

WATER PERMIT NO. 6078-3

Name of Applicant: Ronald Pekarek

Address: 20880 341st Ave, Highmore SD 57345-5905

Phone: 605 852-2854

Amount of Water Claimed: 480 AF

Total Acres: NA

Source of Water Supply: runoff

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

County: Hyde

Type of Waste Disposal System: NA

Location: 12 miles southwest of Highmore

PRIORITY

Date Received: 5-7-98

Fee: \$225

Corrected Application Received: 5-18-1998

Period of Annual Use: January 1 – December 31

Remarks: Peno Dam – Location Notice-Dry Draw No. 6258 was originally filed on August 1, 1957 for 272 AF. This application is for the remaining 208 AF of storage.

Diversion Point: N ½ NW 1/4

Sec 16-T110N-R71W

Water Impounded: N ½ NW ¼ Sec 16 and
E ½ SW ¼ & W ½ SE ¼ Sec 9; all in T110N-
R71W

Depth of Well: NA

Well Driller:

Remarks:

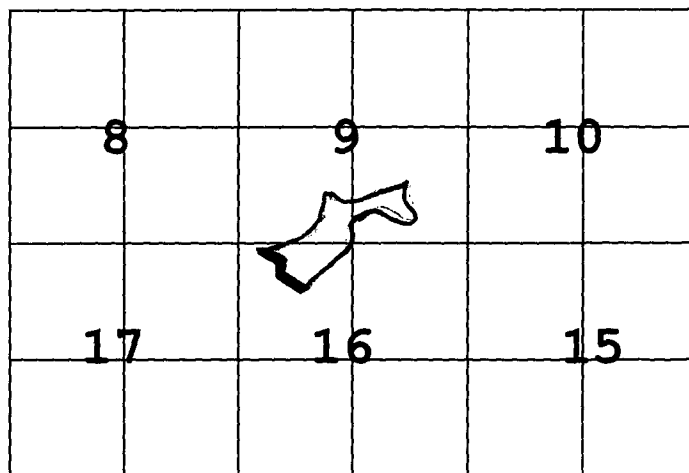
Type of Map: topo

Prepared by: Tim Schaal

Reviewed and the Number Assigned on: 05-19-1998

By: **Karen Schlaak**

Notice of Hearing - date to intervene: _____



**SOUTH DAKOTA
WATER PERMIT NO. 6078-3**

Date of first receipt of application May 7, 1998.

Date of return to applicant for corrections, amendments or changes May 13, 1998.

Date of receipt of corrected application May 18, 1998.

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 6078-3 to Ronald Pekarek, 20880 341st Ave, Highmore SD 57345-5905 authorizing the repair of a dam and the placing of water to beneficial use subject to the following limitations, conditions and qualifications:

1. Water Permit No. 6078-3 authorizes impoundment of a total of 480 acre-feet of water from runoff in Peno Dam located in the N $\frac{1}{2}$ NW $\frac{1}{4}$ Section 16 with water impounded in the N $\frac{1}{2}$ NW $\frac{1}{4}$ Section 16 and E $\frac{1}{2}$ SW $\frac{1}{4}$ and W $\frac{1}{2}$ SE $\frac{1}{4}$ Section 9; all in T110N-R71W. Dry Draw Location Notice No. 6258 was originally filed on August 1, 1957 for a dam to store 272 acre-feet. This permit authorizes impoundment of an additional 208 acre-feet and sufficient water annually to maintain the water level at an approximate outlet elevation of 1,884 feet mean sea level.
2. The water appropriated shall be used for the purpose of providing habitat for fish and wildlife propagation, recreation and livestock water and may not exceed the amount of water needed for beneficial use for these purposes.
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. 6078-3 is June 29, 1998.
5. The dates from which applicant may claim right are: August 1, 1957 for 272 acre-feet of water (Dry Draw Location Notice No. 6258) and May 7, 1998 for 208 acre-feet of water.
6. One-fifth of the construction is to be completed on or before December 29, 2000.
7. All construction is to be completed on or before June 29, 2003.
8. Water is to be put to beneficial use on or before June 29, 2007.
9. Water rights obtained in compliance with the laws of the State of South Dakota may not be unlawfully impaired by this appropriation.

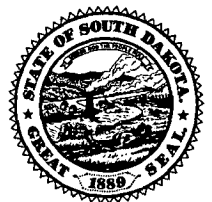
QUALIFICATIONS

1. Water Permit No. 6078-3 authorizes a dam with storage capacity of 480 acre-feet of water and sufficient water annually to maintain the water level to the outlet elevation (approximately 1,884 fmsl).
2. Approval of Permit No. 6078-3 incorporates the applicable portions of Dry Draw Location Notice No. 6258.

WATER MANAGEMENT BOARD

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

AUG 17 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>6078-3</u>	(office use only) Hydrologic Unit <u>10140105</u>
	Basin <u>Missouri River</u>	
	Newspaper <u>Highmore Herald, Highmore, 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.) Location Notice-Dry

Draw No. 6258 was originally filed on August 1, 1957 for 272 acre-feet. This application is for the remaining 208 acre-feet of storage.

- Name of Applicant Ronald Pekarek Phone 852-2854
(check one) ☐ Owner ☐ Tenant/lessee
Mailing Address 20880 341st Ave. Highmore State SD 57345-5905
(Street, RR, or Box and City) (Zip Code)
- Amount of water claimed _____ *CFS or _____ **GPM 480 ***AF
(*Cubic Feet per Second) (**Gallons per Minute) (***)Acre Feet - storage capacity of dam/dugout or annual use if applicable)
- Source of water supply Surface Runoff
- Location of point of diversion (example - 3 wells in SW1/4 NE1/4 section 12-T104N-R53W) N 1/2 NW 1/4 Sec. 16-T110N-R71W
Water Impounded: N 1/2 NW 1/4 Sec. 16 and E 1/2 SW 1/4 & W 1/2 SE 1/4 Sec. 9; all in T110N-R71W
County Hyde
- County or counties where water will be used Hyde
- 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)

Existing dam being repaired by the NRCS and USFWS by installing a new 60 inch drop inlet primary spillway and a new 250 foot wide secondary spillway.

STATE OF SOUTH DAKOTA)

County of Hyde 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, Ronald Pekarek, the applicant, certify that I have read this application, have examined the attached map and that the matters stated are true and that I intend, and am able to complete the necessary construction.

Applicant's signature [Signature]

Subscribed and sworn to before me this 6 day of May 19 98

[Signature]
Notary Public signature

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

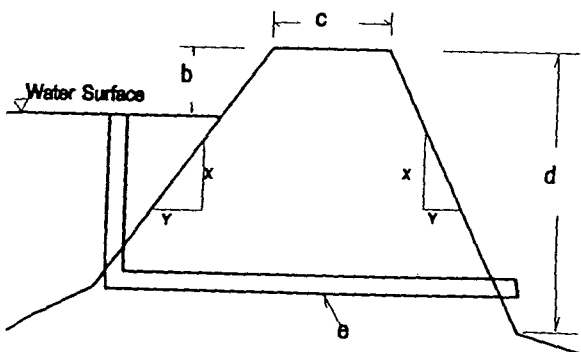
- a) Surface Dimensions _____ Depth _____
- b) Depth to water (ground surface to water level) _____

4. Water Storage Dams

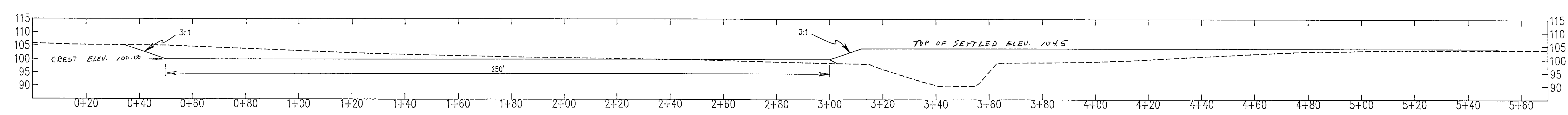
If the proposed water use system contains one or more storage dams, please furnish the information requested below for each dam. The locations of the dams need to be shown on the map submitted with the application.

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

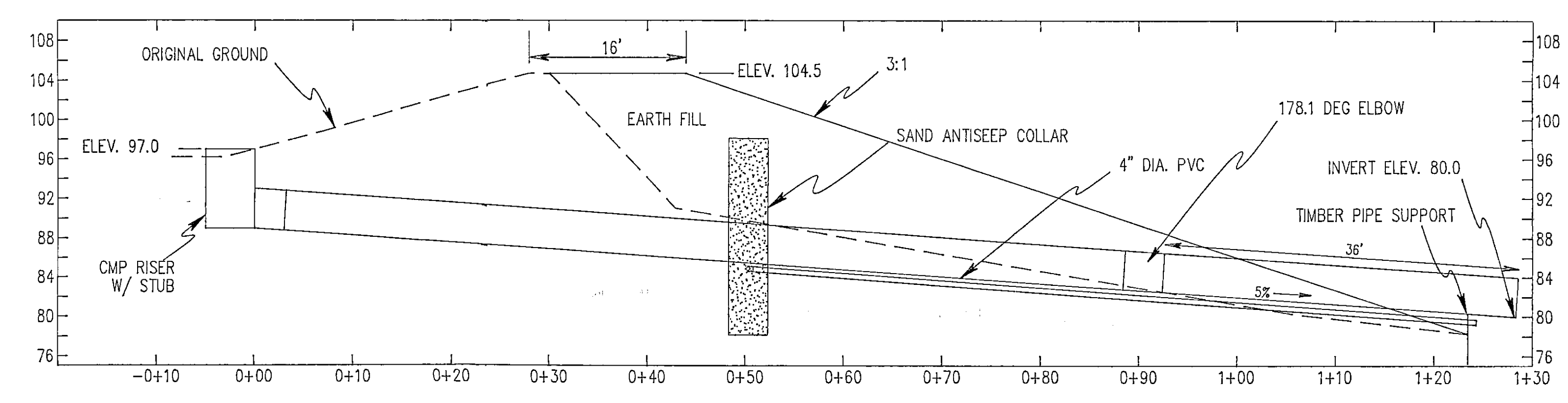
NRCS
P.O. Box 1258
314 S. Henry St, Ste 300
Pierre, SD 57501



