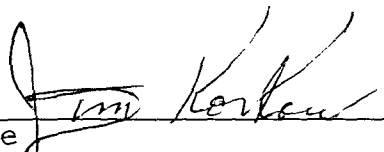
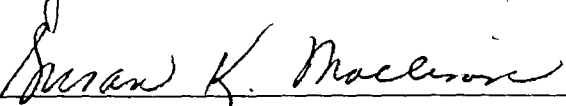
III. General

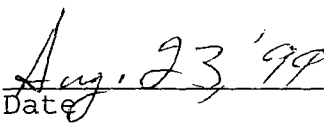
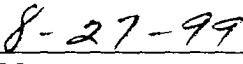
A. The Producers Will:

1. Prohibit the installation of any facility that will defeat the purpose of the pond as designed.
2. The Producers hereby agree that in the case of sale or assignment of land, that this Agreement will be made a part thereto and that the party or parties having control of the land will continue to operate and maintain the pond in accordance with the Pooling Agreement.
3. It is mutually agreed that this Operation and Maintenance Plan may be revised, amended or replaced in case a more permanent O & M Plan is developed.
4. It is further agreed that all parties, guests thereof and successors thereof to this pooling agreement shall have unrestricted access to the area in and around the pond, earthen embankment and spillways to maintain, improve, enhance or pursue recreational interests.

- B. The Service will, upon request of the producers and to the extent that its resources permit, provide consultative assistance in the operation and maintenance of the pond.

The Producers and the Service Agree to carry out the above Operation and Maintenance Plan for the period of the Pooling Agreement.


Name _____

Name _____


Date _____

Date _____

REPORT ON
WATER PERMIT APPLICATION NO. 6154-3
Susan Mollison
November 23, 1999

Water Permit Application No. 6154-3 has been filed by Susan Mollison to impound 78 acre-feet of water from runoff by constructing a dam located in the NW $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 27-T111N-R77W, in Hughes County. The application also requests impoundment of sufficient water to maintain the reservoir at the outlet elevation. The water will be used for fish and wildlife propagation and livestock watering.

Discussion:

The Mollison Dam will be classified as a Category 3, Low Hazard dam. The dam has been designed by the Natural Resources Conservation Service. The plans and specifications have been reviewed and will be approved; however, construction of the dam can not begin until Water Permit Application No. 6154-3 is approved.

The dam will be 32 feet high with a normal storage capacity of 78 acre-feet with a reservoir level at the spillway elevation, and a maximum storage capacity of 140 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.

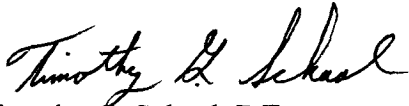
The dam is designed to have a 48 inch RCP riser with an 27 inch RCP barrel with 7.5 feet of available freeboard as the primary spillway, and a 100 foot wide earthcut spillway with 3 feet of available freeboard as the secondary spillway. The dam will have a drainage area of 1900 acres (2.97 square miles). A 25-year frequency event will produce a peak of approximately 335 cfs and a 100-year frequency event will produce a peak of approximately 636 cfs. The 100 foot wide earthcut secondary spillway will have a capacity of approximately 1350 cfs.

The annual yield for this drainage area with a 10 percent chance of occurrence, or 1 out of 10 years, is expected to be 222 acre-feet. The annual yield with a 50 percent chance of occurrence, or 1 out of 2 years, is expected to be 42 acre-feet and the annual yield with a 80 percent chance of occurrence, or 8 out of 10 years, is expected to be 13 acre-feet.

The Mollison Dam will be located in the NW $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 27-T111N-R77W on Hiddenwood Gulch, about one and one-half miles upstream of its confluence with Medicine Knoll Creek and about five miles above the confluence of Medicine Knoll Creek and Lake Sharpe on the Missouri River. There are no existing Water Permits/Rights located on Hiddenwood Creek or Medicine Knoll Creek between the proposed dam and the Missouri River.

Conclusions:

1. Water Permit Application No. 6154-3 should be approved since unappropriated water is available and approval should not have any adverse effect on existing Water Permits/Rights.
2. If approved, the low flow bypass requirement for downstream domestic use should be a qualification on Water Permit Application No. 6154-3.



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

Approved by:



Gale N. Selken, P.E.
Natural Resources Engineer IV

**RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 6154-3, Susan Mollison**

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. 6154-3, Susan Mollison, 101 Wood River Quay, Pierre SD 57501.

