



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

January 5, 2000

6084-3

Margery A. Houck
P.O. Box 203
Gettysburg, SD 57442

Dear Ms. Houck:

The investigation of your water use system was conducted on August 3, 1999, by Lynn Beck, staff engineer. The investigation included the extent of application of water to beneficial use, as developed under Water Permit No. 6084-3. Your final water right document, the Water License, can now be issued.

Statutes require that we charge a \$50.00 fee for the investigation and issuance of the Water License. Upon receipt of the \$50.00 fee from you, we will begin processing your Water License.

**Please remit fee to:
Department of Environment & Natural Resources
Water Rights Program
523 E. Capitol
Pierre, SD 57501-3181**

Sincerely,

Cheryl F. Frost
Secretary
Water Rights Program
(605) 773-3352

NOTE: On check or money order, please specify your permit number. This will insure proper handling of the fee.

RECEIPT

Water Rights Program

South Dakota Department of Environment and Natural Resources

NE 416341

Pierre, January 10, 2000

RECEIVED OF Robert D. Houck (Margery A. Houck), P.O. Box 203, Gettysburg, SD 57442
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 _____

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. 6084-3

50 00

Fee for Filing Transfer Form _____

Fee for Filing Extension Request _____

Fee for _____

(Any Other Work Provided by Law)

Total

50 00

By

Marland L. Lohr 
Chief Engineer

Permit No. 6084-3
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, August 3, 1999 made a thorough examination of the water use system constructed by Margery A. Houck of P.O. Box 203, Gettysburg, SD 57442 holder of Permit No. 6084-3, bearing the priority of May 28, 1998 authorizing the storage of 34 acre-feet of the waters of unnamed tributary to Lake Oahe for wildlife propagation, livestock watering, and recreation purposes, in Potter County.

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

A. Works used to divert the water:

A 27' high dam with a primary spillway at 21.5' and a secondary spillway at 24'. The primary spillway is a 60" diameter riser and a 48" diameter barrel. The secondary spillway is a 40' earth cut spillway. The combined capacity of the spillways is 770 cfs.

The system is in the following condition good. The point of diversion is located 1400' S and 3500' W of the NE corner Section 11, T119N, R78W.

The works are capable of storing 34 acre-feet at normal storage and 77 acre-feet at capacity of water which is to be used for fish and wildlife propagation, livestock watering, and recreation. Water has been put to beneficial use to the maximum extent as follows:

SE¼ NW¼ of Section 11, T119N, R78W

The license should be issued for 34 acre-feet of storage.

Applicable permit qualifications have been complied with: yes

Exceptions to compliance are: none

Lynn Beck
Lynn Beck

Natural Resources Engineer
DENR, Water Rights Program

11-1-99
Date

REPORT ON INSPECTION OF PERMIT NO. 6084-3

DATE OF INSPECTION: 8-3-99

Other permit(s) associated with the project: none

NAME & ADDRESS OF INSPECTION CONTACT: Bob Houck, P.O. Box 203, Gettysburg, SD 57442

RELATIONSHIP TO PERMIT HOLDER, IF APPLICABLE: husband

NAME & ADDRESS OF PERMIT HOLDER: Margery A. Houck, same address as above.

DIVERSION POINT LEGAL LOCATION: 1400' S and 3500' W of the NE corner Section 11, T119N, R78W.

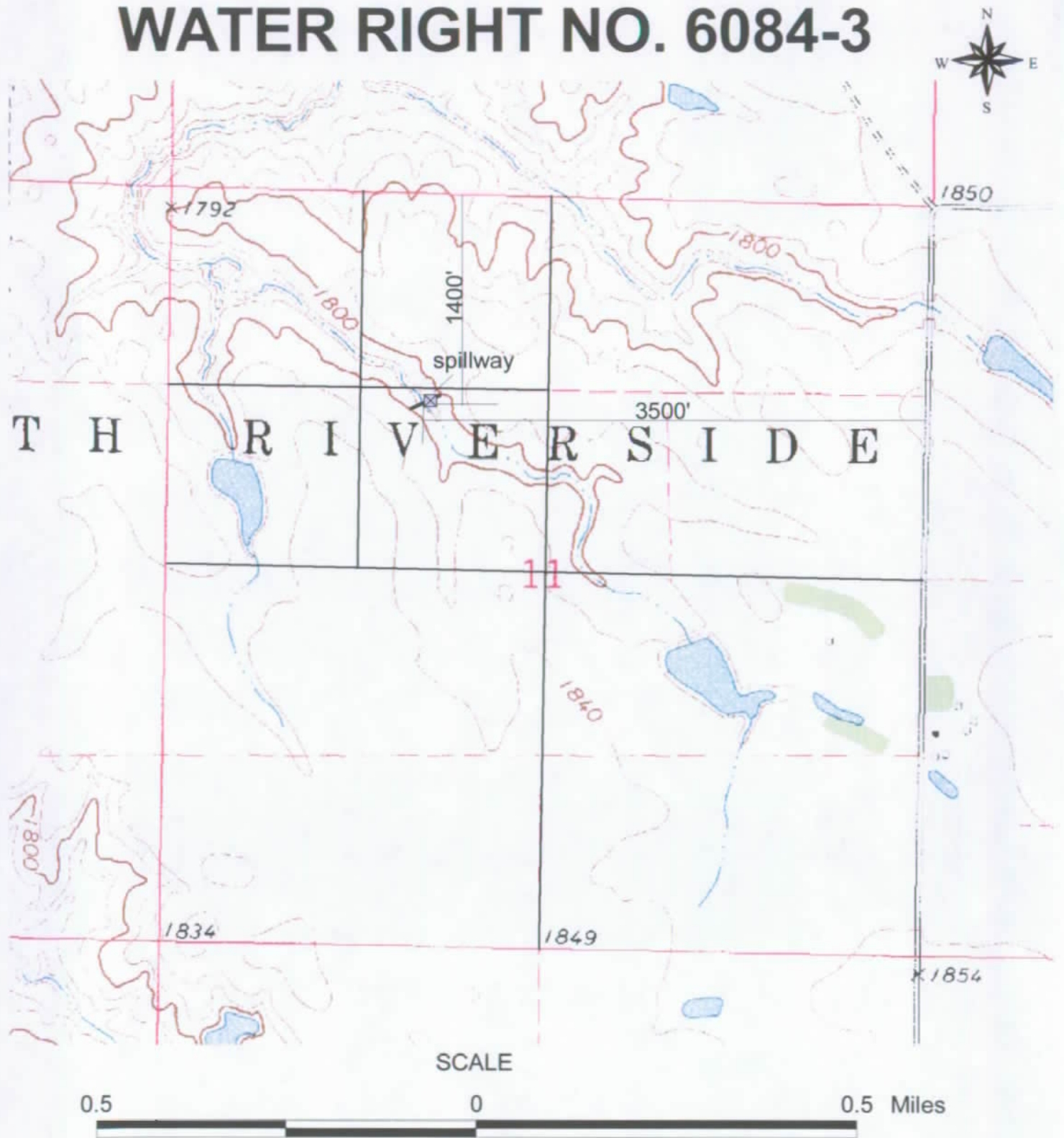
DAM INFORMATION:

- 1) Height to crest 27 feet
- 2) Height to primary spillway 21.2 feet
- 3) Height to secondary spillway 24 feet
- 4) Crest width 12 feet
- 5) Crest length 200 feet
- 6) Spillway length 100 feet
- 7) Spillway width 40 feet
- 8) Approx. storage 34 ac-ft
- 9) Approx. Storage to crest 77 ac-ft
- 10) Date constructed: August 1998
- 11) Outlet tubes:
 - a) diameter 48 inches
 - b) type cor. vinyl pipe
 - c) valved no
 - d) valve type na
 - e) location on structure 134' from west end
- 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

WATER RIGHT NO. 6084-3



Lynn Beck
Natural Resources Engineer
DENR, Water Rights
November 1, 1999



South Dakota Department of
Environment and Natural Resources



Protecting South Dakota's Tomorrow... Today

STATE OF SOUTH DAKOTA

WATER LICENSE NO. 6084-3

(1) Margery A Houck, PO Box 203, Gettysburg SD 57442 made Application No. 6084-3, May 28, 1998 for a water permit to impound 34 acre-feet of water from runoff, Potter County, South Dakota for fish & wildlife propagation, livestock water and recreational purposes. Permit No. 6084-3, with a priority date of May 28, 1998 was approved July 13, 1998 and issued to the applicant for diversion of water with construction of the described water supply system to be completed on or before July 13, 2003 and for the application to beneficial use of said water on or before July 13, 2007.

The permit holder submitted a *Notice of Completion of Works and Application of Water to Beneficial Use* on September 8, 1998. The *Notice* stated the diversion system was completed and water placed to beneficial use on August 7, 1998.

(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 34 acre-feet of water for beneficial use with sufficient water annually to maintain the water level to the outlet elevation of approximately 1,800 feet mean sea level. The location of the storage dam is 1,400 feet south and 3,500 feet west of the northeast corner of Section 11-T119N-R78W (SE ¼ NW ¼).

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

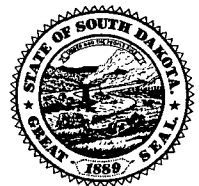
(4) Pursuant to South Dakota Water Law 46-5-30.1 Margery A Houck, PO Box 203, Gettysburg SD 57442 the holder and/or owner of Water Right No. 6084-3 is issued a license to appropriate water, the right to impound 34 acre-feet of water from runoff with sufficient water annually to maintain the water level to the outlet elevation of approximately 1,800 feet mean sea level with a priority date of May 28, 1998 from the location specified in (2) of this license. for fish & wildlife propagation, livestock water and recreational purposes. This license is subject to any limitations or qualifications listed in Water Right No. 6084-3 and subject to South Dakota State Law.



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

JAN 21 2000

date





**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

JAN 21 2000

6084-3

Margery A. Houck
P.O. Box 203
Gettysburg, SD 57442

Dear Ms. Houck:

Enclosed is Water License No. 6084-3 and Receipt No. 416341 for \$50.00 which was assessed for an investigation and issuance of the license. Water License No. 6084-3 is the final document which completes the 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

ks
enclosures

WATER PERMIT NO. 6084-3

Name of Applicant: Margery A Houck

Address: Box 203, Gettysburg SD 57442-0203

Phone: 605 765-2858

Amount of Water Claimed: 34 AF

Total Acres: NA

Source of Water Supply: dry draw

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

County: Potter

Type of Waste Disposal System: NA

Location: 12 miles southwest of Gettysburg

PRIORITY Date Received: 5-28-1998

Fee: \$150.00

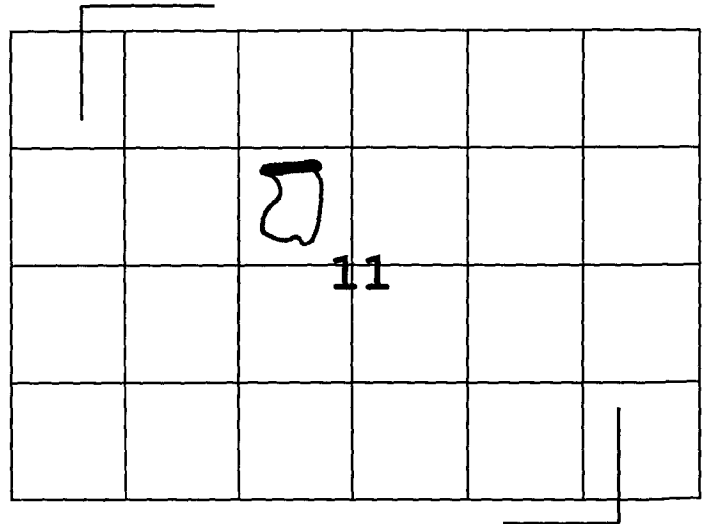
Corrected Application Received: 6-4-1998

Period of Annual Use: January 1 – December 31

Remarks:

Diversion Point: SE ¼ NW ¼ Sec 11-T119N-R78W

Water Impounded: SE ¼ NW ¼ Sec 11-T119N-R78W



Depth of Well: NA

Well Driller:

Remarks:

Type of Map: topo

Prepared by: Jim Ridler, NRCS

Reviewed and the Number Assigned on: 6-4-1998

By: Karen Schlaak

Notice of Hearing - date to intervene: _____

**SOUTH DAKOTA
WATER PERMIT NO. 6084-3**

Date of first receipt of application May 28, 1998.