- b) Freeboard 7'
- c) Crest Width 12' to 16'
Crest Length ≈ 1400'
- d) Height 20'
- e) Primary Outlet Capacity 230 cfs
If pipe, diameter 48"
- f) Secondary Spillway Capacity 1838 cfs
Spillway Width 250'
- g) X & Y Slope _____
Upstream 3:1
Downstream 3:1
- h) Surface Area of Impoundment 53
- i) Storage 480 720 Acre Feet
P.S. E.S.
- j) Drainage Area Above Dam 11,589 Acres



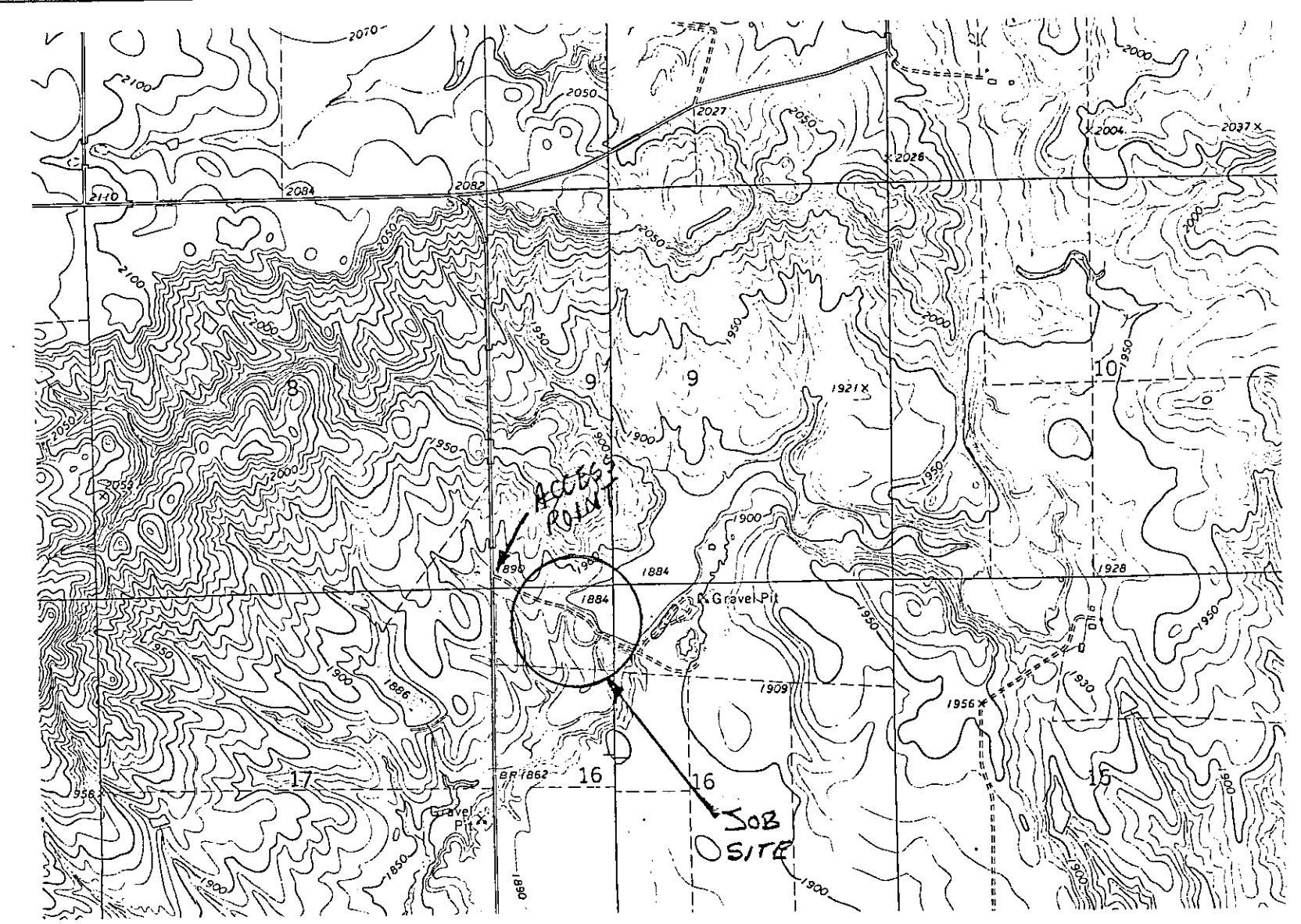
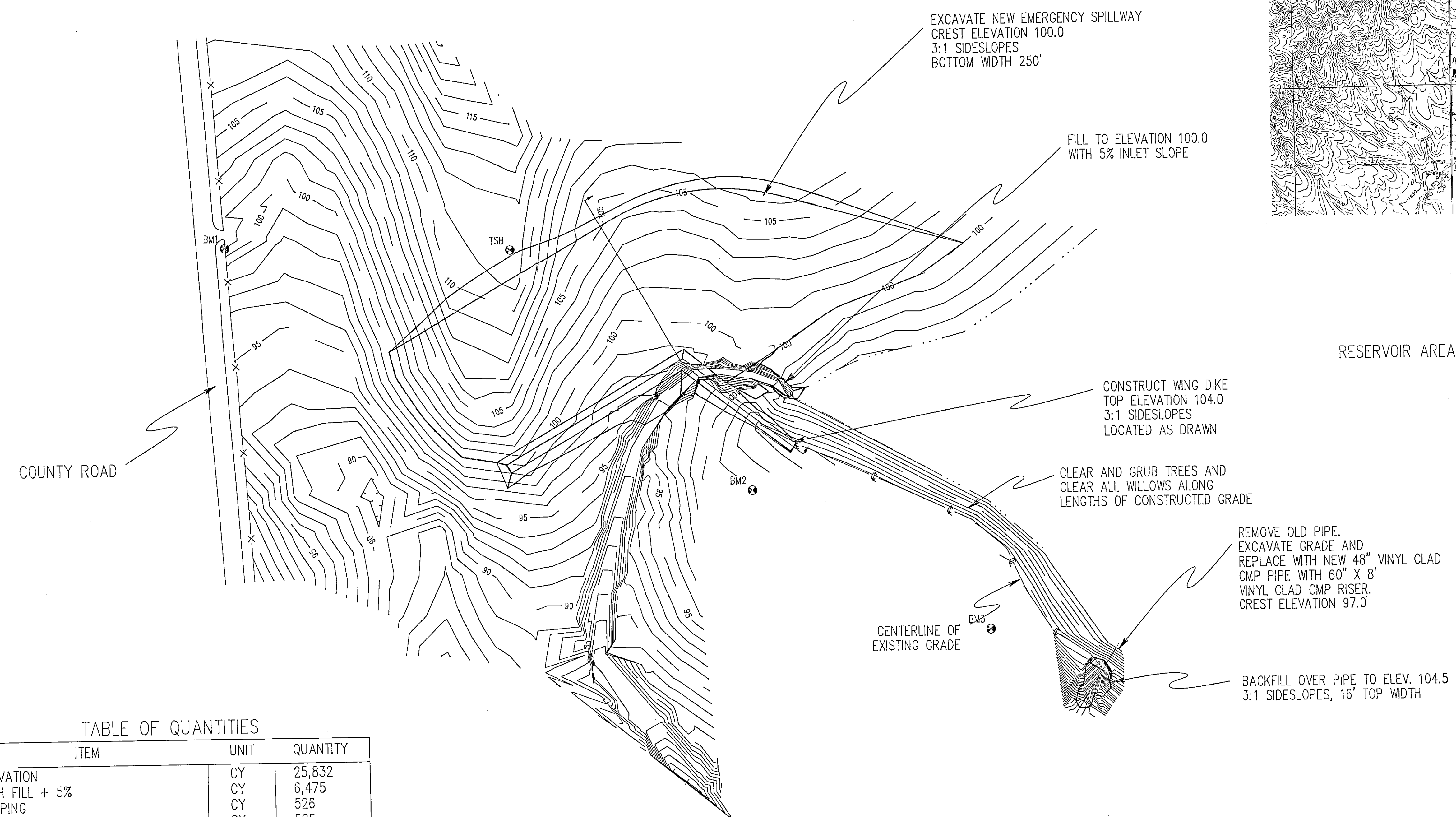
CROSS-SECTION OF EMERGENCY SPILLWAY AND PROFILE OF WING DIKE (SCALE: 1" = 20')



CROSS-SECTION OF DAM AND PROFILE OF PIPE INSTALLATION (SCALE: 1" = 10')

CROSS-SECTIONS
AND
PROFILES

PENO DAM SPILLWAY REPAIR			
Sec. 9 & Sec. 16 T110N R71W Hyde County, South Dakota			
USDA U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE			
Designed by: <u>J. Reedy</u>	Date: <u>10/9/97</u>	Approved by: _____	
Drawn by: <u>J. Reedy</u>	Date: <u>1/29/98</u>	Title: _____	
Traced by: _____	Sheet <u>3</u>	Drawing No. _____	
Checked by: _____	of <u>8</u>		