The Chief Engineer is recommending APPROVAL of Application No. 6154-3 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. 6154-3 authorizes a dam with storage capacity of 78 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.


JOHN HATCH, Chief Engineer
December 3, 1999



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

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

December 3, 1999

Susan Mollison
101 Wood River Quay
Pierre, SD 57501

Dear Ms. Mollison:

Water Permit Application No. 6154-3 for recreation, fish & wildlife propagation, and livestock water 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 Capital Journal printed at Pierre, SD (Ph # (605) 224-7301). For your information, a copy of the notice, the recommendation of the Chief Engineer and a report on the application are enclosed. Please review the notice prior to publication and notify this office, if you have any corrections or questions.

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

Sincerely,

Eric Gronlund
Natural Resources Engineer
(605) 773-3352

enclosures

c: Jim Korkow, 30543 206 St., Pierre, SD 57501

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



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

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

December 3, 1999

Capital Journal
P.O. Box 878
Pierre, SD 57501-0878

ATTENTION: Legal Public Notice

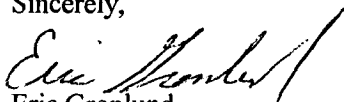
Enclosed is a Notice of Hearing on Application No. 6154-3 to Appropriate Water to be published twice. Please publish the first notice on December 10, 1999, with the second publication 7 days later.

The applicant must verify to you that the notice is to be published, before you make the first publication. **Please BILL the APPLICANT for the cost of publication.** The APPLICANT is Susan Mollison, 101 Wood River Quay, Pierre, SD 57501 (Ph # (605) 224-0173).

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

After the second publication, **please send us an affidavit or use the enclosed Proof of Publication form.** The applicant pays the cost of publication, but the Water Rights Program records require an affidavit or Proof of Publication. Delays in receiving the affidavit can be costly to the applicant.

Sincerely,


Eric Gronlund
Natural Resources Engineer
605 773-3352

enclosures

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

No. 6154-3

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

Date _____

We are in receipt of your letter of December 3, 1999, enclosing Notice of Hearing to Appropriate Water by Application No. 6154-3 which was first published in our issue of _____. ENCLOSED IS A COPY OF THIS FIRST PUBLICATION.

Name

Newspaper

Instruction to Newspaper - Publish first Notice on December 10, 1999, with the second publication 7 days later. The applicant is responsible for payment.

NOTICE OF APPLICATION NO. 6154-3 to Appropriate Water

Notice is given that Susan Mollison, 101 Wood River Quay, Pierre SD 57501 has filed an application for a water permit to impound 78 acre-feet of water from runoff by constructing a dam located in the NW ¼ SW ¼ Section 27 with water impounded in the NW ¼ SW ¼ Section 27; all in T111N-R77W. This application requests impoundment of sufficient water to maintain water at the outlet elevation. The water is to be used for fish and wildlife propagation, recreational use and livestock water.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 6154-3 because 1) unappropriated water is available, 2) existing rights will not be unlawfully impaired, 3) it is a beneficial use of water, and 4) it is in the public interest. In accordance with SDCL 46-2A-23, the Chief Engineer will act on the application, as recommended, unless a petition is filed opposing the application or the applicant files a petition contesting the Chief Engineer's recommendation. If a petition opposing the application or contesting the recommendation is filed, then a hearing will be scheduled and the Water Management Board will consider the application. Notice of the hearing will be given to the applicant and any person filing a petition.

Any person interested in opposing or supporting this application or recommendation must file a written petition with BOTH the applicant and Chief Engineer. The applicant must file a petition if contesting the Chief Engineer's recommendation. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E Capitol, Pierre SD 57501 (605 773-3352)" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by December 27, 1999.

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



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

December 6, 1999

Susan Mollison
101 Wood River Quay
Pierre, SD 57501

Dear Mrs. Mollison:

We have reviewed the plans and specifications for your dam located in the NW $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 27-T111N-R77W, in Hughes County. The plans and specifications as submitted are approved. Approval of the plans and specifications does not authorize construction of the project. Construction of the project may not begin until Water Permit Application No. 6154-3 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 Mollison Dam will be classified as a small size Category 3, Low Hazard dam with a dam height of 32 feet and a normal storage capacity of 78 acre-feet and a maximum storage capacity of 140 acre-feet.