Date of return to applicant for corrections, amendments or changes May 28, 1998.

Date of receipt of corrected application June 4, 1998.

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 6084-3 to Margery A Houck, Box 203, Gettysburg SD 57442-0203 authorizing the construction of a dam and the placing of water to beneficial use subject to the following limitations, conditions and qualifications:

1. Water Permit No. 6084-3 authorizes impoundment of 34 acre-feet of runoff water in a dry draw by constructing a dam located in the SE $\frac{1}{4}$ NW $\frac{1}{4}$ Section 11; with water impounded in the SE $\frac{1}{4}$ NW $\frac{1}{4}$ Section 11; all in T119N-R78W. This permit authorizes impoundment of sufficient water to maintain the water level to the outlet elevation of approximately 1800 feet mean sea level.
2. The water appropriated shall be used for the purpose of providing habitat for fish and wildlife propagation, livestock water and recreational use and may not exceed the amount of water needed for beneficial use.
3. The water is to be used during the following described annual period: January 1 – December 31.
4. The date of approval of Permit No. 6084-3 is July 13, 1998.
5. The date from which applicant may claim right is May 28, 1998.
6. One-fifth of the construction is to be completed on or before January 13, 2001.
7. All construction is to be completed on or before July 13, 2003.
8. Water is to be put to beneficial use on or before July 13, 2007.
9. Water rights obtained in compliance with the laws of the State of South Dakota may not be unlawfully impaired by this appropriation.

QUALIFICATIONS

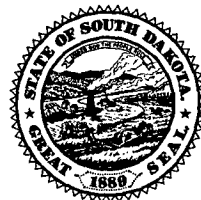
1. Water Permit No. 6084-3 authorizes a dam with storage capacity of 34 acre-feet of water and sufficient water annually to maintain the water level to the outlet elevation.
2. Low flows as needed for downstream domestic use, including livestock water and prior water rights must be by-passed.

WATER MANAGEMENT BOARD

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

SEP 3 1998

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>6084-3</u>	(office use only) Hydrologic Unit <u>10130105</u>
	Basin <u>Missouri River</u>	
	Newspaper <u>Potter Co. News, Gettysburg, 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 livestock water

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.) _____

1. Name of Applicant MARGERY A. HOUCK Phone (605) 765 2858
(check one) ☐ Owner ☐ Tenant/lessee
Mailing Address Box 203 Gettysburg, State SD 57442-0203
(Street, RR. or Box) (Zip Code)

2. Amount of water claimed _____ *CFS or _____ **GPM _____ 34 ***AF
(*Cubic Feet per Second) (**Gallons per Minute) (***)Acres Feet - storage capacity of dam/dugout or annual use if applicable)

3. Source of water supply DRY DRAW

4. Location of point of diversion (example - 3 wells in SW 1/4 NE 1/4 section 12-T104N-R53W)
SE 1/4 NW 1/4 - 11-119-78 Water Impounded: SE 1/4 NW 1/4 SEC. 11-T119N-R 78W
County Potter

5. County or counties where water will be used Potter

6. Annual period during which water is to be used 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)

COMBINATION GRADE STABILIZATION AND WILDLIFE POND

STATE OF SOUTH DAKOTA)
County of Potter 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, Margery A. Houck, 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 Margery A. Houck

Subscribed and sworn to before me this 27th day of May 19 98

ROBERT D. HOUCK
Notary Public - Potter County, SD
My Commission Expires: Jan. 19, 2000

Robert D. Houck

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 _____

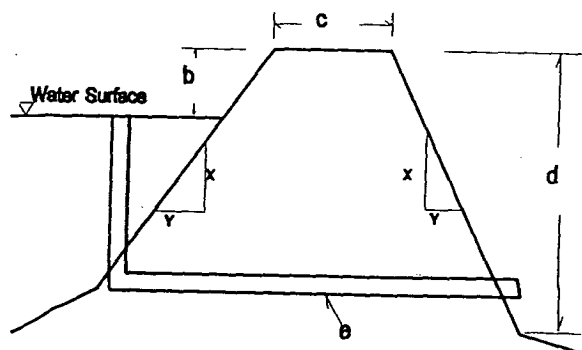
3. Dugout Information

- 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 12
Crest Length 200
- d) Height 28
- e) Primary Outlet Capacity 235
If pipe, diameter 60"
- f) Secondary Spillway Capacity 330 cfs
Spillway Width 40'
- g) X & Y Slope 3:1
Upstream 3:1
Downstream 3:1
- h) Surface Area of Impoundment 4.6
- i) Storage 34 Acre Feet
- j) Drainage Area Above Dam 1215 Acres

This is a Class "A" structure. Jim Riddle NRCS, Gettysburg SD



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May 28, 1998

Margery A Houck
Box 203
Gettysburg SD 57442-0203

Dear Mrs. Houck:

Thank you for submitting your *Application for a Permit to Appropriate Water*. In order to complete the application the following is required.

A written preliminary risk assessment of the downstream hazard potential needs to be provided to aid in determining the hazard classification for the proposed dam (see enclosed Safety of Dams Rules Sections 74:02:08:05 and 74:02:08:05.01). The hazard classification for the dam (Category 1, 2 or 3) needs to be known in order to determine what provisions of the Safety of Dams Rules will apply to your dam.

An assessment of the downstream hazard potential is to consist of a list of properties downstream from the dam (homes, roads, dams and other structures) with the potential affects of a dam failure to these properties. The legal descriptions of these downstream properties and the elevation above the waterway need to be included in the assessment. The risk assessment needs to be prepared by an engineer as defined in the Safety of Dams rules. *none - < 210 ahe*

Eric Gronlund, with this office indicated he talked with Bob Houck regarding this application. Possibly, James Ridler with the Natural Resources Conservation Service who signed the map submitted with your application may be able to assist with the risk assessment.

Plans and specifications for the dam will also be needed pursuant to the Safety of Dams Rules Chapter 74:02:08 as well as completion of Item No. 4 of the enclosed Form 2A.

If you have any questions, please contact Eric Gronlund or me.

Sincerely,

Karen Schlaak

Karen Schlaak
Water Rights Program
605 773-3352

enclosures

as requested:
Jim Ridler
NRCS
Gettysburg

Water Permit Application No. 6084-3
Margery Houck

Cat. 3 - Low Hazard Dam

$$\left. \begin{array}{l} \text{Top of Dam Elev.} - 100 \\ \text{P. Spillway Elev.} - 94.2 \\ \text{2nd Spillway Elev.} - 97 \\ \text{D/S Toe Elev.} - 72 \end{array} \right\} \text{Height} = 28 \text{ ft}$$

Normal Storage Capacity - 34 Ac-Ft.
Int. Storage Capacity - 47 Ac-Ft.
Max. Storage Capacity - 77 Ac-Ft.

Int. Storage Capacity $\times$ Eff. Height = $47 \times 25 = 1175 < 3000$ $\therefore$
25 Minimum Spillway Design

From USGS WRI 80-80 "Tech. for Est. Peak Floods ... in SD"

$$\begin{aligned} \text{DA} &= 1215 \text{ Ac} = 1.9 \text{ mi}^2 \\ \text{Slope} &= 30^\circ/\text{mi} \\ \text{SI} &= 3.33 \end{aligned}$$

$$\begin{aligned} Q_{25} &= 83.4 A^{.65} S^{.46} SI^{-.67} \\ &= 83.4 (1.9)^{.65} (30)^{.46} (3.33)^{-.67} \\ &= 83.4 (1.47) (4.46) (0.42) \\ &= \underline{230 \text{ cfs}} \end{aligned}$$

$$\begin{aligned} Q_{100} &= 132 A^{.65} S^{.46} SI^{-.67} \\ &= 132 (1.9)^{.65} (30)^{.46} (3.33)^{-.67} \\ &= 132 (1.52) (4.78) (0.45) \\ &= \underline{430 \text{ cfs}} \end{aligned}$$

Secondary Spillway Flow

$$\begin{aligned} C &= 2.6 & Q &= C L H^{3/2} \\ L &= 40 & &= 2.6 (40) (3)^{1.5} \\ H &= 3 & &= \underline{540 \text{ cfs}} \end{aligned}$$

Section 74:02:08:09

1. Topo Map - OK
2. Dam Axis Profile - OK
3. Dam Max. X-Sec. - OK
4. Area Capacity Data - OK
5. Outlet Details - OK
6. Spillway Rating - OK
7. Spillway Details - OK
8. Specs. - SH. NRCS - OK
9. EPP - N/A Cat. 3 - OK

NRCS Annual Yield

$$\text{DA} = 1215 \text{ Ac}, \text{CN} = 84, \text{ISO} = 2$$

$$\begin{aligned} 80\% \text{ chance} &= 0.44 \\ 0.44 \times 1215/2 &= \underline{42.5 \text{ Ac-Ft.}} \end{aligned}$$

$$\begin{aligned} 50\% \text{ chance} &= 1.0 \\ 1.0 \times 1215/2 &= \underline{101 \text{ Ac-Ft.}} \end{aligned}$$

$$\begin{aligned} 10\% \text{ chance} &= 3.4 \\ 3.4 \times 1215/2 &= \underline{344 \text{ Ac-Ft.}} \end{aligned}$$

DAMS2 XEQ 05/21/98 STRUCTURE SITE ANALYSIS COMPUTER PROGRAM
REV 01/01/90 SCS TECHNICAL RELEASE 48, (USER MANUAL) DATED JAN. 1990
TIME 10:16:53

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

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

DAMS2 01/01/90 B. Houck SEC11, T119N, R78W Potter Co. SD
STRUCTURE Houck Trial #1 05/21/98 D.Konechne 378 Design
74.0 0.0
85.0 5.0
93.0 94.2 29.0 34
95.0 37.0
97.0 47.0
100.0 77.0

ENDTABLE

WSDATA 1A101 AC 84 1215 7.18
PDIRECT 2.9 4.0 4.0
POOLDATA ELEV 94.2 94.2
PSDATA 1 112 48 0.025 75.0
PSINLET ELEV 1.0 15.7 94.2
ESCREST ELEV
ESDATA 17 50 0.03 3 0.035 10
BTMWIDTH FEET 40

COMMENT

COMMENT

COMMENT This is routing a 5 -yr storm

COMMENT

COMMENT

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.