LOCATION MAP

RESERVOIR AREA

PLAN VIEW
AND
CONSTRUCTION NOTES

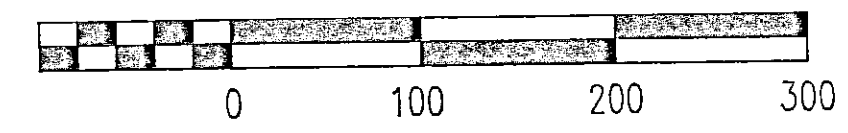
TABLE OF QUANTITIES

ITEM	UNIT	QUANTITY
EXCAVATION	CY	25,832
EARTH FILL + 5% STRIPPING	CY	6,475
PIPE EXCAVATION	CY	526
48" DIA. VINYL CLAD CMP PIPE (5 X 1 CORRUG., 14 GAGE)	LF	525
60" DIA. VINYL CLAD CMP RISER W/ 3' STUB	EA	126
178.1 DEG CMP ELBOW	EA	1
FILTER SAND (JOB PLAN 3.8)	EA	1
REINFORCED CONCRETE (JOB PLAN 5.3)	CY	83.0
TIMBER PIPE SUPPORT (JOB PLAN 4.0)	CY	2.0
TRASH RACK / BAFFLE (JOB PLAN 6.4)	EA	1
4" DIA. PERFORATED PVC PIPE	LF	27
4" DIA. NON-PERFORATED PVC PIPE	LF	74
CLEAR AND GRUB TREES	EA	17
CLEARING (WILLOWS)	JOB	-

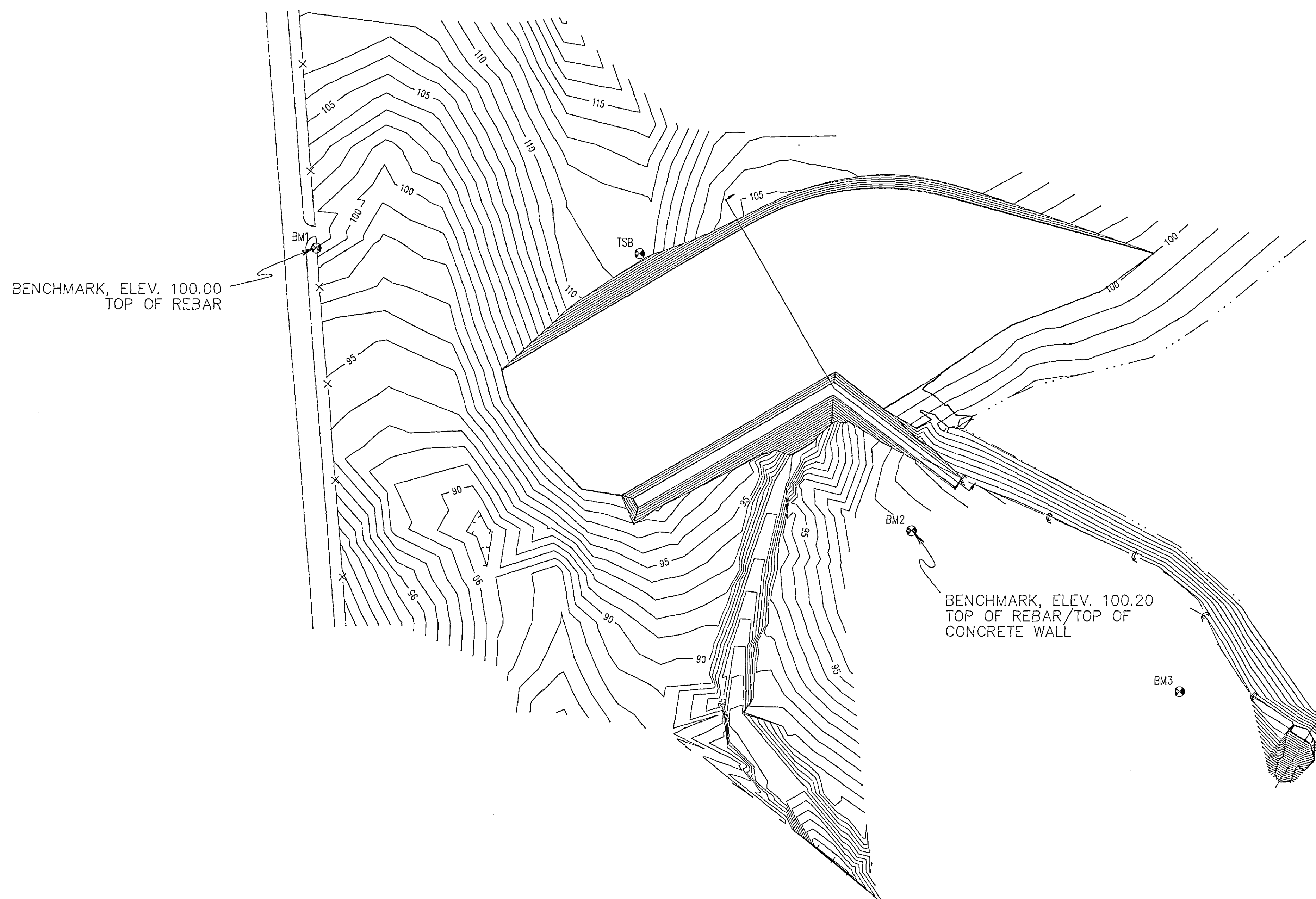
SEE ATTACHED JOB PLANS FOR ADDITIONAL QUANTITIES

APPLICABLE CONSTRUCTION/MATERIAL SPECIFICATIONS

- SD-1 CLEARING
- SD-2 CLEARING AND GRUBBING
- SD-4 STRIPPING
- SD-5 EXCAVATION
- SD-7S EARTH FILL - CLASS S
- SD-9 DRAIN FILL AND FILTER
- SD-12B CONCRETE FOR MINOR STRUCTURES
- SD-13 STEEL REINFORCEMENT
- SD-15 CORRUGATED METAL PIPE CONDUITS
- SD-16 TIMBER FABRICATION AND INSTALLATION
- SD-50 ZINC-COATED IRON OR STEEL CORRUGATED PIPE
- SD-55 PLASTIC PIPE



PENO DAM SPILLWAY REPAIR			
Sec. 9 & Sec. 16 T110N R71W Hyde County, South Dakota			
USDA U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE			
Designed by: J. Reedy	Date: 10/9/97	Approved by: Dwight Hale	Title: SCF / PE125
Drawn by: J. Reedy	1/29/98		
Traced by:		Sheet 1	Drawing No.
Checked by:		of 8	



CONTOUR IMAGE
OF
FINAL CONSTRUCTION

PENO DAM SPILLWAY REPAIR

Sec. 9 & Sec. 16 T110N R71W
Hyde County, South Dakota

USDA U.S. DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

Designed by: <i>J. Reedy</i>	Date: <i>10/9/97</i>	Approved by: _____
Drawn by: <i>J. Reedy</i>	<i>1/29/98</i>	Title: _____
Traced by: _____	Sheet <i>2</i>	Drawing No. _____
Checked by: _____	of <i>8</i>	



LOCATION NOTICE—DRY DRAW

Hyde

County

6258

Dry Draw No.

Joe E. Polarek

I, _____

Name

of

Highmore, South Dakota

Address

Town

Hyde

County

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

Commission of the State of South Dakota and all others concerned that I am exercising my right under Section 61.0138 of Chapter 430 of the Session Laws of 1955 for construction of a Dry Draw dam for the purpose of storing flood waters for storing, diverting, or both

Livestock

(livestock, irrigation or both) purposes.

The following data is presented in compliance with Section 61.0138:

(1) Dates of

(a) This application

June 18, 1957

(b) Posting at construction site

June 18, 1957

(2) Legal description of the land upon which the dam is located. NE 1/4 of the NW 1/4 of Section 16 Township 110 Range 71. The dam is located 85 rods 8 and 50 rods 8 of the NW corner of said Section (N.S.E.W.) (N.S.E.W.) (NW.NE.SE.SW) in the County of Hyde

The owner of the land is

Joe E. Polarek, Highmore, South Dakota

Name

Address

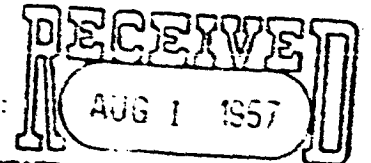
(3) Amount of water claimed for all purposes each year 272 acre feet.

(4) Storage capacity of reservoir 272 acre feet.

(5) Surface area of reservoir 34 acres.

(6) Size of watershed above dam 18,600 acres.

(Over)



STATE WATER RESOURCES COMM.
PIERRE, SOUTH DAKOTA

Enclosed herewith is one dollar (\$1.00). The Water Resources Commission is requested to file this Location Notice in their official records.

A copy of this Location Notice has been filed (do not record) with the Register of Deeds of **Hyde** County and has been posted at the structure site in accordance with Section 61.0138 of the Water Laws.

[Signature]
Owner

by _____
Locator



STATE OF SOUTH DAKOTA
County of **Hyde**

On this **18th** day of **June**, 19 **57** before me

Lilly Hagan _____
Notary Public
(Notary Public or other Official having a seal)

in and for the County and State aforesaid, personally appeared **Joe E. Reinert**
to me personally known to be the person who executed the foregoing instrument and acknowledged that he executed the same for the purposes therein set forth.

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

[Signature]
Name

(SEAL)

Notary Public
Title

My Commission Expires on 8-6-58



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE SOUTH DAKOTA 57501-3181

April 28, 1998

Kelly Stout
Natural Resources Conservation Service
PO Box 484
Highmore, SD 57345

Dear Mr. Stout:

Enclosed is the application form for Peno Dam. All you need to do is have Mr. Pekarek sign the form and return it to us with the map (aerial photo). We will contact the USFWS for the \$225.00 fee.

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

Sincerely,

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

enclosure



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

May 13, 1998

Curt Forman
US Fish & Wildlife Service
520 3rd Ave
Brookings SD 57006

Dear Mr. Forman:

We have received the *Application for a Permit to Appropriate Water* for Peno Dam in Hyde County. The application filing fee is \$225.00. I understand the US Fish & Wildlife Service will be submitting this fee.

Upon receipt of the fee, further processing of the application will continue. If you have any questions, please contact me.