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

Sincerely,

Gale N. Selken, P.E.
Natural Resources Engineer IV
for John Hatch, Chief Engineer
Water Rights Program
(605) 773-3352

c: Dave Konechne, NRCS, Pierre

PROOF OF PUBLICATION

STATE OF SOUTH DAKOTA)
County of Hughes) SS

I, Peggy Warner

certify that the attached printed Notice was taken

from the Capital Journal

printed and published in Pierre

County of Hughes and

state of South Dakota. The notice was published

in the newspaper on the following two dates:

December 10, 1999

December 17, 1999

Cost of Printing \$38.48

Peggy Warner
(Signature)

Legal Ad Representative
(Title)

Dec. 20, 1999
(Date Signed)



No. 2824 2tdly 12/10, 12/17
NOTICE OF APPLICATION
NO. 6154-3 To Appropriate
Water

Notice is given that Susan Molli-son, 101 Wood River Quay, Pierre SD 57501 has filed an application for a water permit to impound 78 acre-feet of water from runoff by constructing a dam located in the NW 1/4 SW 1/4 Section 27 with water impounded in the NW 1/4 SW 1/4 Section 27; all in T111N-R77W. This application requests impoundment of sufficient water to maintain water at the outlet elevation. The water is to be used for fish and wildlife propagation, recreational use and livestock water.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends Approval of Application No. 6154-3 because 1) unappropriated water is available, 2) existing rights will not be unlawfully impaired, 3) it is a beneficial use of water, and 4) it is in the public interest. In accordance with SDCL 46-2A-23, the Chief Engineer will act on the application, as recommended, unless a petition is filed opposing the application or the applicant files a petition contesting the Chief Engineer's recommendation. If a petition opposing the application or contesting the recommendation is filed, then a hearing will be scheduled and the Water Management Board will consider the application. Notice of the hearing will be given to the applicant and any person filing a petition.

Any person interested in opposing or supporting this application or recommendation must file a

written petition with BOTH the applicant and Chief Engineer. The applicant must file a petition if contesting the Chief Engineer's recommendation. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E Capital, 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 December 27, 1999.

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

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



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

JAN 7 2000

Susan Mollison
101 Wood River quay
Pierre, SD 57501

Dear Ms. Mollison:

Enclosed is Water Permit No. 6154-3 authorizing construction of your water diversion system and beneficial use of the water, not exceeding the limits as specified in the Water Permit.

Form 10, *Notice of Completion of Works and Application of Water to Beneficial Use*, is enclosed. Please return this completed form after you have finished the system and have put the water to beneficial use. An investigation can then be scheduled so the water license may be issued, thus completing the acquisition of a water right.

An informational sheet *Common Water Right Questions?* is also enclosed. This sheet is intended to answer some of the questions associated with obtaining and keeping a water right.

Very truly yours,

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

enclosures

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



Date 1/3/2001

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

FROM: Susan Mollison
(name)
161 WOOD RIVER QUAY
(address)
PIERRE, SD 57501 224-0173
(city, state, zip) (phone)

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

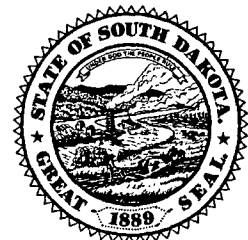
Water Permit No. 6154-3 states that the water use system is to be constructed by
12/27/2004 , and water is to be put to beneficial use by 12/27/2008
(date) (date)

The water use system was completed on Nov, 2000
(date)

Applying the water to beneficial use was completed on Spring 2001
(As soon as reservoir fills) (date)

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

Susan K Mollison by J B Mollison
(signature) - agent



REPORT ON INSPECTION OF PERMIT NO. 6154-3

DATE OF INSPECTION: September 24, 2001

Other permit(s) associated with the project: none

NAME & ADDRESS OF INSPECTION CONTACT: Jim Mollison, 101 Woodriver Quay, Pierre, SD 57501

RELATIONSHIP TO PERMIT HOLDER, IF APPLICABLE: spouse

NAME & ADDRESS OF PERMIT HOLDER: Susan Mollison, same as above

DIVERSION POINT LEGAL LOCATION: 2160' N and 230' E of the SW corner in the NW¹/₄ SW¹/₄ of Section 27, T111N-R77W.