full pipe flow



DAMS2 XEQ 05/21/98

REV 01/01/90

EC11, T119N, R78W Potter Co. SD

WSID = B. Houck

This is routing a 5 -yr storm

DAMS2 -----
 XEQ 05/21/98 EC11, T119N, R78W Potter Co. SD WSID= B. Houck
 REV 01/01/90 Trial #1 05/21/98 D.Konechne 378 Design SUBW= 01
 TIME 10:16:53 SITE = Houck 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 2.90	P-PS10 DAY .00	P-ES 4.00	P-FB 4.00	
WSDATA-	CN 84.00	DA-SM 1.90	TC/L 7.18	-/H .00	
SITEDATA-	PERM POOL 94.20	CREST PS 94.20	FP SED .00	QRF .00	
	BASEFLOW .00	INITIAL EL .00	EXTRA VOL. .00		
PSDATA-	NO. COND. 1.00	COND L 112.00	D/W 48.00	-/H .00	
	PS N .025	KE 1.00	WEIR L 15.70	TW EL 75.00	
	2ND STG 94.20	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 17	ES LENGTH 50	ES ENTRANCE N .030		
BTM WIDTH-	BW1 40.00	BW2 .00	BW3 .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	17	ELEVATION INCREMENT (FT)= 1.000	
DISCHARGES-Q1	Q2	Q3	Q4
2.177	7.222	14.080	22.436
Q5	Q6	Q7	Q8
31.983	42.623	54.218	66.737
Q9	Q10	Q11	Q12
80.111	94.210	109.077	124.678

DAMS2 -----
 XEQ 05/21/98 EC11, T119N, R78W Potter Co. SD WSID= B. Houck
 REV 01/01/90 Trial #1 05/21/98 D.Konechne 378 Design SUBW= 01
 TIME 10:16:53 SITE = Houck PASS= 1 PAGE= 2

PERM POOL	94.20 FT	33.8 ACFT	.00 AC	.0 CFS
CREST PS	94.20 FT	33.8 ACFT	.00 AC	.0 CFS
SED ACCUM	94.20 FT	33.8 ACFT	.00 AC	.0 CFS
2ND STAGE	94.20 FT	33.8 ACFT	.00 AC	.0 CFS
STARTING E	94.20 FT	33.8 ACFT	.00 AC	.0 CFS

SCS-PSH D= 24.00 HR P= 2.90 IN Q= 1.43 IN DA = 1.90 SM
 TC= 7.18 HR CN= 84.00 VOL= 145.2 ACFT

PEAK = 214.6 CFS, AT 16.4 HRS.

ROUTED RESULTS - HYD TYPE	EMAX	VOL-MAX	AMAX	QMAX
SCS-PSH	96.88 FT	46.4 ACFT	.00 AC	209.9 CFS

PS STORAGE 12.6 ACFT BETWEEN ES CREST AND SED ACCUM ELEVATIONS

DRAWDOWN (DDT) TEST 94.20 FT 33.8 ACFT .00 CFS
 CONTROL IS .000 DETENTION STORAGE

TIME = 1.14 DAYS, TO .0 CFS (LIMIT = 10.00 DAYS)

 RATING TABLE DEVELOPED, SITE = Houck
 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	94.20	.00	.00	33.80	.00
2	94.92	29.44	29.44	36.66	.00
3	95.63	83.27	83.27	40.15	.00
4	96.35	152.98	152.98	43.73	.00
5	97.06	235.52	235.52	47.61	.00
6	97.43	237.49	237.49	51.28	.00
7	97.80	239.42	239.42	54.96	.00
8	98.16	241.34	241.34	58.63	.00
9	98.53	243.25	243.25	62.31	.00
10	98.90	245.14	245.14	65.98	.00
11	99.27	247.02	247.02	69.65	.00
12	99.63	248.88	248.88	73.33	.00
13	100.00	250.73	250.73	77.00	.00

FULL CONDUIT FLOW, ELEV = 97.06 FT

DAMS2 -----
 XEQ 05/21/98 EC11, T119N, R78W Potter Co. SD WSID= B. Houck
 REV 01/01/90 Trial #1 05/21/98 D.Konechne 378 Design SUBW= 01
 TIME 10:16:53 SITE = Houck PASS= 1 PAGE= 3

ES CREST 96.88 FT 46.4 ACFT .00 AC 209.9 CFS
 PS STORAGE 12.6 ACFT BETWEEN ES CREST AND SED ACCUM ELEVATIONS
 STARTING E 94.20 FT 33.8 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= 2.37 IN DA = 1.90 SM
 TC= 7.18 HR CN= 84.00 VOL= 240.1 ACFT

PEAK = 433.5 CFS, AT 7.5 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= 2.37 IN DA = 1.90 SM
 TC= 7.18 HR CN= 84.00 VOL= 240.1 ACFT

PEAK = 433.5 CFS, AT 7.5 HRS.

 RATING TABLE DEVELOPED, SITE = Houck
 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	94.20	.00	.00	33.80	.00
2	94.50	7.91	7.91	34.99	.00
3	94.80	22.38	22.38	36.18	.00
4	95.09	41.11	41.11	37.47	.00
5	95.39	63.30	63.30	38.96	.00
6	95.69	88.46	88.46	40.45	.00
7	95.99	116.28	116.28	41.94	.00
8	96.29	146.54	146.54	43.43	.00
9	96.58	179.03	179.03	44.91	.00
10	96.88	213.63	213.63	46.40	.00
11	96.94	226.11	220.85	46.70	.00
12	97.00	238.70	228.15	47.01	.00
13	97.06	251.41	235.52	47.61	.00
FULL CONDUIT FLOW, ELEV = 97.06 FT					
14	97.21	265.33	236.32	49.08	.00
15	97.35	279.36	237.10	50.55	.00
16	97.62	304.88	238.49	53.19	.00
17	97.94	344.06	240.19	56.43	.00
18	98.53	477.36	243.25	62.30	.00
19	99.27	684.10	247.02	69.65	.00
20	100.00	940.57	250.73	77.00	.00

940.57
 - 250.73

 689.84 cfs

ROUTED RESULTS	BTM WIDTH FT	MAX ELEV FT	VOL-MAX ACFT	AREA-MAX AC	EMG. HP FT	VOL-ES ACFT
SCS-ESH	40.0	98.29	59.9	.0	1.40	13.4

PEAK - CFS DISCHARGE =	Q-PS	Q-ES	Q-TOT
	242.0	179.8	421.7

CRITICAL CRITICAL CRITICAL 25% OF

	DEPTH	VELOCITY	SLOPE-S/C	S/C
EMERGENCY	FT	FT/SEC	FT/FT	FT/FT
SPILLWAY----	.84	5.05	.019	.026

	DURATION	ATTACK	SUMMATION
	FLOW	OE/B	VEL**2 DELTA T
EMERGENCY	HRS	ACFT/FT	(FT/SEC)**2 HRS
SPILLWAY----	6.6	1.3	267.3

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

EXIT CHANNEL FLOW SUPERCRITICAL: MAX VELOCITY= 8.40 FT/SEC
EXIT SLOPE = .100 FT/FT
FLOW DEPTH = .515

DRAWDOWN USING FREEBOARD STORM FOLLOWS, STARTING AT ELEVATION 96.88 FT.

DRAWDOWN (DDT) TEST 94.20 FT 33.8 ACFT .00 CFS
CONTROL IS .000 DETENTION STORAGE

TIME = .87 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	40.0	98.29	59.9	.0	1.40	13.4

H=1.3
PEAK - CFS Q-PS Q-ES Q-TOT
DISCHARGE = 242.0 179.8 421.7

	CRITICAL	CRITICAL	CRITICAL	25% OF
	DEPTH	VELOCITY	SLOPE-S/C	S/C
EMERGENCY	FT	FT/SEC	FT/FT	FT/FT
SPILLWAY----	.84	5.05	.019	.026

	DURATION	ATTACK	SUMMATION
	FLOW	OE/B	VEL**2 DELTA T
EMERGENCY	HRS	ACFT/FT	(FT/SEC)**2 HRS
SPILLWAY----	6.6	1.3	267.3

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

EXIT CHANNEL FLOW SUPERCRITICAL: MAX VELOCITY= 8.40 FT/SEC
EXIT SLOPE = .100 FT/FT
FLOW DEPTH = .515

***** 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	40.0	98.86	65.6	.0	1.98	19.2

PEAK - CFS Q-PS Q-ES Q-TOT
DISCHARGE = 244.9 325.1 570.0

	CRITICAL	CRITICAL	CRITICAL	25% OF
	DEPTH	VELOCITY	SLOPE-S/C	S/C
EMERGENCY	FT	FT/SEC	FT/FT	FT/FT
SPILLWAY----	1.23	6.04	.017	.023

***** ES378 RUN - MINIMUM DEPTH, CREST EMG TO TOP OF DAM IS 2.00 FT
NEW TOP OF DAM ELEVATION = 98.88

ROUTED	BTM WIDTH	MAX ELEV	VOL-MAX	AREA-MAX	EMG. HP	VOL-ES
RESULTS	FT	FT	ACFT	AC	FT	ACFT
MINIMUM ES	40.0	98.88	65.8	.0	2.00	19.4
PEAK - CFS		Q-PS	Q-ES	Q-TOT		
DISCHARGES =		245.1	330.9	575.9		
		CRITICAL	CRITICAL	CRITICAL	25% OF	
		DEPTH	VELOCITY	SLOPE-S/C	S/C	
EMERGENCY		FT	FT/SEC	FT/FT	FT/FT	
SPILLWAY----		1.25	6.08	.017	.023	

***** ES378 RUN - MINIMUM DEPTH, DESIGN FLOW TO TOP OF DAM, REQUIRED
FOR THIS PASS. NEW TOP OF DAM ELEVATION = 99.29

ROUTED	BTM WIDTH	MAX ELEV	VOL-MAX	AREA-MAX	EMG. HP	VOL-ES
RESULTS	FT	FT	ACFT	AC	FT	ACFT
MINIMUM ES	40.0	99.29	69.9	.0	2.40	23.4
PEAK - CFS		Q-PS	Q-ES	Q-TOT		
DISCHARGES =		247.1	443.9	691.1		
		CRITICAL	CRITICAL	CRITICAL	25% OF	
		DEPTH	VELOCITY	SLOPE-S/C	S/C	
EMERGENCY		FT	FT/SEC	FT/FT	FT/FT	
SPILLWAY----		1.50	6.63	.016	.021	

DAMS2.....JOB NO. 1 COMPLETE

B. Houck EC11, T119N, R78W Potter Co. SD

0 SUBWATERSHED(S) ANALYZED

1 STRUCTURE(S) ANALYZED

3 HYDROGRAPHS ROUTED AT LOWEST SITE

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

DAMS2.....COMPUTATIONS COMPLETE

WATERSHED ID		RUN DATE		RUN TIME	
B. Houck		05/21/98		10:16:53	

>>>	SITE ID	SUBWS ID	SUBWS DA (SQ MI)	CURVE NO.	TC (HRS)	TOTAL DA (SQ MI)	TYPE DESIGN	STRUC CLASS	<<<
	Houck	01	1.90	84.	7.18	1.90	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	48.0	96.88	40.00	2.40	99.29	0.	1.3	8.40	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
B. Houck FILES

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

DATED 05/21/98 10:16:53

Client : Bob Houck

By: DFK

Date: 04-10-98

County : Potter

State: SD

Checked: _____

Date: _____

Practice: Grade Stab NW1/4, SEC11, T119N, R78W

Drainage Area : 1215 Acres
 Curve Number : 75
 Watershed Length : 14000 Feet
 Watershed Slope : .5 Percent
 Time of Concentration: 7.18 Hours
 Rainfall Type : II

* DAMS2 program uses CN=84

Storm Number	1	2	3	4	5	6	7
Frequency (yrs)	1	2	5	10	25	50	100
24-Hr Rainfall (in)	1.8	2.2	2.9	3.5	4	4.5	5.1
Ia/P Ratio	0.37	0.30	0.23	0.19	0.17	0.15	0.13
Runoff (in)	0.29	0.48	0.90	1.30	1.67	2.05	2.53
Unit Peak Discharge (cfs/acre/in)	0.103	0.109	0.115	0.119	0.120	0.122	0.123
Peak Discharge (cfs)	36	64	126	188	244	304	379