Sincerely,

Karen Schlaak
Water Rights Program
605 773-3352

cc: Ronald Pekarek

RECEIPT

Water Rights Program

South Dakota Department of Environment and Natural Resources

415768

Pierre, May 18, 19 98

RECEIVED OF U.S. Fish & Wildlife Service, P.O. Box 247, Brookings, SD 57006
the following amount in fees for services rendered as provided for by law:

Fee for Application for Permit No. <u>6078-3</u> to Appropriate Water, to construct and to put water to beneficial use _____	225	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	225 00

By _____
Chief Engineer

John Hatch (G)

Water Permit Application No. 6078-3

Peno Dam

Ronald PeKarek

Top of Dam Elev. - 104.5

P. Spillway Elev. - 97

2nd Spillway Elev. - 100

D/S Toe Elev. - 78

Height = 26.5

Cat. 3 - Low Hazard Dam
Intermediate Size

100 year - Minimum Spillway Design

Normal Storage Capacity - 480 Ac-Ft

Int. Storage Capacity - 720 Ac-Ft

Max Storage Capacity - 1062 Ac-Ft

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

$$Q_{100} = 132 A^{.65} S^{.46} S^{-.67}$$

$$= 132 (18.1)^{.65} (35)^{.46} (3.33)^{-.67}$$

$$= 132 (6.57) (5.13) (.45)$$

$$= \underline{\underline{2000 \text{ cfs}}}$$

$$DA = 11589 \text{ Ac} = 18.1 \text{ mi}^2$$

$$\text{Slope} = 35 \text{ ft/mile}$$

$$S = 3.33$$

2nd Spillway Capacity

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

$$C = 2.6$$

$$L = 250'$$

$$= (2.6)(250)(4)^{1.5}$$

$$H = 4'$$

$$= \underline{\underline{5200 \text{ cfs}}}$$

Section 74:02:08:09

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

NRCS Annual Yield

$$CN = 76 \quad DA = 11,589 \text{ Ac}, ISO = 2$$

$$80\% \text{ chance} = 0.15$$

$$0.15 \times 11589/12 = \underline{\underline{145 \text{ Ac-Ft.}}}$$

$$50\% \text{ chance} = 0.40$$

$$0.40 \times 11589/12 = \underline{\underline{390 \text{ Ac-Ft.}}}$$

$$10\% \text{ chance} = 1.90$$

$$1.90 \times 11589/12 = \underline{\underline{1835 \text{ Ac-Ft.}}}$$

PENO DAM
JAMES K. STOUT
District Conservationist
Highway 50

H22
110-71

Section 16
T110-R71

H22
110-71

6078-3



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

June 1, 1998

Ronald Pekarek
20880 341st Ave.
Highmore, SD 57345-5905

Dear Mr. Pekarek:

We have reviewed the plans and specifications for the Peno Dam Repair Project located in the NW ¼ of Section 16-T110N-R71W, in Hyde 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. 6078-3 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.

Peno Dam is classified as an intermediate size Category 3, Low Hazard dam with a dam height of 26 feet and a normal storage capacity of 480 acre-feet and a maximum storage capacity of 1062 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: Jim Reedy, NRCS, Pierre
Kelly Stout, NRCS, Highmore
Curt Forman, USFWS, Brookings

REPORT ON
WATER PERMIT APPLICATION No. 6078-3
Ronald Pekarek
May 28, 1998

Water Permit Application No. 6078-3 has been filed by Ronald Pekarek to impound 480 acre-feet of water from runoff in Peno Dam located in the N $\frac{1}{2}$ NW $\frac{1}{4}$ of Section 16-T110N-R71W, in Hyde County. The water will be used for recreation, fish and wildlife production and livestock watering.

Discussion:

Peno Dam was originally constructed in 1935 by the Works Progress Administration (WPA) on property owned by the State of South Dakota through School and Public Lands. On January 28, 1957, the property was sold to Joe Pekarek and Dry Draw Location Notice No. 6258 was filed on August 1, 1957 for 272 acre-feet of storage in Peno Dam. At some time in the past, the normal storage capacity for the dam was increased to 480 acre-feet of water. Peno Dam has recently washed out and the proposed repair will restore the current storage capacity of 480 acre-feet of water. Water Permit Application No. 6078-3 has been filed for the total storage of 480 acre-feet of water, with the original 272 acre-feet of storage maintaining the August 1, 1957 priority date.

The dam is listed on the Safety of Dams inventory (ID No. 270) as an intermediate size, Category 3, Low Hazard dam. The height of the dam will be 26 feet with a normal storage capacity of 480 acre-feet at the spillway elevation, and a maximum storage capacity of 1062 acre-feet at the top of dam elevation. A dam of this size and hazard category is required to have a minimum spillway design capable of passing a 100-year flood.

The repair of Peno Dam has been designed by the Natural Resources Conservation Service (NRCS). The plans and specifications have been reviewed and will be approved. Peno Dam has a drainage area of 18.1 square miles. A 100-year flood for this drainage area produces a peak runoff of approximately 2000 cfs. The proposed repair includes a 250 foot wide earthcut secondary spillway with four feet of available head and has a spillway capacity of approximately 5200 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 1835 acre-feet. The annual yield with a 50 percent chance of occurrence, or 1 out of 2 years, is expected to be 390 acre-feet, and the annual yield with a 80 percent chance of occurrence, or 8 out of 10 years, is expected to be 145 acre-feet.

Peno Dam is located in the N $\frac{1}{2}$ NW $\frac{1}{4}$ of Section 16-T110N-71W on an unnamed tributary to Elm Creek about six miles upstream of the confluence of the unnamed tributary and Elm Creek. There are no existing Water Permits/Rights located on the unnamed tributary.

Conclusions:

1. Water Permit Application No. 6078-3 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. 6078-3.



Timothy G. Schaal, P.E.

Natural Resources Engineer III

Approved by:



Gale N. Selken, P.E.

Natural Resources Engineer IV

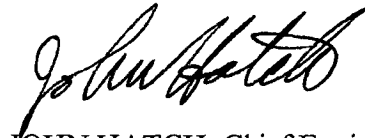
**RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 6078-3, Ronald Pekarek**

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. 6078-3, Ronald Pekarek, 20880 341st Ave., Highmore, SD 57345-5905.

The Chief Engineer is recommending APPROVAL of Application No. 6078-3 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. 6078-3 authorizes a dam with storage capacity of 480 acre feet of water and sufficient water annually to maintain the water level to the outlet elevation (approximately 1884 fmsl).
2. Approval of Permit No. 6078-3 incorporates the applicable portions of Dry Draw Location Notice No. 6258.

See report on application for additional information.



JOHN HATCH, Chief Engineer
May 29, 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 1, 1998

Ronald Pekarek
20880 341st Ave.
Highmore, SD 57345-5905

Dear Mr. Pekarek:

Water Permit Application No. 6078-3 for fish and wildlife, recreation and livestock use has been examined and found to comply with the South Dakota Water Laws and applicable rules. A notice of hearing has been sent to the Publisher of the Highmore Herald printed at Highmore, SD (Ph # (605) 852-2927). 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: Curt Forman, USFWS, 520 3rd Ave., Brookings, SD 57006

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 1, 1998

Highmore Herald
Box 435
Highmore, SD 57345-0435

ATTENTION: Legal Department

Enclosed is a Notice of Hearing on Application No. 6078-3 to Appropriate Water to be published twice. Please publish the first notice on June 11, 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 Ronald Pekarek, 20880 341st Ave., Highmore, SD 57345-5905 (Ph # (605) 852-2854).

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. 6078-3

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

Date _____

We are in receipt of your letter of June 1, 1998, enclosing Notice of Hearing to Appropriate Water by Application No. 6078-3 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 11, 1998, with the second publication 7 days later. The applicant is responsible for payment.

NOTICE OF APPLICATION NO. 6078-3 to Appropriate Water

Notice is given that Ronald Pekarek, 20880 341st Ave, Highmore SD 57345-5905 has filed an application for a water permit to impound a total of 480 acre-feet of water from runoff in Peno Dam located in the N $\frac{1}{2}$ NW $\frac{1}{4}$ Section 16 with water impounded in the N $\frac{1}{2}$ NW $\frac{1}{4}$ Section 16 and E $\frac{1}{2}$ SW $\frac{1}{4}$ and W $\frac{1}{2}$ SE $\frac{1}{4}$ Section 9; all in T110N-R71W. Dry Draw Location Notice No. 6258 was originally filed on August 1, 1957, for a dam to store 272 acre-feet. This application requests impoundment of an additional 208 acre-feet and sufficient water annually to maintain the water level at an approximate outlet elevation of 1884 feet mean sea level. The water is to be used for fish and wildlife propagation, recreation and livestock watering use.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 6078-3 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. 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 June 29, 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.

PROOF OF PUBLICATION

STATE OF SOUTH DAKOTA)
) SS
 County of Hyde)

I, Mary Ann Morford

certify that the attached printed Notice was taken
 from the Highmore Herald

printed and published in Highmore

County of Hyde and

state of South Dakota. The notice was published
 in the newspaper on the following two dates:

June 11, 1998

June 18, 1998

Cost of Printing \$44.77

Mary Ann Morford
 (Signature)

Publisher
 (Title)

6-18-98

(Date Signed)

**NOTICE OF APPLICATION
 NO. 6078-3**

TO APPROPRIATE WATER

Notice is given that Ronald Pekarek, 20880 341st Ave., Highmore, South Dakota 57345-5905 has filed an application for a water permit to impound a total of 480 acre-feet of water from runoff in Peno Dam located in the N 1/2 NW 1/4 Section 16 with water impounded in the N 1/2 NW 1/4 Section 16 and E 1/2 SW 1/4 and W 1/2 SE 1/4 Section 9; all in T110N-R71W. Dry Draw Location Notice No. 6258 was originally filed on August 1, 1957, for a dam to store 272 acre-feet. This application requests impoundment of an additional 208 acre-feet and sufficient water annually to maintain the water level at an approximate outlet elevation of 1884 feet mean sea level. The water is to be used for fish and wildlife propagation, recreation and livestock watering use.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 6078-3 because 1) there is reasonable probability that there is inappropriate 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. 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, South Dakota 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 June 29, 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.