DAM INFORMATION:

- 1) Height to crest 32 feet
- 2) Height to primary spillway 24.5 feet
- 3) Height to secondary spillway 29 feet
- 4) Crest width 12 feet
- 5) Crest length 226 feet
- 6) Spillway length 145 feet
- 7) Spillway width 100 feet
- 8) Approx. storage 78 ac-ft
- 9) Approx. Storage to crest 140 ac-ft
- 10) Date constructed: Nov. 2000
- 11) Outlet tubes:
 - a) diameter 27 inches
 - b) type rcp
 - c) valved no
 - d) location on structure 75' NW of the SW end of the dam
- 12) Category of Dam 3
- 13) Inspection Sheet Completed no

PERMIT QUALIFICATIONS AND REGULATIONS:

- 1) Special qualifications to permit being abided by yes
- 2) All structures, wells and lands on map yes

Comments: Embankment needs cover, plan to plant yet this fall. Some moisture along the SW groin on the downstream side.

WATER PERMIT NO. 6154-3 SUSAN MOLLISON



0.5 SCALE 0 0.5 Miles

Lynn Beck
Natural Resources Engineer Specialist
Water Rights Program, DENR
October 2, 2001

Lynn Beck



Permit No. 6154-3
Missouri River - Water District

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

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

I have this day, September 24, 2001 made a thorough examination of the water use system constructed by Susan Mollison of 101 Woodriver Quay holder of Permit No. 6154-3, bearing the priority of November 10, 1999 authorizing the storage of 78 acre-feet of the waters of unnamed drainage for recreation, fish and wildlife propagation, and livestock purposes, in Hughes County.

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

A. Works used to divert the water:

The dam is a category 3 dam 226' long and 32' in height to crest and 24.5' to primary spillway. The primary spillway is a 27" reinforced concrete pipe with a 30" cmp outlet tube. The secondary spillway is an earthen spillway 100' wide and 145' long.

B. Works used to apply water to beneficial use:

Same as above.

The system is in the following condition good/new. The point of diversion is located 2160' N and 230' E of the SW corner in the NW¼ SW¼ of Section 27, T111N-R77W. The works are capable of diverting and storing 78 acre feet of water which is to be used for recreation, fish and wildlife propagation, and livestock.

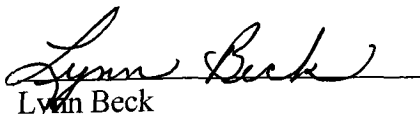
Water has been put to beneficial use to the maximum extent as follows:

Water is impounded behind the dam in the NW¼ SW¼ of Section 27, T111N-R77W.

The license should be issued for 78 acre-feet of storage.

Applicable permit qualifications have been complied with: yes

Exceptions to compliance are: none


Lynn Beck

Natural Resources Engineer
DENR, Water Rights Program

10.9.01
Date

STATE OF SOUTH DAKOTA

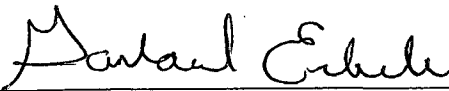
WATER LICENSE NO. 6154-3

(1) Susan Mollison, 101 Woodriver Quay, Pierre SD 57501 made Application No. 6154-3, November 10, 1999 for a water permit to impound 78 acre-feet of water from runoff, Hughes County, South Dakota for fish & wildlife propagation, recreation and livestock watering purposes. Permit No. 6154-3, with a priority date of November 10, 1999 was approved December 27, 1999 and issued to the applicant for diversion of water with construction of the described water supply system to be completed on or before December 27, 2004 and for the application to beneficial use of said water on or before December 27, 2008.

(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 78 acre-feet of water for beneficial use with sufficient water annually to maintain the water level to the outlet elevation. The location of the storage dam (spillway) is 2,160 feet north and 230 feet east of the southwest corner of Section 27-T111N-R77W (NW ¼ SW ¼).

(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 Susan Mollison, 101 Woodriver Quay, Pierre SD 57501 the holder and/or owner of Water Right No. 6154-3 is issued a license to appropriate water, the right to impound 78 acre-feet of water from runoff with sufficient water annually to maintain the water level to the outlet elevation with a priority date of November 10, 1999 from the location specified in (2) of this license for fish & wildlife propagation, recreation and livestock watering. This license is subject to any limitations or qualifications listed in Water Right No. 6154-3 and subject to South Dakota State Law.



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

DEC 07 2001

date





**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

DEC 07 2001

6154-3

Susan Mollison
101 Woodriver Quay
Pierre, SD 57501

Dear Ms. Molliossn:

Enclosed is Water License No. 6154-3. This is the final water right document completing your process of obtaining a Water Right.

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

Sincerely,

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

enclosures