CN=84215 ~~8~~434

$$\frac{4.5}{6/2 \times 4.5}$$

RECEIPT

Water Rights Program

South Dakota Department of Environment and Natural Resources

415780

Pierre, May 28, 19 98

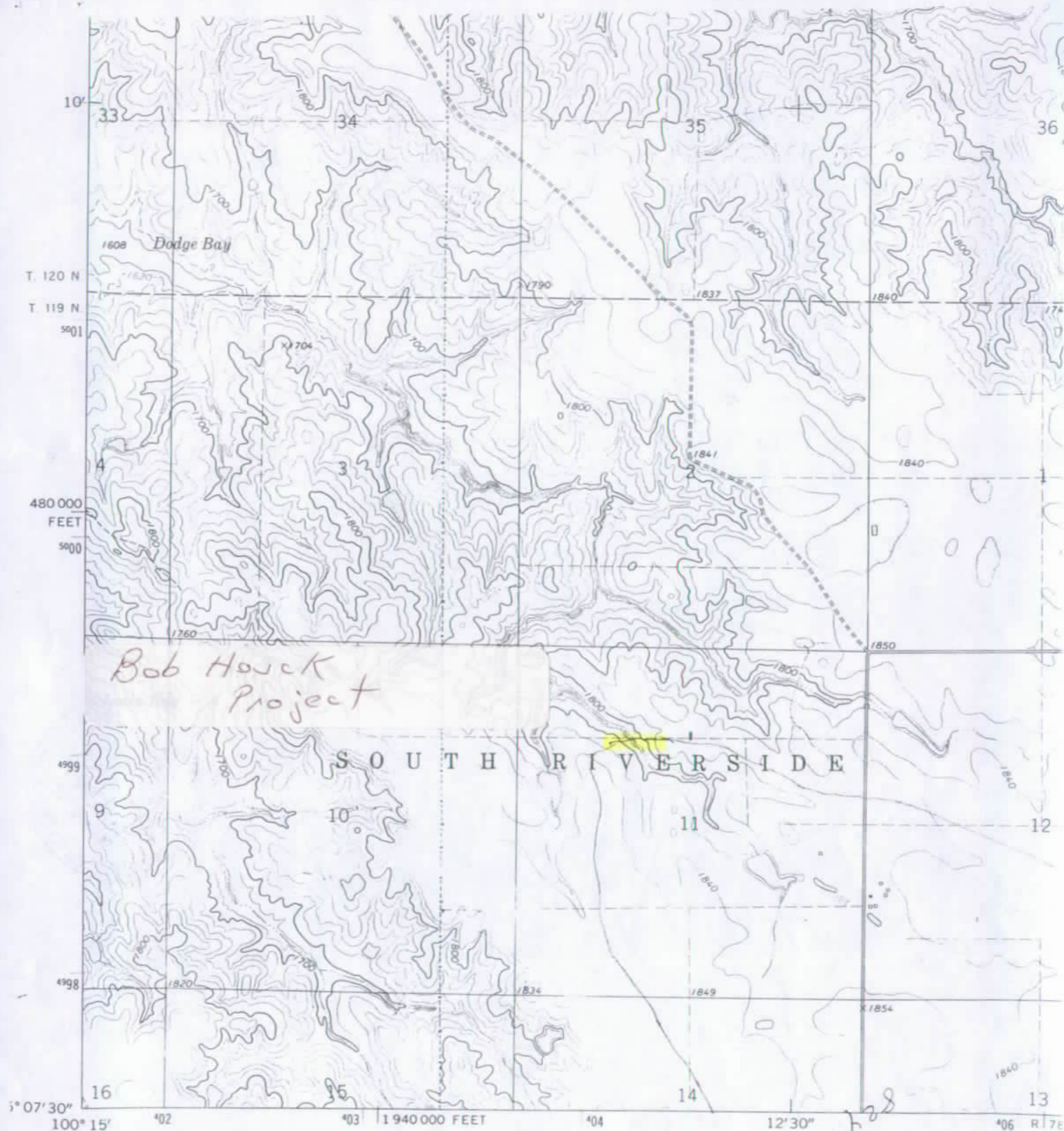
RECEIVED OF Houck & Horrell Farms, P.O. Box 261, Gettysburg, SD 57442
the following amount in fees for services rendered as provided for by law:

Fee for Application for Permit No. <u>6084-3</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. _____		
Fee for Filing Transfer Form _____		
Fee for Filing Extension Request _____		
Fee for _____		

(Any Other Work Provided by Law)	Total	150 00

By _____
Chief Engineer

John Hatch



Mapped, edited, and published by the Geological Survey

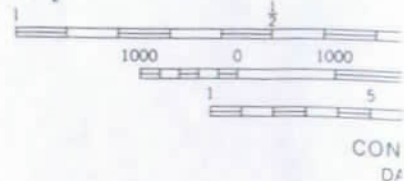
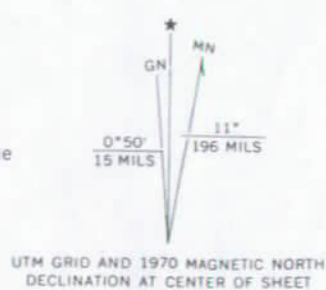
Control by USGS and USC&GS

Topography by photogrammetric methods from aerial photographs taken 1969. Field checked 1970

Polyconic projection. 1927 North American datum
10,000-foot grid based on South Dakota coordinate system, north zone
1000-meter Universal Transverse Mercator grid ticks, zone 14, shown in blue

Areas covered by dashed light-blue pattern
are subject to controlled inundation

Fine red dashed lines indicate selected fence and field lines where
generally visible on aerial photographs. This information is unchecked



THIS MAP COMPLIES
FOR SALE BY U. S. GEOLOGICAL SURVEY

6084-3

NOT TO SCALE





**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

June 17, 1998

Margery A. Houck
Box 203
Gettysburg, SD 57442-0203

Dear Mrs. Houck:

We have reviewed the plans and specifications for your proposed dam located in the SE ¼ NW ¼ of Section 11-T119N-R78W, in Potter County. The plans and specifications as submitted are approved. Approval of the plans and specifications does not authorize construction of the dam. Construction of the dam may not begin until Water Permit Application No. 6084-3 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 Margery Houck Dam will be classified as a small size Category 3, Low Hazard dam with a dam height of 28 feet and a normal storage capacity of 34 acre-feet and a maximum storage capacity of 77 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
James Ridler, NRCS, Gettysburg

REPORT ON
WATER PERMIT APPLICATION NO. 6084-3

Margery A. Houck
June 12, 1998

Water Permit Application No. 6084-3 has been filed by Margery A. Houck to impound 34 acre-feet of runoff water by constructing a dam located in the SE ¼ NW ¼ of Section 11-T119N-R78W, in Potter County. The application also requests impoundment of sufficient water to maintain the reservoir at the outlet elevation of approximately 1800 feet mean sea level. The water will be used for fish and wildlife propagation, livestock watering and recreation.

Discussion:

The Margery Houck Dam will be classified as a Category 3, Low Hazard dam. It 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. 6084-3 is approved.

The Houck Dam will be 28 feet high with a normal storage capacity of 34 acre-feet with a reservoir level at the spillway elevation, and a maximum storage capacity of 77 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.

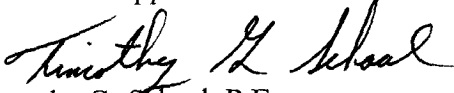
The dam is designed to have a CMP drop inlet primary spillway with a 60 inch diameter riser and a 48 inch diameter barrel with 5.8 feet of available head and a 40 foot wide earthcut secondary spillway with 3.0 feet of available head. The dam will have a drainage area of 1215 acres (1.9 square miles). A 25-year frequency event will produce a peak of approximately 230 cfs and a 100-year frequency event will produce a peak of approximately 430 cfs. The 40 foot wide earthcut secondary spillway will have a capacity of approximately 540 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 344 acre-feet. The annual yield with a 50 percent chance of occurrence, or 1 out of 2 years, is expected to be 101 acre-feet and the annual yield with a 80 percent chance of occurrence, or 8 out of 10 years, is expected to be 44.5 acre-feet.

The Margery Houck Dam will be located in the NW ¼ of Section 11-T119N-R78W on an unnamed tributary to Lake Oahe Reservoir about 2 miles upstream of Lake Oahe. There are no existing Water Permits/Rights located on the unnamed tributary between the proposed dam and Lake Oahe.

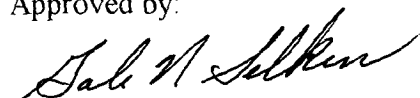
Conclusions:

1. Water Permit Application No. 6084-3 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. 6084-3.



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. 6084-3, Margery A. Houck**

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. 6084-3, Margery A. Houck, Box 203, Gettysburg, SD 57442-0203

The Chief Engineer is recommending APPROVAL of Application No. 6084-3 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. 6084-3 authorizes a dam with storage capacity of 34 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.

A handwritten signature in black ink, appearing to read "John Hatch", with a stylized flourish at the end.

JOHN HATCH, Chief Engineer
June 16, 1998



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

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

June 17, 1998

Margery A. Houck
Box 203
Gettysburg, SD 57442-0203

Dear Ms. Houck:

Water Permit Application No. 6084-3 for recreation, and fish & wildlife propagation 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 Potter Co. News printed at Gettysburg, SD (Ph # (605) 765-2464). 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: Al Olson, USFWS, Sand Lake National Wildlife Refuge, 39650 Sand Lake, Columbia, SD 57433-9761.

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

June 17, 1998

Potter Co. News
Box 190
Gettysburg, SD 57442-0190

ATTENTION: Legal Department

Enclosed is a Notice of Hearing on Application No. 6084-3 to Appropriate Water to be published twice. Please publish the first notice on June 25, 1998, 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 Margery A. Houck, Box 203, Gettysburg, SD 57442-0203 (Ph # (605) 765-2858).

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. 6084-3

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

Date _____

We are in receipt of your letter of June 17, 1998, enclosing Notice of Hearing to Appropriate Water by Application No. 6084-3 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 June 25, 1998, with the second publication 7 days later. The applicant is responsible for payment.

NOTICE OF APPLICATION NO. 6084-3 to Appropriate Water

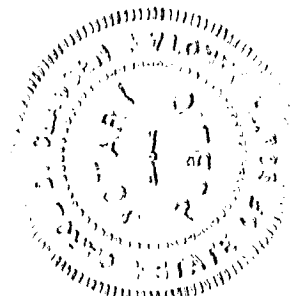
Notice is given that Margery A Houck, Box 203, Gettysburg SD 57442-0203 has filed an application for a water permit to impound 34 acre-feet of runoff water in a dry draw by constructing a dam located in the SE ¼ NW ¼ Section 11; with water impounded in the SE ¼ NW ¼ Section 11; all in T119N-R78W. This application requests impoundment of sufficient water to maintain water at the outlet elevation of approximately 1800 feet mean sea level and is to be used to provide habitat for fish and wildlife propagation, livestock water and recreational use.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 6084-3 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 July 13, 1998.

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.

APPLICATION NO. 6084-3
TO APPROPRIATE WATER





**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

SEP 3 1998

Margery A. Houck
Box 203
Gettysburg, SD 57442-0203

Dear Ms. Houck:

Enclosed is Water Permit No. 6084-3 authorizing construction of your water diversion system and beneficial use of the water, not exceeding the limits as specified in the Water Permit.

Also enclosed is Form 10, Notice of Completion of Works and Application of Water to Beneficial Use, which you are to complete and submit to the Chief Engineer when you have completed the system and/or have put the water to beneficial use. An inspection can then be scheduled so that the Water License may be issued, thus completing your acquisition of a Water Right.