FPNO 40

LPNO 41





**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

AUG 17 1998

Ronald Pekarek
20880 341st Ave.
Highmore, SD 57345-5905

Dear Mr. Pekarek:

Enclosed is Water Permit No. 6078-3 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.



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

September 1, 1998

6078-3

Curt Forman
US Fish & Wildlife Service
520 3rd Ave
Brookings, SD 57006

Dear Mr. Forman:

Water Permit No. 6078-3, listed in the name of Ronald Pekarek, authorizes impoundment of 480 acre feet of water annually in Peno Dam in Hyde County. The investigation of the water use system, including the extent of application of water to beneficial use, as developed under Water Permit No. 6078-3, has been completed. The 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. It is our understanding that the US Fish & Wildlife Service will be submitting the \$50.00 fee. Please remit the fee to:

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

If you have any questions concerning the permit, licensing requirements or payment of the fee, please get in touch with me.

Sincerely,

Genny McMath
Environmental Scientist
Water Rights Program
(605) 773-3352

c: Ronald Pekarek

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

N2 415853

Pierre, September 8, 19 98

RECEIVED OF US Fish & Wildlife Service, 520 3rd Ave., Brookings, SD 57006
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. 6078-3

50 00

Fee for Filing Transfer Form _____

Fee for Filing Extension Request _____

Fee for _____

(Any Other Work Provided by Law)

Total

50 00

By _____
Chief Engineer

John Hatch (Signature)

Permit No. 6078-3
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 13, 1998, made a thorough examination of the water use system constructed by Ronald Pekarek of 20880 341st Ave. Highmore, SD 57345-5905 holder of Permit No. 6078-3, bearing the priority of August 1, 1957 (272 Ac-Ft.) & May 7, 1998 (208 Ac-Ft.) authorizing the storage of 480 acre-feet of the waters of surface runoff for fish & wildlife propagation, recreation and livestock water purposes, in Hyde County.

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

A. Works used to divert the water:

26.5 foot high dam with 480 ac-ft storage capacity

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

N/A

C. Works used to apply water to beneficial use:

26.5 foot high dam with 480 ac-ft storage capacity

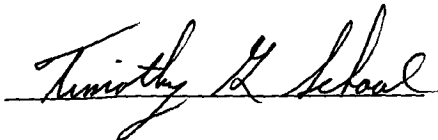
The system is in the following condition good. The point of diversion is located 750 feet south & 1600 feet east of the NW corner of Section 16-T110N-R71W (NE ¼ NW ¼). The works are capable of storing 480 acre-feet of water which is to be used for fish & wildlife propagation, recreation and livestock water. Water has been put to beneficial use to the maximum extent as follows:

26.5 foot high dam with 480 ac-ft storage capacity

and the license should be issued for 480 acre-feet of storage.

Applicable permit qualifications have been complied with: Yes X

Exceptions to compliance are: none Date Report Completed: August 26, 1998



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

REPORT ON INSPECTION OF PERMIT NO. 6078-3

Other permit(s) associated with the project: XXXX

DATE OF INSPECTION: August 13, 1998

NAME & ADDRESS OF INSPECTION CONTACT/ Mrs. Ronald Pekarek, 20880 341st Ave.,
Highmore, SD 57345-5905

RELATIONSHIP TO PERMIT HOLDER, IF APPLICABLE: owner

NAME & ADDRESS OF PERMIT HOLDER: same

DIVERSION POINT LEGAL LOCATION: 750 feet south & 1600 feet east of the NW corner of
Section 16-T110N-R71W (NE ¼ NW ¼).

DAM INFORMATION:

- 1) Height to crest 26.5 feet
- 2) Height to primary spillway 19 feet
- 3) Height to secondary spillway 22 feet
- 4) Crest width 14 feet
- 5) Crest length 1400 feet
- 6) Spillway length XXX feet
- 7) Spillway width 250 feet
- 8) Approx. storage (Normal) 480 acre-feet
- 9) Approx. storage (Maximum) 1062 acre-feet
- 10) Date constructed: 1935 repaired 1998

PERMIT QUALIFICATIONS AND REGULATIONS:

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



STATE OF SOUTH DAKOTA

WATER LICENSE NO. 6078-3

(1) Ronald Pekarek, 20880 341st Ave., Highmore, SD 57345-5905 made Application No. 6078-3, May 7, 1998 for a water permit to impound 480 acre-feet of runoff water in Peno Dam, Hyde County, South Dakota for fish & wildlife propagation, recreation and livestock watering purposes. Permit No. 6078-3, with priority dates of August 1, 1957 (272 acre-feet of water) and May 7, 1998 (208 acre-feet of water) was approved June 29, 1998 and issued to the applicant for diversion of water with construction of the described water supply system to be completed on or before June 29, 2003 and for the application to beneficial use of said water on or before June 29, 2007.

Dry Draw Location Notice No. 6258 was originally filed on August 1, 1957 for a dam to store 272 acre-feet of water. Water Permit No. 6078-3 authorizes impoundment of an additional 208 acre-feet and sufficient water annually to maintain the water level at an approximate outlet elevation of 1,884.0 feet mean sea level (fmsl).

(2) It is certified that the permit holder has complied with the provisions of South Dakota State Law relating to completion of the storage dam and is entitled to impound 480 acre-feet of water for beneficial use with sufficient water annually to maintain the water level to the outlet elevation of 1,884.0 fmsl. The location of the storage dam (center of the spillway) is 750'S and 1,600'E of the NW corner of Section 16, T110N, R71W (NE 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 Ronald Pekarek, 20880 341st Ave, Highmore, SD 57345-5905 the holder and/or owner of Water Permit No. 6078-3 is issued a license to appropriate water, the right to impound 480 acre-feet of water from runoff with sufficient water annually to maintain the water level to the outlet elevation of 1,884.0 fmsl with priority dates of August 1, 1957 and May 7, 1998 from the location specified in (2) of this license. The water is used for the purpose of providing habitat for fish & wildlife propagation, recreation and livestock water. This license is subject to any limitations or qualifications listed in Water Permit No. 6078-3 and subject to South Dakota State Law.



JOHN HATCH, Chief Engineer
Water Rights Program
Department of Environment and Natural Resources

SEP 23 1998

date





**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

SEP 23 1998

6078-3

Ronald Pekarek
20880 341st Ave.
Highmore, SD 57345-5905

Dear Mr. Pekarek:

Enclosed is Water License No. 6078-3 and Receipt No. 415853 for \$50.00 which was assessed for an investigation and issuance of the license. Water License No. 6078-3 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.

Very truly yours,

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

gm
enclosures

c: Curt Forman, US Fish & Wildlife Service, 520 3rd Ave., Brookings, SD 57006

1DAMS2 XEQ 10/09/97 STRUCTURE SITE ANALYSIS COMPUTER PROGRAM
REV 01/01/90 SCS TECHNICAL RELEASE 48, (USER MANUAL) DATED JAN. 1990
TIME 12:27:54

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

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

DAMS2 01/01/90 PENO DAM ROUTING 10/9/97
STRUCTURE PENO Location: HYDE COUNTY

	85.0	0.00	0.00
	91.0	35.0	210.0
P.S. Elev. →	97.0	40.0	480.0 ← Storage (Ac-Ft)
F.S. Elev. →	100.0	48.0	720.0
	105.0	60.0	1100.0

ENDTABLE

WSDATA	1A101	AC	76	11589	10.00
PDIRECT	1.0	3.60	Barrel	4.70	Riser Crest
PSDATA	1 ← Single pipe	100 ← Length	48 ← Barrel Dia.	4.70	Elev.
PSINLET	ELEV	1.0	15.708	97.0	0.025
POOLDATA	ELEV		97.0		
ESCREST	ELEV	100.0	101.0		
ESDATA	28	100	0.030	3 ← F.S. Sideslopes	0.035
BTMWIDTH	FEET	120	200	220	250 ← E.S. width

COMMENT

COMMENT Route a 10 year storm through the principal
COMMENT spillway and a 50 yr storm through the emergency spillway.
COMMENT Routed by Jim Reedy.

COMMENT
GO, DESIGN L TYPE2 24 TYPE2 24
ENDJOB

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

1DAMS2 XEQ 10/09/97
REV 01/01/90 OUTING 10/9/97 WSID = PENO DAM

Route a 10 year storm through the principal
spillway and a 50 yr storm through the emergency spillway.
Routed by Jim Reedy.

1DAMS2 -----
XEQ 10/09/97 OUTING 10/9/97 WSID= PENO DAM
REV 01/01/90 Location: HYDE COUNTY SUBW= 01
TIME 12:27:54 SITE = PENO 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 ESH...24 HOUR TYPE II RAINFALL DISTRIBUTION

Top of Dam 104.5'
5' { 100 720 } 380
104.5' x 1100'
380/5 = 76
X = 1062 Ac-Ft

PRECIP.-	P-PS1 DAY 3.60	P-PS10 DAY .00	P-ES 4.70	P-FB 4.70
WSDATA-	CN 76.00	DA-SM 18.11	TC/L 10.00	-/H .00
SITEDATA-	PERM POOL .00	CREST PS 97.00	FP SED .00	QRF .00
	BASEFLOW .00	INITIAL EL .00	EXTRA VOL. .00	
PSDATA-	NO. COND. 1.00	COND L 100.00	D/W 48.00	-/H .00
	PS N .025	KE 1.00	WEIR L 15.71	TW EL 82.00
	2ND STG 97.00	ORF H .00	ORF L .00	START ES .00
CRESTS-	ES1 100.00	ES2 101.00	ES3 .00	ES4 .00
				ES5 .00
EMG DATA-	SIDE SLOPE 3.00	EXIT N .035	EXIT SLOPE .050	
EMG DATA-	ES TYPE 28	ES LENGTH 100	ES ENTRANCE N .030	
BTM WIDTH-	BW1 120.00	BW2 200.00	BW3 220.00	BW4 250.00
				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	Q4
1.989	6.714	13.276	21.371
Q5	Q6	Q7	Q8
30.689	41.133	52.528	64.883
Q9	Q10	Q11	Q12
78.101	92.064	106.796	122.278

1DAMS2 -----
 XEQ 10/09/97 OUTING 10/9/97 WSID= PENO DAM
 REV 01/01/90 Location: HYDE COUNTY SUBW= 01
 TIME 12:27:54 SITE = PENO PASS= 1 PAGE= 2

CREST PS	97.00 FT	480.0 ACFT	40.00 AC	.0 CFS
SED ACCUM	97.00 FT	480.0 ACFT	40.00 AC	.0 CFS
2ND STAGE	97.00 FT	480.0 ACFT	40.00 AC	.0 CFS
STARTING E	97.00 FT	480.0 ACFT	40.00 AC	.0 CFS

1DAMS2 -----
 XEQ 10/09/97 OUTING 10/9/97 WSID= PENO DAM
 REV 01/01/90 Location: HYDE COUNTY SUBW= 01

ES CREST 100.00 FT 720.0 ACFT 48.00 AC 218.7 CFS
 PS STORAGE 240.0 ACFT BETWEEN ES CREST AND SED ACCUM ELEVATIONS
 STARTING E 97.00 FT 480.0 ACFT 40.00 AC .0 CFS

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

SCS-ESH D= 24.00 HR P= 4.27 IN Q= 1.94 IN DA = 18.11 SM
 TC= 10.00 HR CN= 76.00 VOL= 1877.8 ACFT

PEAK = 2129.3 CFS, AT 18.4 HRS.

SCS-FBH D= 24.00 HR P= 4.27 IN Q= 1.94 IN DA = 18.11 SM
 TC= 10.00 HR CN= 76.00 VOL= 1877.8 ACFT

PEAK = 2129.3 CFS, AT 18.4 HRS.
 ES AREAL CORRECTION USED = .9076

RATING TABLE DEVELOPED, SITE = PENO
 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	97.00	.00	.00	480.00	40.00
2	97.68	27.11	27.11	534.14	41.80
3	98.35	76.68	76.68	588.28	43.61
4	99.03	140.86	140.86	642.42	45.41
5	99.71	216.87	216.87	696.56	47.22
FULL CONDUIT FLOW, ELEV = 99.71 FT					
6	99.74	217.19	217.19	699.49	47.32
7	99.78	217.41	217.41	702.42	47.41
8	99.82	217.63	217.63	705.35	47.51
9	99.85	217.86	217.86	708.28	47.61
10	99.89	218.08	218.08	711.21	47.71
11	99.93	218.30	218.30	714.14	47.80
12	99.96	218.53	218.53	717.07	47.90
13	100.00	218.75	218.75	720.00	48.00
14	100.25	280.24	220.26	739.00	48.60
15	100.50	342.06	221.77	758.00	49.20
16	100.95	453.96	224.45	792.20	50.28
17	101.50	760.85	227.68	834.00	51.60
18	102.50	1476.60	233.45	910.00	54.00
19	103.75	2693.65	240.46	1005.00	57.00
20	105.00	4213.76	247.27	1100.00	60.00

ROUTED RESULTS BTM WIDTH MAX ELEV VOL-MAX AREA-MAX EMG. HP VOL-ES
 FT FT ACFT AC FT ACFT
 SCS-ESH 120.0 103.00 948.2 55.2 3.00 228.2

PEAK - CFS Q-PS Q-ES Q-TOT
 DISCHARGE = 236.3 1729.3 1965.6

EMERGENCY CRITICAL CRITICAL CRITICAL 25% OF
 SPILLWAY----- DEPTH VELOCITY SLOPE-S/C S/C
 FT FT/SEC FT/FT FT/FT
 1.83 7.52 .015 .020

	DURATION	ATTACK	SUMMATION
	FLOW	OE/B	VEL**2 DELTA T
EMERGENCY	HRS	ACFT/FT	(FT/SEC)**2 HRS
SPILLWAY----	20.6	10.1	1150.7

EXIT CHANNEL FLOW SUPERCRITICAL: MAX VELOCITY= 10.93 FT/SEC
EXIT SLOPE = .050 FT/FT
FLOW DEPTH = 1.278

ROUTED	BTM WIDTH	MAX ELEV	VOL-MAX	AREA-MAX	EMG. HP	VOL-ES
RESULTS	FT	FT	ACFT	AC	FT	ACFT
SCS-FBH	120.0	103.00	948.2	55.2	3.00	228.2

PEAK - CFS	Q-PS	Q-ES	Q-TOT
DISCHARGE =	236.3	1729.3	1965.6

	CRITICAL	CRITICAL	CRITICAL	25% OF
	DEPTH	VELOCITY	SLOPE-S/C	S/C
EMERGENCY	FT	FT/SEC	FT/FT	FT/FT
SPILLWAY----	1.83	7.52	.015	.020

	DURATION	ATTACK	SUMMATION
	FLOW	OE/B	VEL**2 DELTA T
EMERGENCY	HRS	ACFT/FT	(FT/SEC)**2 HRS
SPILLWAY----	20.6	10.1	1150.7

EXIT CHANNEL FLOW SUPERCRITICAL: MAX VELOCITY= 10.93 FT/SEC
EXIT SLOPE = .050 FT/FT
FLOW DEPTH = 1.278

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

RATING TABLE NUMBER 3

	ELEV	Q-TOTAL	Q-PS	VOLUME	AREA
	FEET	CFS	CFS	AC-FT	ACRE
1	97.00	.00	.00	480.00	40.00
2	97.68	27.11	27.11	534.14	41.80
3	98.35	76.68	76.68	588.28	43.61
4	99.03	140.86	140.86	642.42	45.41
5	99.71	216.87	216.87	696.56	47.22
6	99.74	217.19	217.19	699.49	47.32
7	99.78	217.41	217.41	702.42	47.41
8	99.82	217.63	217.63	705.35	47.51
9	99.85	217.86	217.86	708.28	47.61
10	99.89	218.08	218.08	711.21	47.71
11	99.93	218.30	218.30	714.14	47.80
12	99.96	218.53	218.53	717.07	47.90
13	100.00	218.75	218.75	720.00	48.00
14	100.25	320.03	220.26	739.00	48.60
15	100.50	421.64	221.77	758.00	49.20
16	100.95	605.15	224.45	792.20	50.28
17	101.50	1109.00	227.68	834.00	51.60
18	102.50	2276.20	233.45	910.00	54.00
19	103.75	4241.42	240.46	1005.00	57.00
20	105.00	6668.89	247.27	1100.00	60.00

FULL CONDUIT FLOW, ELEV = 99.71 FT

ROUTED	BTM WIDTH	MAX ELEV	VOL-MAX	AREA-MAX	EMG. HP	VOL-ES
RESULTS	FT	FT	ACFT	AC	FT	ACFT
SCS-ESH	200.0	102.29	894.4	53.5	2.29	174.4

PEAK - CFS	Q-PS	Q-ES	Q-TOT
------------	------	------	-------

DISCHARGE = 232.3 1804.6 2036.9

	CRITICAL DEPTH FT	CRITICAL VELOCITY FT/SEC	CRITICAL SLOPE-S/C FT/FT	25% OF S/C FT/FT
EMERGENCY SPILLWAY----	1.35	6.54	.016	.022

	DURATION FLOW HRS	ATTACK OE/B ACFT/FT	SUMMATION VEL**2 DELTA T (FT/SEC)**2 HRS
EMERGENCY SPILLWAY----	19.5	6.2	783.1

EXIT CHANNEL FLOW SUPERCRITICAL: MAX VELOCITY= 9.19 FT/SEC
EXIT SLOPE = .050 FT/FT
FLOW DEPTH = .968

ROUTED RESULTS SCS-FBH	BTM WIDTH FT	MAX ELEV FT	VOL-MAX ACFT	AREA-MAX AC	EMG. HP FT	VOL-ES ACFT
	200.0	102.29	894.4	53.5	2.29	174.4

PEAK - CFS = Q-PS Q-ES Q-TOT
DISCHARGE = 232.3 1804.6 2036.9

	CRITICAL DEPTH FT	CRITICAL VELOCITY FT/SEC	CRITICAL SLOPE-S/C FT/FT	25% OF S/C FT/FT
EMERGENCY SPILLWAY----	1.35	6.54	.016	.022

	DURATION FLOW HRS	ATTACK OE/B ACFT/FT	SUMMATION VEL**2 DELTA T (FT/SEC)**2 HRS
EMERGENCY SPILLWAY----	19.5	6.2	783.1

EXIT CHANNEL FLOW SUPERCRITICAL: MAX VELOCITY= 9.19 FT/SEC
EXIT SLOPE = .050 FT/FT
FLOW DEPTH = .968

ROUTED RESULTS	BTM WIDTH FT	MAX ELEV FT	VOL-MAX ACFT	AREA-MAX AC	EMG. HP FT	VOL-ES ACFT
	200.0	103.00	948.0	55.2	3.00	228.0

***** MINIMUM DEPTH IN TR60 IS 3.000 FEET. *****
MINIMUM ES 200.0 103.00 948.0 55.2 3.00 228.0

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

RATING TABLE NUMBER 4

	ELEV FEET	Q-TOTAL CFS	Q-PS CFS	VOLUME AC-FT	AREA ACRE
1	97.00	.00	.00	480.00	40.00
2	97.68	27.11	27.11	534.14	41.80
3	98.35	76.68	76.68	588.28	43.61
4	99.03	140.86	140.86	642.42	45.41
5	99.71	216.87	216.87	696.56	47.22
6	99.74	217.19	217.19	699.49	47.32
7	99.78	217.41	217.41	702.42	47.41
8	99.82	217.63	217.63	705.35	47.51
9	99.85	217.86	217.86	708.28	47.61
10	99.89	218.08	218.08	711.21	47.71
11	99.93	218.30	218.30	714.14	47.80
12	99.96	218.53	218.53	717.07	47.90
13	100.00	218.75	218.75	720.00	48.00