Very truly yours,

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

enclosures

PLEASE NOTE: Certain changes may be made to your water permit usually without affecting the priority date. The location of a point of diversion may be changed or additional points of diversion may be approved if the water source remains unchanged; no additional water is appropriated; and, if irrigating, no additional land is irrigated. The change may be allowed without application or publication, if the Water Rights Program is contacted and the chief engineer makes a finding that the change does not increase the potential for interference with existing diversions.

A new water permit application is required to change water sources, increase the permitted diversion rate, or increase the irrigated acreage. If the application is approved, the water permit will receive a new priority date.



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

Date September 4, 1998

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

FROM: Margery A. Houck Box 203,
(name) (address)
Gettysburg, South Dakota 57442 605 765 2858
(city) (state) (zip) (phone)

I have completed the construction of the water diversion system and I have put the water to beneficial use to the maximum extent it is going to be used. I have not exceeded the amounts specified in Water Permit No. 6084-3.

Water Permit No. 6084-3 states that the diversion system is to be constructed by July 13, 2003, and that the water is put to beneficial use by
(date)

July 13, 2007.
(date)

The diversion system was completed on August 7, 1998.
(date)

Applying the water to beneficial use was completed on August 7, 1998.
(date)

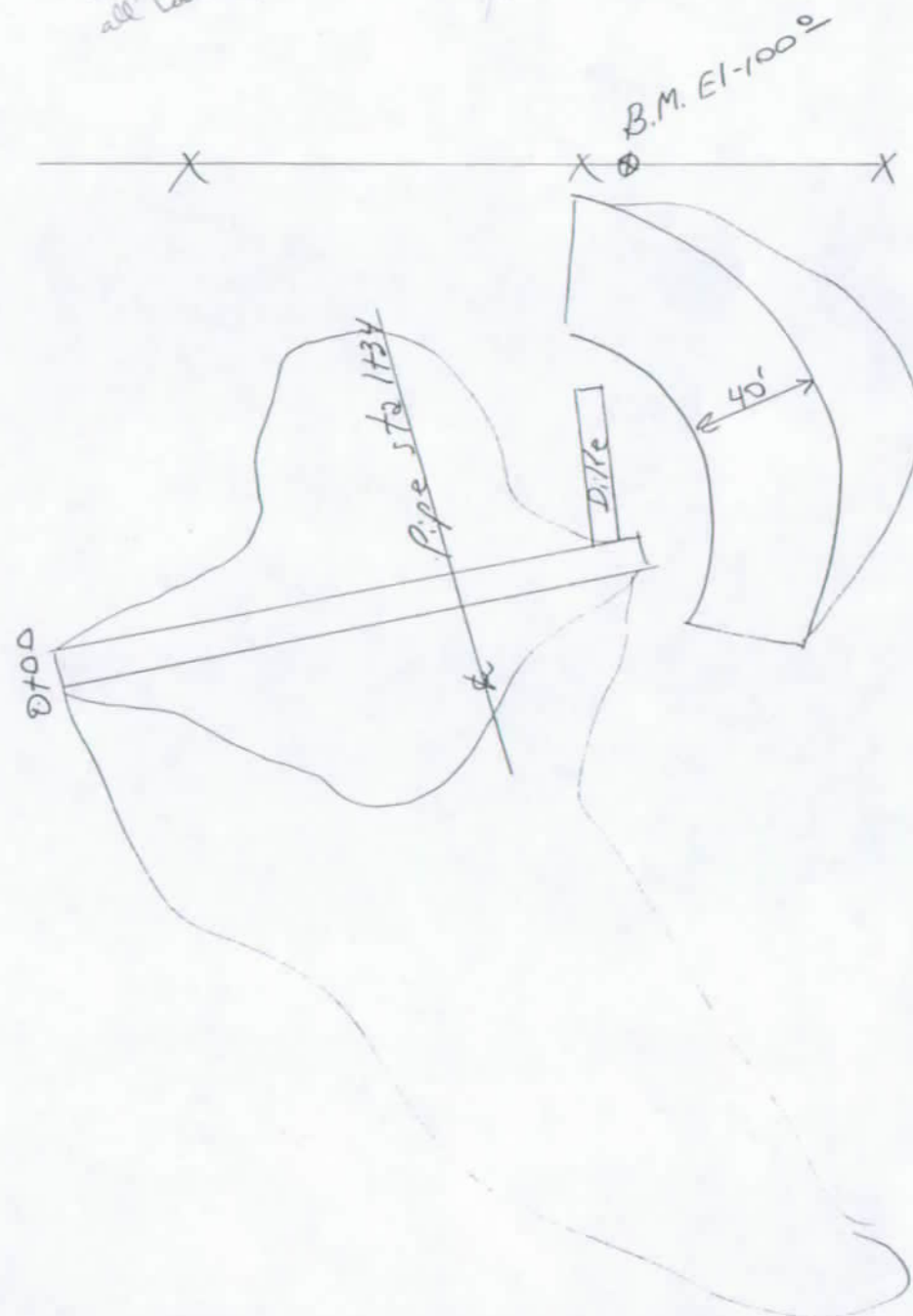
You may schedule an investigation so that the Water License may be issued.

Margery A. Houck
(signature)

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.
1215	29	244	330	21	4.6	—	34

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.
1215	29	244	330	21	4.6	—	34

U.S. & slopes
beginning vegetation
all looks good



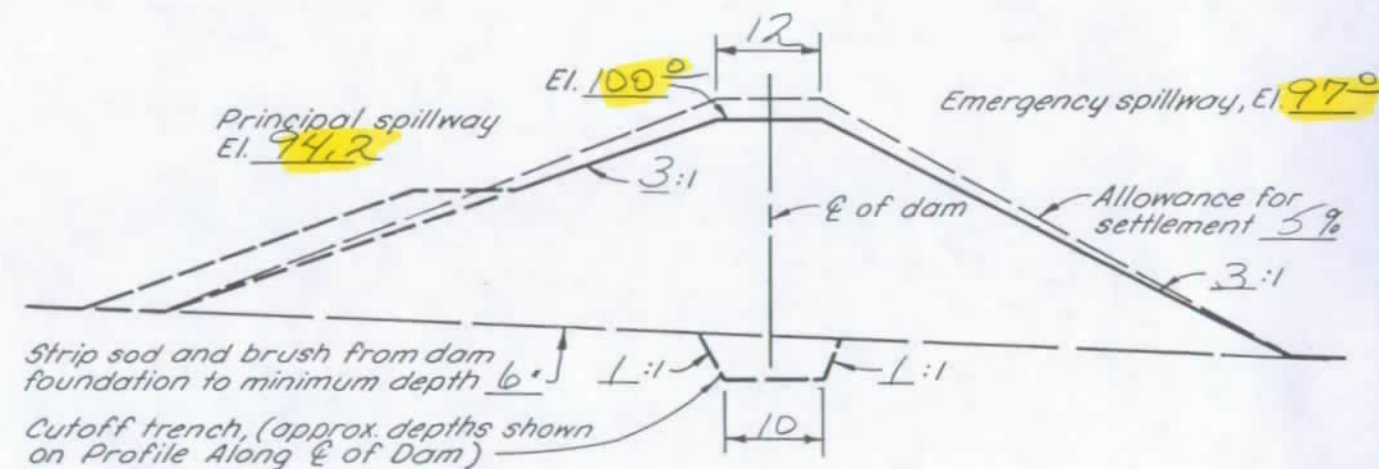
Approximate scale 1" =

REFERENCE: GUIDE PLAN NO. 1.0



Sec. 11 T. 119 N. R. 78 W
Potter County

LOCATION

[illegible]

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-16 Timber Fabrication
SD-50 CMP

EARTH DAM

OPERATOR: Bob Houck
CONSERVATION DISTRICT: Potter

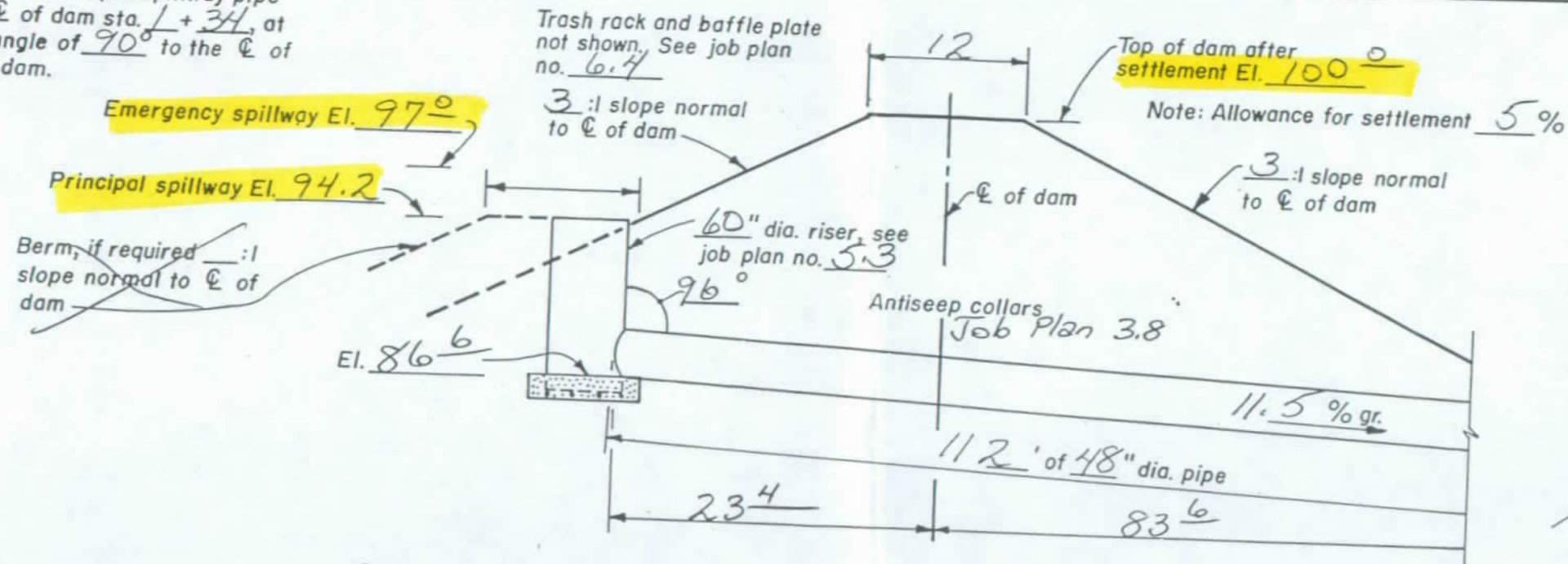
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Designed <u>D. Konechne</u>	Date	Approved <u>John Konech</u>
Drawn		Title <u>27 Eng</u>
Traced		Title
Checked	Sheet No. <u>1</u>	Drawing No.

JOB PLAN NO. 1.0

(Rev. 4-73) 5, N-29, 073.1a(1,

Locate principal spillway pipe at $\mathcal{C}$ of dam sta. $1 + 34$, at an angle of 90° to the $\mathcal{C}$ of the dam.