FULL CONDUIT FLOW, ELEV = 99.71 FT

14	100.25	329.97	220.26	739.00	48.60
15	100.50	441.53	221.77	758.00	49.20
16	100.95	642.95	224.45	792.20	50.28
17	101.50	1196.03	227.68	834.00	51.60
18	102.50	2476.10	233.45	910.00	54.00
19	103.75	4628.36	240.46	1005.00	57.00
20	105.00	7282.67	247.27	1100.00	60.00

ROUTED	BTM WIDTH	MAX ELEV	VOL-MAX	AREA-MAX	EMG. HP	VOL-ES
RESULTS	FT	FT	ACFT	AC	FT	ACFT
SCS-ESH	220.0	102.17	884.6	53.2	2.17	164.6

PEAK - CFS	Q-PS	Q-ES	Q-TOT
DISCHARGE =	231.5	1816.8	2048.4

	CRITICAL	CRITICAL	CRITICAL	25% OF
	DEPTH	VELOCITY	SLOPE-S/C	S/C
EMERGENCY	FT	FT/SEC	FT/FT	FT/FT
SPILLWAY----	1.28	6.36	.017	.023

	DURATION	ATTACK	SUMMATION
	FLOW	OE/B	VEL**2 DELTA T
EMERGENCY	HRS	ACFT/FT	(FT/SEC)**2 HRS
SPILLWAY----	18.9	5.6	732.5

EXIT CHANNEL FLOW SUPERCRITICAL: MAX VELOCITY= 8.88 FT/SEC
EXIT SLOPE = .050 FT/FT
FLOW DEPTH = .918

ROUTED	BTM WIDTH	MAX ELEV	VOL-MAX	AREA-MAX	EMG. HP	VOL-ES
RESULTS	FT	FT	ACFT	AC	FT	ACFT
SCS-FBH	220.0	102.17	884.6	53.2	2.17	164.6

PEAK - CFS	Q-PS	Q-ES	Q-TOT
DISCHARGE =	231.5	1816.8	2048.4

	CRITICAL	CRITICAL	CRITICAL	25% OF
	DEPTH	VELOCITY	SLOPE-S/C	S/C
EMERGENCY	FT	FT/SEC	FT/FT	FT/FT
SPILLWAY----	1.28	6.36	.017	.023

	DURATION	ATTACK	SUMMATION
	FLOW	OE/B	VEL**2 DELTA T
EMERGENCY	HRS	ACFT/FT	(FT/SEC)**2 HRS
SPILLWAY----	18.9	5.6	732.5

EXIT CHANNEL FLOW SUPERCRITICAL: MAX VELOCITY= 8.88 FT/SEC
EXIT SLOPE = .050 FT/FT
FLOW DEPTH = .918

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

***** MINIMUM DEPTH IN TR60 IS 3.000 FEET. *****
MINIMUM ES 220.0 103.00 948.0 55.2 3.00 228.0

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

RATING	TABLE	NUMBER	5
ELEV	Q-TOTAL	Q-PS	VOLUME
FEET	CFS	CFS	AC-FT
1	97.00	.00	480.00
			40.00

2	97.68	27.11	534.14	41.80
3	98.35	76.68	588.28	43.61
4	99.03	140.86	642.42	45.41
5	99.71	216.87	696.56	47.22
6	99.74	217.19	699.49	47.32
7	99.78	217.41	702.42	47.41
8	99.82	217.63	705.35	47.51
9	99.85	217.86	708.28	47.61
10	99.89	218.08	711.21	47.71
11	99.93	218.30	714.14	47.80
12	99.96	218.53	717.07	47.90
13	100.00	218.75	720.00	48.00
14	100.25	344.89	739.00	48.60
15	100.50	471.37	758.00	49.20
16	100.95	699.64	792.20	50.28
17	101.50	1326.59	834.00	51.60
18	102.50	2775.96	910.00	54.00
19	103.75	5208.78	1005.00	57.00
20	105.00	8203.35	1100.00	60.00

FULL CONDUIT FLOW, ELEV = 99.71 FT

ROUTED RESULTS	BTM WIDTH	MAX ELEV	VOL-MAX	AREA-MAX	EMG. HP	VOL-ES
SCS-ESH	FT	FT	ACFT	AC	FT	ACFT
	250.0	102.01	872.9	52.8	2.01	152.9

PEAK - CFS DISCHARGE =	Q-PS	Q-ES	Q-TOT
	230.7	1838.2	2068.9

	CRITICAL DEPTH	CRITICAL VELOCITY	CRITICAL SLOPE-S/C	25% OF S/C
EMERGENCY SPILLWAY----	FT	FT/SEC	FT/FT	FT/FT
	1.18	6.13	.017	.023

	DURATION FLOW	ATTACK OE/B	SUMMATION
EMERGENCY SPILLWAY----	HRS	ACFT/FT	VEL**2 DELTA T (FT/SEC)**2 HRS
	18.9	5.0	662.7

EXIT CHANNEL FLOW SUPERCRITICAL: MAX VELOCITY= 8.50 FT/SEC
EXIT SLOPE = .050 FT/FT
FLOW DEPTH = .856

ROUTED RESULTS	BTM WIDTH	MAX ELEV	VOL-MAX	AREA-MAX	EMG. HP	VOL-ES
SCS-FBH	FT	FT	ACFT	AC	FT	ACFT
	250.0	102.01	872.9	52.8	2.01	152.9

PEAK - CFS DISCHARGE =	Q-PS	Q-ES	Q-TOT
	230.7	1838.2	2068.9

	CRITICAL DEPTH	CRITICAL VELOCITY	CRITICAL SLOPE-S/C	25% OF S/C
EMERGENCY SPILLWAY----	FT	FT/SEC	FT/FT	FT/FT
	1.18	6.13	.017	.023

	DURATION FLOW	ATTACK OE/B	SUMMATION
EMERGENCY SPILLWAY----	HRS	ACFT/FT	VEL**2 DELTA T (FT/SEC)**2 HRS
	18.9	5.0	662.7

EXIT CHANNEL FLOW SUPERCRITICAL: MAX VELOCITY= 8.50 FT/SEC
EXIT SLOPE = .050 FT/FT
FLOW DEPTH = .856

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

***** MINIMUM DEPTH IN TR60 IS 3.000 FEET. *****
MINIMUM ES 250.0 103.00 948.0 55.2 3.00 228.0

1DAMS2 -----
XEQ 10/09/97 OUTING 10/9/97 WSID= PENO DAM
REV 01/01/90 Location: HYDE COUNTY SUBW= 01
TIME 12:27:54 SITE = PENO PASS= 1 PAGE= 4

ES CREST 101.00 FT 796.0 ACFT 50.40 AC 224.5 CFS

PS STORAGE 316.0 ACFT BETWEEN ES CREST AND SED ACCUM ELEVATIONS

STARTING E 97.00 FT 480.0 ACFT 40.00 AC .0 CFS

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

SCS-ESH D= 24.00 HR P= 4.27 IN Q= 1.94 IN DA = 18.11 SM
TC= 10.00 HR CN= 76.00 VOL= 1877.8 ACFT

PEAK = 2129.3 CFS, AT 18.4 HRS.

SCS-FBH D= 24.00 HR P= 4.27 IN Q= 1.94 IN DA = 18.11 SM
TC= 10.00 HR CN= 76.00 VOL= 1877.8 ACFT

PEAK = 2129.3 CFS, AT 18.4 HRS.
ES AREAL CORRECTION USED = .9076

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

RATING TABLE NUMBER 6

	ELEV FEET	Q-TOTAL CFS	Q-PS CFS	VOLUME AC-FT	AREA ACRE
1	97.00	.00	.00	480.00	40.00
2	97.68	27.11	27.11	534.14	41.80
3	98.35	76.68	76.68	588.28	43.61
4	99.03	140.86	140.86	642.42	45.41
5	99.71	216.87	216.87	696.56	47.22
6	99.87	217.95	217.95	709.49	47.65
7	100.03	218.93	218.93	722.30	48.07
8	100.19	219.91	219.91	734.58	48.46
9	100.35	220.89	220.89	746.86	48.85
10	100.52	221.86	221.86	759.15	49.24
11	100.68	222.82	222.82	771.43	49.62
12	100.84	223.79	223.79	783.72	50.01
13	101.00	224.74	224.74	796.00	50.40
14	101.20	273.87	225.92	811.20	50.88
15	101.40	323.23	227.10	826.40	51.36
16	101.76	412.50	229.20	853.76	52.22
17	102.20	589.53	231.73	887.20	53.28
18	103.00	1064.54	236.28	948.00	55.20
19	104.00	1905.14	241.84	1024.00	57.60
20	105.00	2967.05	247.27	1100.00	60.00

FULL CONDUIT FLOW, ELEV = 99.71 FT

ROUTED RESULTS	BTM WIDTH FT	MAX ELEV FT	VOL-MAX ACFT	AREA-MAX AC	EMG. HP FT	VOL-ES ACFT
SCS-ESH	120.0	104.00	1023.8	57.6	3.00	227.8

PEAK - CFS Q-PS Q-ES Q-TOT

DISCHARGE = 241.8 1661.1 1902.9

	CRITICAL DEPTH FT	CRITICAL VELOCITY FT/SEC	CRITICAL SLOPE-S/C FT/FT	25% OF S/C FT/FT
EMERGENCY SPILLWAY----	1.79	7.42	.015	.020

	DURATION FLOW HRS	ATTACK OE/B ACFT/FT	SUMMATION VEL**2 DELTA T (FT/SEC)**2 HRS
EMERGENCY SPILLWAY----	20.0	9.4	1089.0

EXIT CHANNEL FLOW SUPERCRITICAL: MAX VELOCITY= 10.76 FT/SEC
EXIT SLOPE = .050 FT/FT
FLOW DEPTH = 1.247

ROUTED RESULTS SCS-FBH	BTM WIDTH FT	MAX ELEV FT	VOL-MAX ACFT	AREA-MAX AC	EMG. HP FT	VOL-ES ACFT
	120.0	104.00	1023.8	57.6	3.00	227.8