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

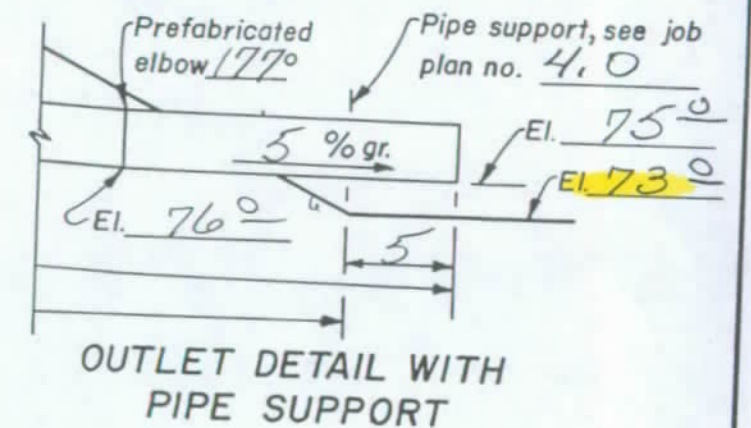
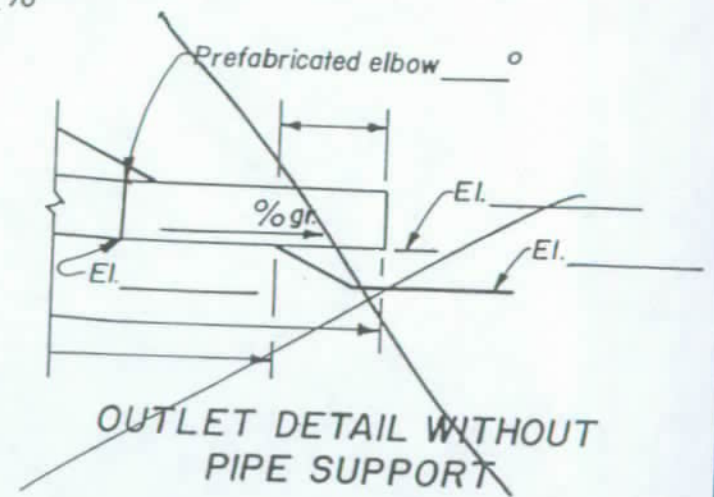
SPECIFICATION NOTES

1. ELBOW, IF REQUIRED, MAY BE FABRICATED BY CONTINUOUS WELDING SEPERATE PIPE SECTIONS OR BY FABRICATING A CONTINUOUS WELDED JOINT ON THE UPSTREAM END OF LAST SECTION OF PIPE.
2. PIPE WALL THICKNESS SHALL BE 12 GAGE OR 0.107 INCHES.
3. All pipe to be vinyl clad, if riveted use caulked seams.
4. Repair all scuff marks with asphalt mastic
5. outlet section of pipe to be 20' length

TABLE OF QUANTITIES

ITEM	UNIT	QUANTITY
60" dia riser 8 ft long with 48" dia stub 4 ft long	ea	1
48" dia - 12 gage - 22 ft long	ea	4
48" dia - 12 gage - 20 ft long	ea	1
48" dia bands	ea	5

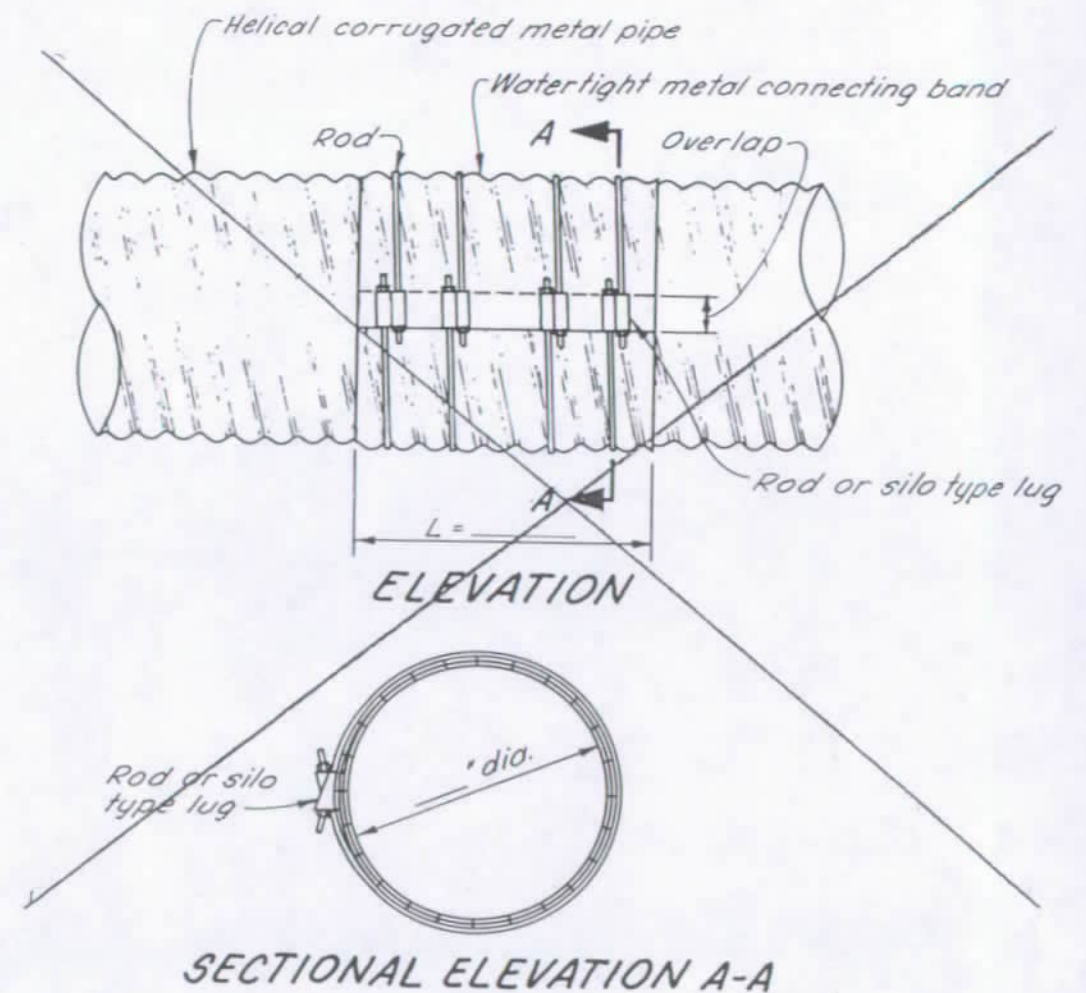
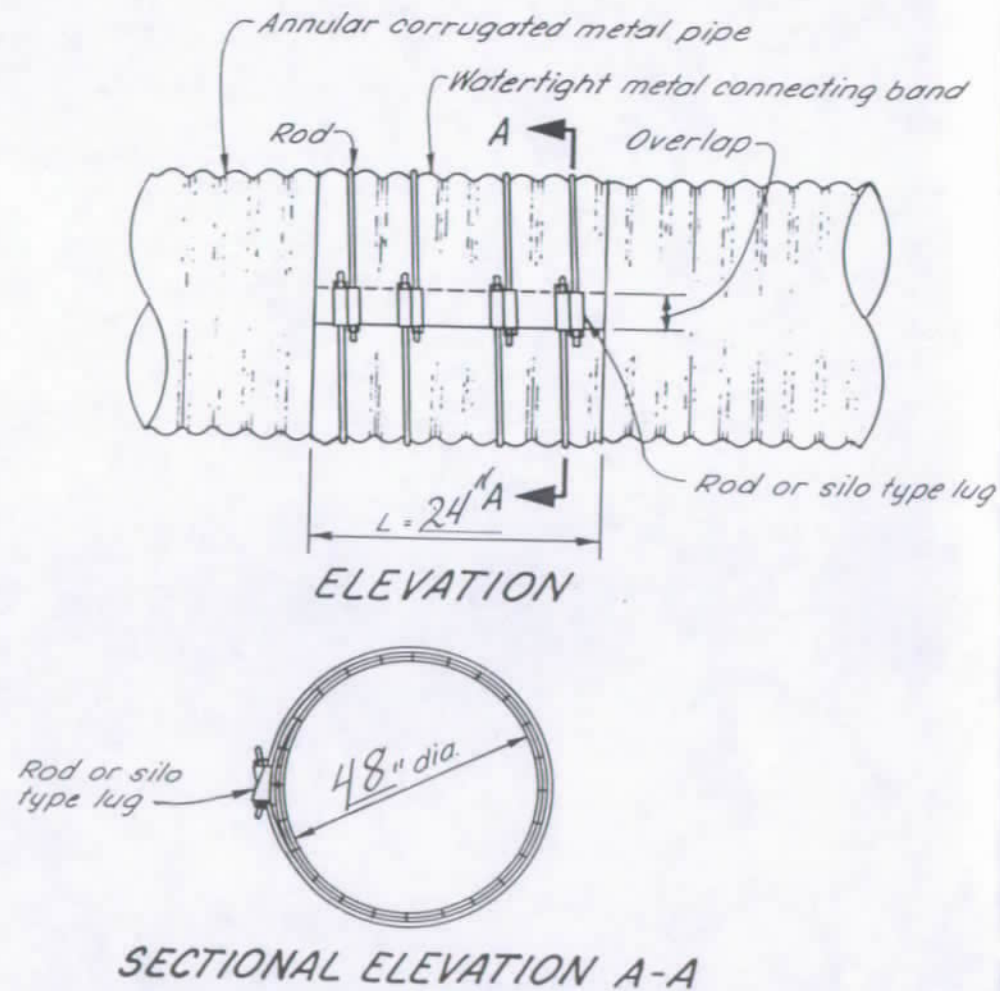
APPLICABLE STANDARD S.C.S. SPECIFICATIONS



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

CORRUGATED METAL PIPE DROP INLET PRINCIPAL SPILLWAY

OPERATOR <u>Bob Huck</u>	
CONSERVATION DISTRICT _____	
U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	
Designed <u>Konechne</u>	Date _____
Drawn _____	Approved by _____
Traced _____	Title _____
Checked _____	Sheet <u>2</u> of <u>7</u>
	Drawing No. _____



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.

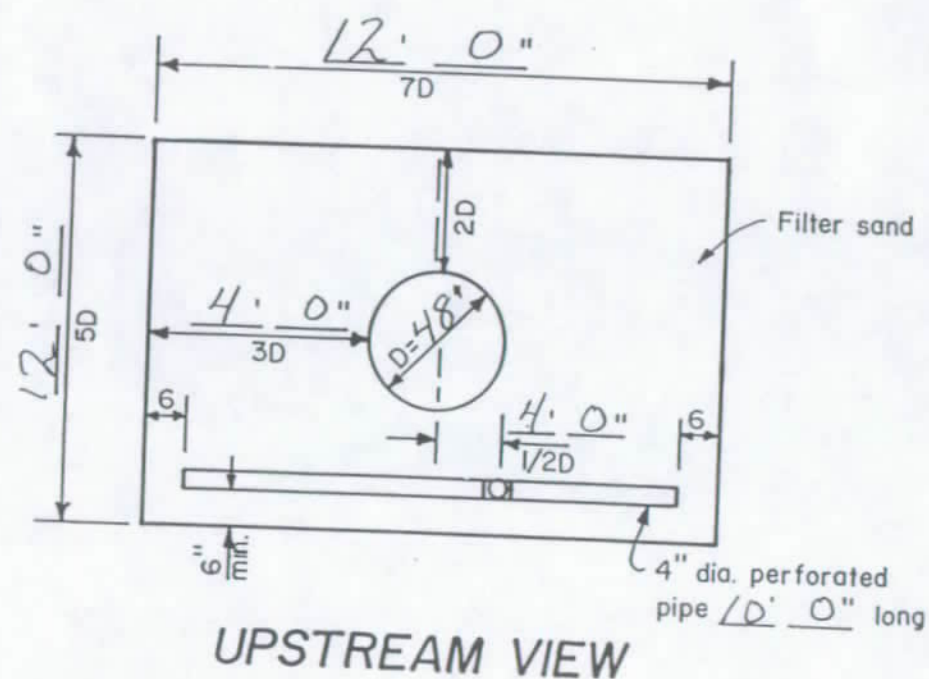
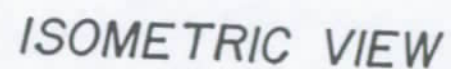
WATERTIGHT CONNECTING BAND FOR ANNULAR AND HELICAL CORRUGATED METAL PIPE

OPERATOR: Bob Houck

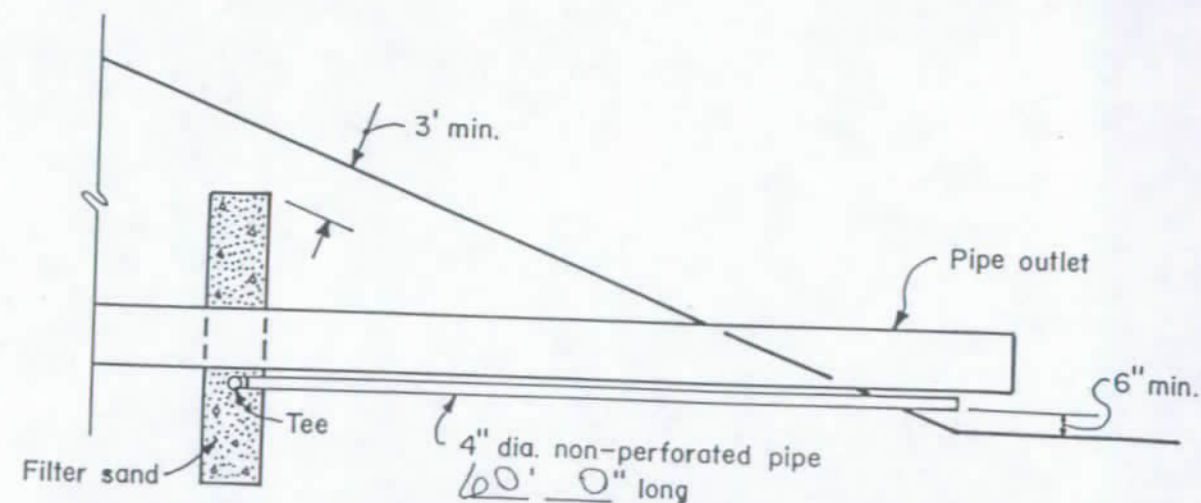
CONSERVATION DISTRICT: _____

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

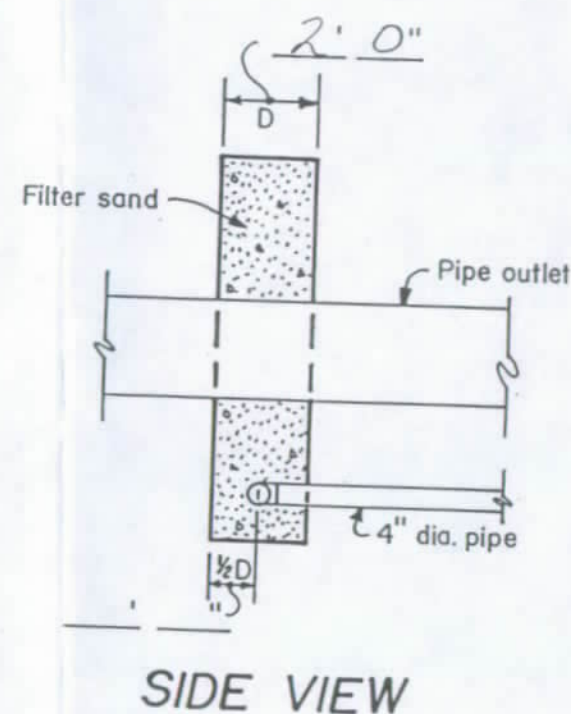
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 Drawn _____
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1. THE 4" DIA. PIPE SHALL BE ASTM D1785, SCHEDULE 40, PVC.
2. PROVIDE AN ANIMAL GUARD ON DRAIN OUTLET PIPE. DRILL 2, 1/2" DIA. HOLES, ON ϕ 6" FROM END OF PIPE AND PLACE A 3/8" DIA.,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



OUTLET DETAIL



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

11 сы

Sec. _____, T. _____, R. _____

LOCATION County

SAND ANTISEEP COLLAR

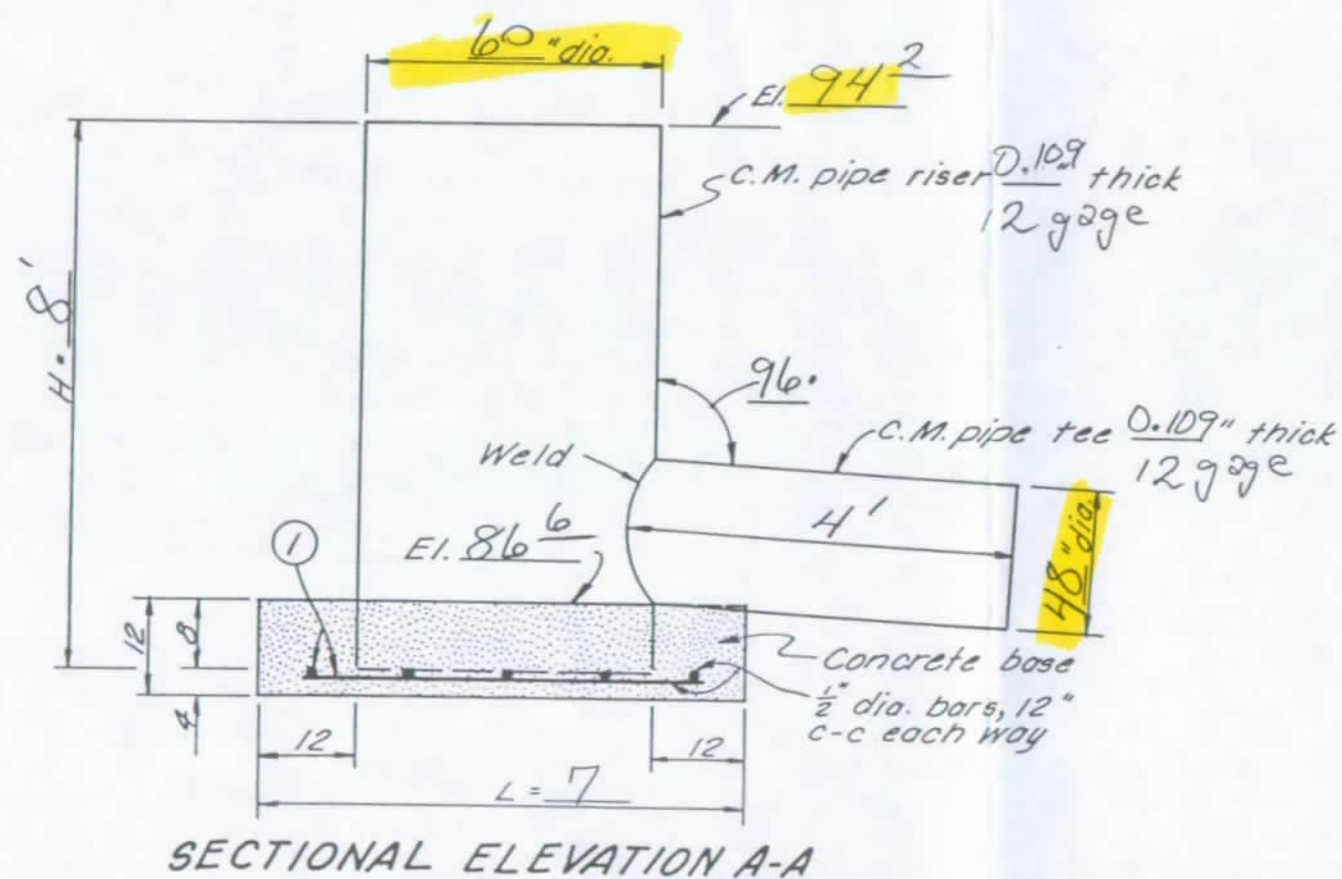
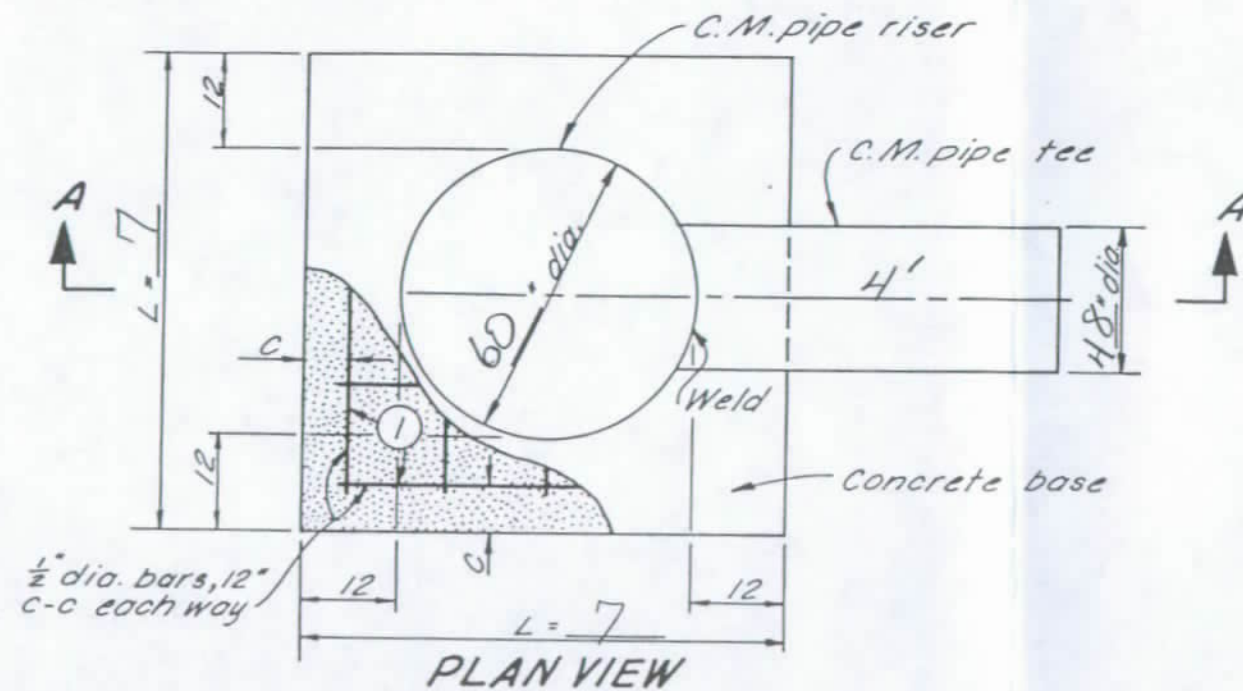
OPERATOR Bob Houck

CONSERVATION DISTRICT

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

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	No. <u>4</u>	
	of _____	

JOB PLAN NO. 3.8



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.
60	4	I	STR.	14	6-6	91-0	61	6	7-0

TABLE OF QUANTITIES

ITEM	UNIT	QUANTITY
CONCRETE	CU. YD.	1.9
REINFORCING STEEL	LB.	61

NOTE: All pipe to be vinyl clad

REFERENCE: GUIDE PLAN NO. 5.3

JOB PLAN NO. 5.3

C.M. PIPE RISER WITH FABRICATED TEE

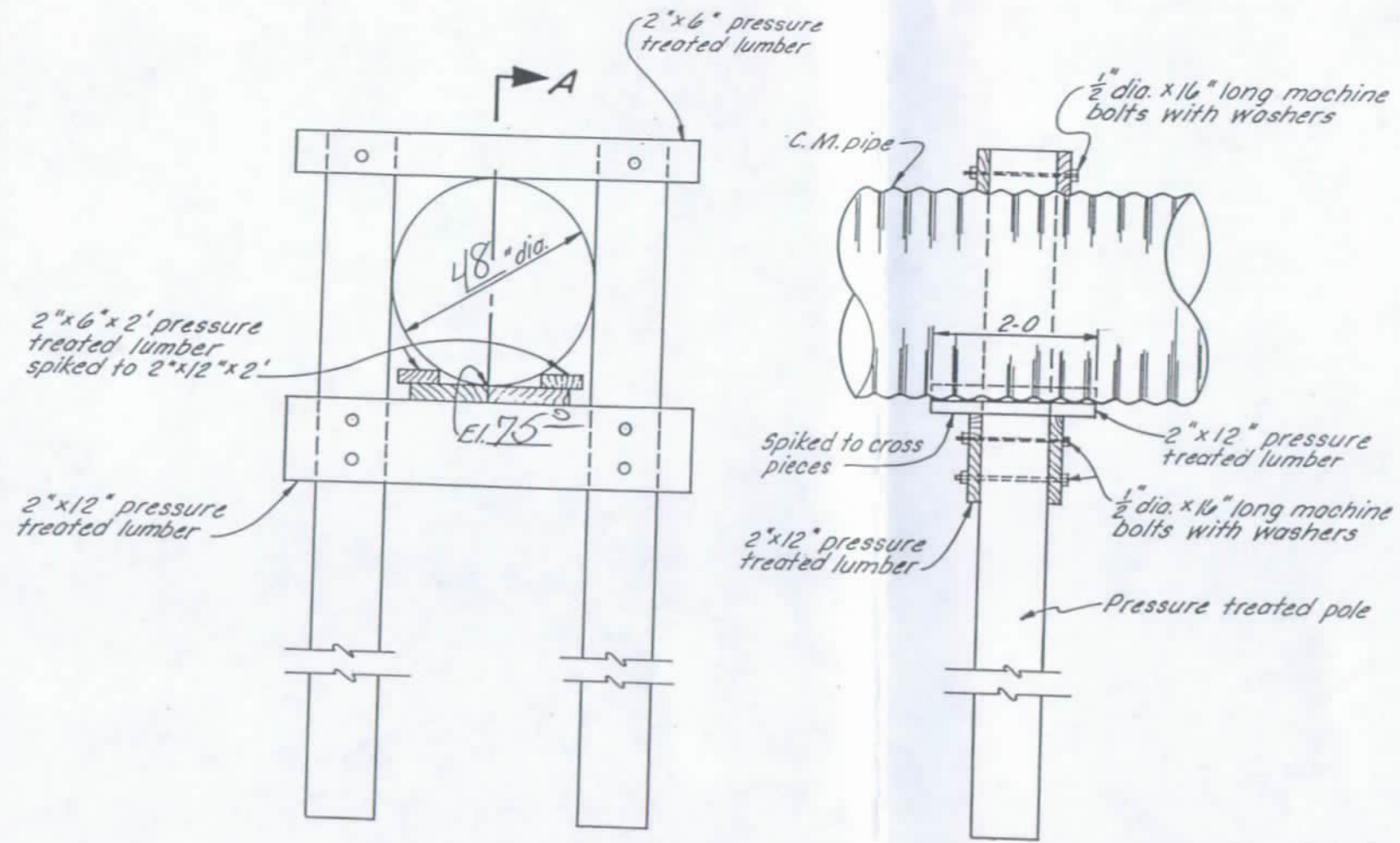
OPERATOR: Bob Houck

CONSERVATION DISTRICT: _____

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

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Drawn: _____	Title: _____	_____
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Checked: _____	Sheet: No. 6	Drawing No. _____

5, N-29,073.5-30



ELEVATION
SECTIONAL ELEVATION A-A

TABLE OF QUANTITIES

ITEM	LENGTH FOR 48" DIA. C.M. PIPE	UNIT	QUANTITY
PRESSURE TREATED POLE 10" DIA.	12'	EACH	2
2" X 12" PRESSURE TREATED LUMBER	6-0	EACH	6
2" X 6" PRESSURE TREATED LUMBER	6-0	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.
-
-
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REFERENCE: GUIDE PLAN NO. 4.0

JOB PLAN NO. 4.0

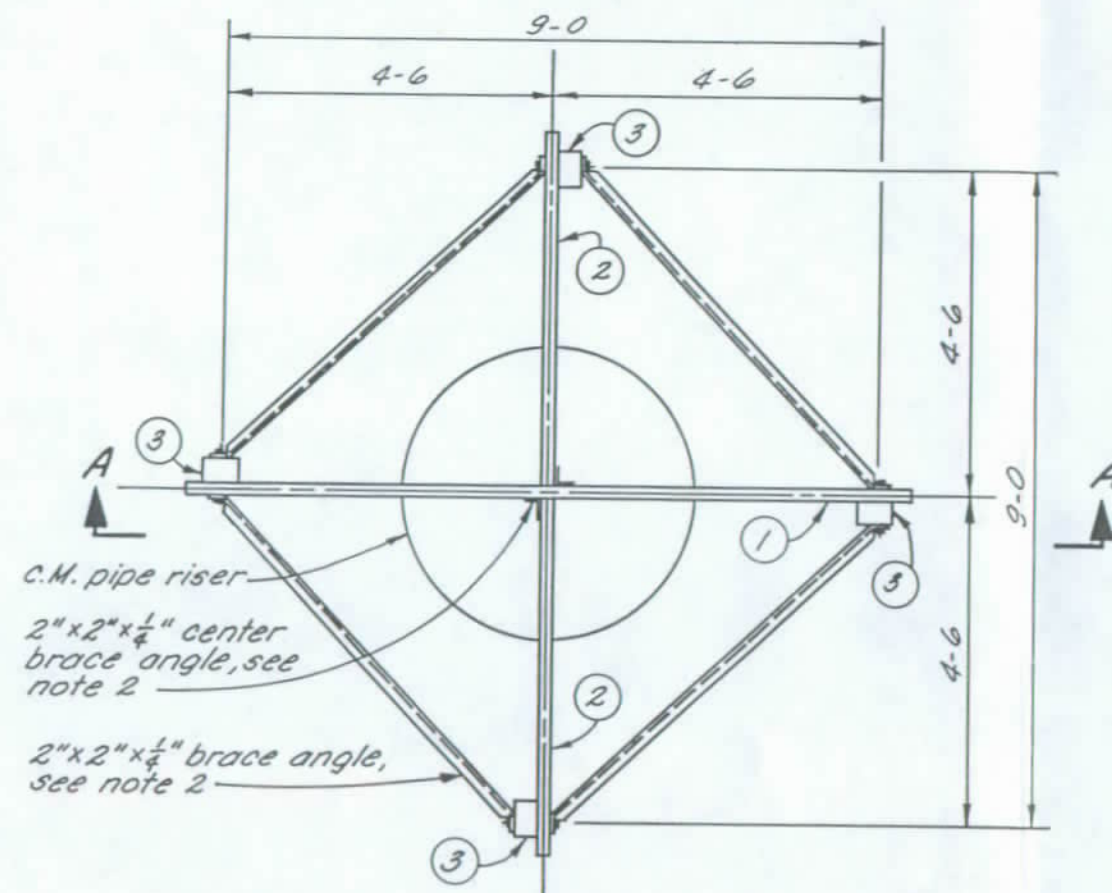
TIMBER PIPE SUPPORT

OPERATOR: Bob Huck

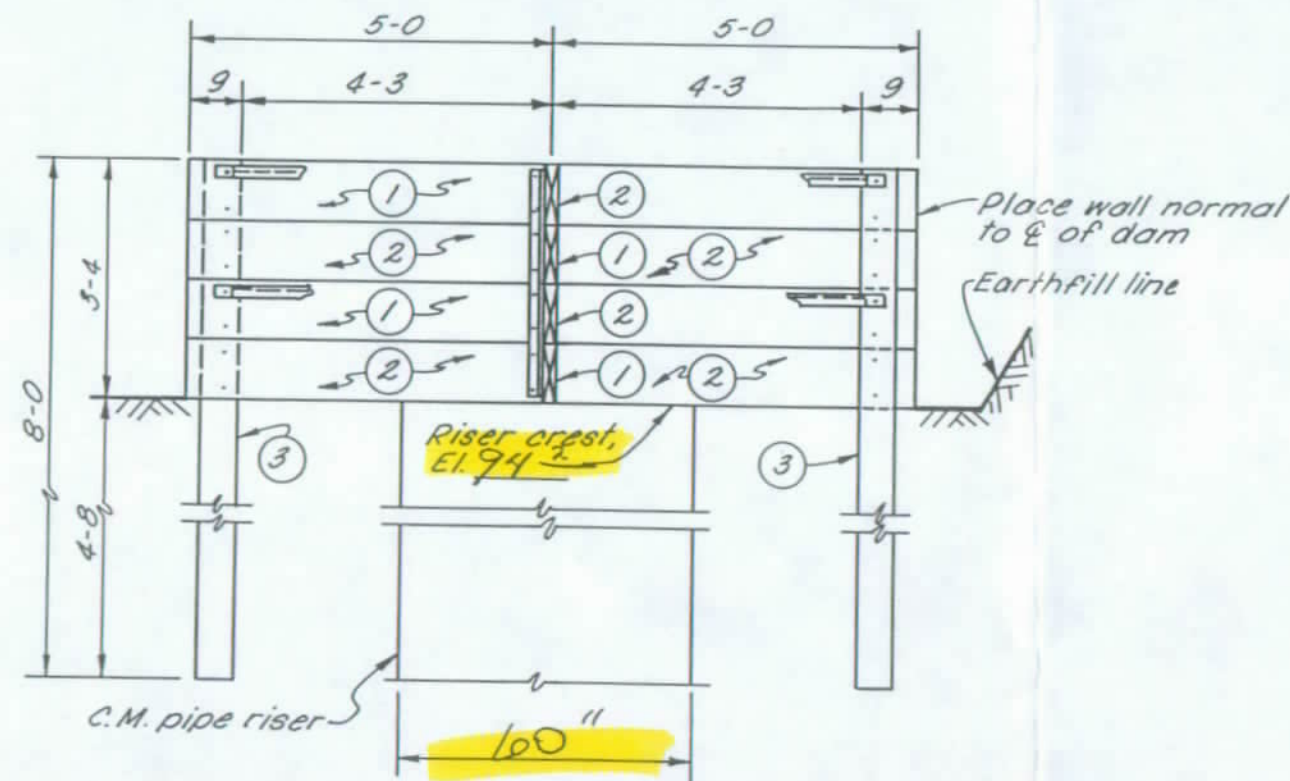
CONSERVATION DISTRICT: _____

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SOIL CONSERVATION SERVICE

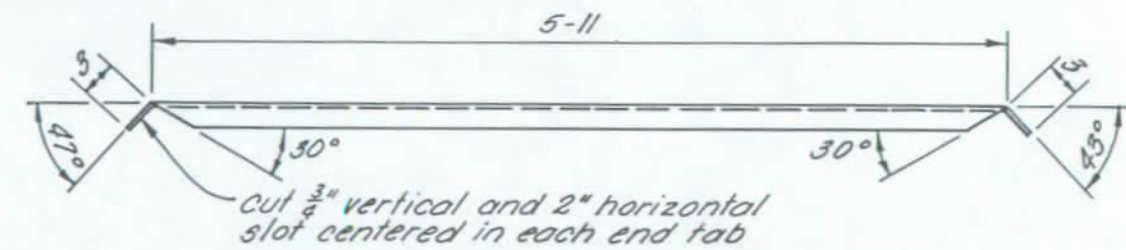
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PLAN VIEW



SECTIONAL ELEVATION A-A



PLAN VIEW OF BRACE ANGLE

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: Bob Hovick

CONSERVATION DISTRICT: Potter

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

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Traced		Title
Checked	Sheet No. <u>7</u>	Drawing No.