PEAK - CFS Q-PS Q-ES Q-TOT
DISCHARGE = 241.8 1661.1 1902.9

	CRITICAL DEPTH FT	CRITICAL VELOCITY FT/SEC	CRITICAL SLOPE-S/C FT/FT	25% OF S/C FT/FT
EMERGENCY SPILLWAY----	1.79	7.42	.015	.020

	DURATION FLOW HRS	ATTACK OE/B ACFT/FT	SUMMATION VEL**2 DELTA T (FT/SEC)**2 HRS
EMERGENCY SPILLWAY----	20.0	9.4	1089.0

EXIT CHANNEL FLOW SUPERCRITICAL: MAX VELOCITY= 10.76 FT/SEC
EXIT SLOPE = .050 FT/FT
FLOW DEPTH = 1.247

ROUTED RESULTS	BTM WIDTH FT	MAX ELEV FT	VOL-MAX ACFT	AREA-MAX AC	EMG. HP FT	VOL-ES ACFT
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***** MINIMUM DEPTH IN TR60 IS 3.000 FEET. *****
MINIMUM ES 120.0 104.00 1024.0 57.6 3.00 228.0

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

RATING TABLE NUMBER 7

	ELEV FEET	Q-TOTAL CFS	Q-PS CFS	VOLUME AC-FT	AREA ACRE
1	97.00	.00	.00	480.00	40.00
2	97.68	27.11	27.11	534.14	41.80
3	98.35	76.68	76.68	588.28	43.61
4	99.03	140.86	140.86	642.42	45.41
5	99.71	216.87	216.87	696.56	47.22
6	99.87	217.95	217.95	709.49	47.65
7	100.03	218.93	218.93	722.30	48.07
8	100.19	219.91	219.91	734.58	48.46
9	100.35	220.89	220.89	746.86	48.85
10	100.52	221.86	221.86	759.15	49.24
11	100.68	222.82	222.82	771.43	49.62
12	100.84	223.79	223.79	783.72	50.01
13	101.00	224.74	224.74	796.00	50.40

FULL CONDUIT FLOW, ELEV = 99.71 FT

14	101.20	305.70	225.92	811.20	50.88
15	101.40	386.89	227.10	826.40	51.36
16	101.76	533.46	229.20	853.76	52.22
17	102.20	824.27	231.73	887.20	53.28
18	103.00	1601.69	236.28	948.00	55.20
19	104.00	2967.20	241.84	1024.00	57.60
20	105.00	4676.72	247.27	1100.00	60.00

ROUTED RESULTS	BTM WIDTH FT	MAX ELEV FT	VOL-MAX ACFT	AREA-MAX AC	EMG. HP FT	VOL-ES ACFT
SCS-ESH	200.0	103.30	970.7	55.9	2.30	174.7

PEAK - CFS DISCHARGE =	Q-PS 238.0	Q-ES 1771.4	Q-TOT 2009.4
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	CRITICAL DEPTH FT	CRITICAL VELOCITY FT/SEC	CRITICAL SLOPE-S/C FT/FT	25% OF S/C FT/FT
EMERGENCY SPILLWAY-----	1.34	6.49	.016	.022

	DURATION FLOW HRS	ATTACK OE/B ACFT/FT	SUMMATION VEL**2 DELTA T (FT/SEC)**2 HRS
EMERGENCY SPILLWAY-----	18.9	5.8	739.9

EXIT CHANNEL FLOW SUPERCRITICAL: MAX VELOCITY= 9.12 FT/SEC
EXIT SLOPE = .050 FT/FT
FLOW DEPTH = .957

ROUTED RESULTS	BTM WIDTH FT	MAX ELEV FT	VOL-MAX ACFT	AREA-MAX AC	EMG. HP FT	VOL-ES ACFT
SCS-FBH	200.0	103.30	970.7	55.9	2.30	174.7

PEAK - CFS DISCHARGE =	Q-PS 238.0	Q-ES 1771.4	Q-TOT 2009.4
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	CRITICAL DEPTH FT	CRITICAL VELOCITY FT/SEC	CRITICAL SLOPE-S/C FT/FT	25% OF S/C FT/FT
EMERGENCY SPILLWAY-----	1.34	6.49	.016	.022

	DURATION FLOW HRS	ATTACK OE/B ACFT/FT	SUMMATION VEL**2 DELTA T (FT/SEC)**2 HRS
EMERGENCY SPILLWAY-----	18.9	5.8	739.9

EXIT CHANNEL FLOW SUPERCRITICAL: MAX VELOCITY= 9.12 FT/SEC
EXIT SLOPE = .050 FT/FT
FLOW DEPTH = .957

ROUTED RESULTS	BTM WIDTH FT	MAX ELEV FT	VOL-MAX ACFT	AREA-MAX AC	EMG. HP FT	VOL-ES ACFT
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***** MINIMUM DEPTH IN TR60 IS 3.000 FEET. *****
MINIMUM ES 200.0 104.00 1024.0 57.6 3.00 228.0

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

RATING TABLE NUMBER 8					
	ELEV FEET	Q-TOTAL CFS	Q-PS CFS	VOLUME AC-FT	AREA ACRE
1	97.00	.00	.00	480.00	40.00

2	97.68	27.11	27.11	534.14	41.80
3	98.35	76.68	76.68	588.28	43.61
4	99.03	140.86	140.86	642.42	45.41
5	99.71	216.87	216.87	696.56	47.22
FULL CONDUIT FLOW, ELEV = 99.71 FT					
6	99.87	217.95	217.95	709.49	47.65
7	100.03	218.93	218.93	722.30	48.07
8	100.19	219.91	219.91	734.58	48.46
9	100.35	220.89	220.89	746.86	48.85
10	100.52	221.86	221.86	759.15	49.24
11	100.68	222.82	222.82	771.43	49.62
12	100.84	223.79	223.79	783.72	50.01
13	101.00	224.74	224.74	796.00	50.40
14	101.20	313.66	225.92	811.20	50.88
15	101.40	402.81	227.10	826.40	51.36
16	101.76	563.70	229.20	853.76	52.22
17	102.20	882.96	231.73	887.20	53.28
18	103.00	1735.98	236.28	948.00	55.20
19	104.00	3232.71	241.84	1024.00	57.60
20	105.00	5104.14	247.27	1100.00	60.00

ROUTED RESULTS	BTM WIDTH FT	MAX ELEV FT	VOL-MAX ACFT	AREA-MAX AC	EMG. HP FT	VOL-ES ACFT
SCS-ESH	220.0	103.19	962.6	55.7	2.19	166.6

PEAK - CFS DISCHARGE =	Q-PS 237.4	Q-ES 1786.0	Q-TOT 2023.3
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	CRITICAL DEPTH FT	CRITICAL VELOCITY FT/SEC	CRITICAL SLOPE-S/C FT/FT	25% OF S/C FT/FT
EMERGENCY SPILLWAY----	1.26	6.32	.017	.023

	DURATION FLOW HRS	ATTACK OE/B ACFT/FT	SUMMATION VEL**2 DELTA T (FT/SEC)**2 HRS
EMERGENCY SPILLWAY----	18.4	5.2	682.7

EXIT CHANNEL FLOW SUPERCRITICAL: MAX VELOCITY= 8.83 FT/SEC
EXIT SLOPE = .050 FT/FT
FLOW DEPTH = .909

ROUTED RESULTS	BTM WIDTH FT	MAX ELEV FT	VOL-MAX ACFT	AREA-MAX AC	EMG. HP FT	VOL-ES ACFT
SCS-FBH	220.0	103.19	962.6	55.7	2.19	166.6

PEAK - CFS DISCHARGE =	Q-PS 237.4	Q-ES 1786.0	Q-TOT 2023.3
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	CRITICAL DEPTH FT	CRITICAL VELOCITY FT/SEC	CRITICAL SLOPE-S/C FT/FT	25% OF S/C FT/FT
EMERGENCY SPILLWAY----	1.26	6.32	.017	.023

	DURATION FLOW HRS	ATTACK OE/B ACFT/FT	SUMMATION VEL**2 DELTA T (FT/SEC)**2 HRS
EMERGENCY SPILLWAY----	18.4	5.2	682.7

EXIT CHANNEL FLOW SUPERCRITICAL: MAX VELOCITY= 8.83 FT/SEC
EXIT SLOPE = .050 FT/FT
FLOW DEPTH = .909

ROUTED RESULTS	BTM WIDTH FT	MAX ELEV FT	VOL-MAX ACFT	AREA-MAX AC	EMG. HP FT	VOL-ES ACFT
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***** MINIMUM DEPTH IN TR60 IS 3.000 FEET. *****
 MINIMUM ES 220.0 104.00 1024.0 57.6 3.00 228.0

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

RATING TABLE NUMBER 9

	ELEV FEET	Q-TOTAL CFS	Q-PS CFS	VOLUME AC-FT	AREA ACRE
1	97.00	.00	.00	480.00	40.00
2	97.68	27.11	27.11	534.14	41.80
3	98.35	76.68	76.68	588.28	43.61
4	99.03	140.86	140.86	642.42	45.41
5	99.71	216.87	216.87	696.56	47.22
6	99.87	217.95	217.95	709.49	47.65
7	100.03	218.93	218.93	722.30	48.07
8	100.19	219.91	219.91	734.58	48.46
9	100.35	220.89	220.89	746.86	48.85
10	100.52	221.86	221.86	759.15	49.24
11	100.68	222.82	222.82	771.43	49.62
12	100.84	223.79	223.79	783.72	50.01
13	101.00	224.74	224.74	796.00	50.40
14	101.20	325.59	225.92	811.20	50.88
15	101.40	426.68	227.10	826.40	51.36
16	101.76	609.05	229.20	853.76	52.22
17	102.20	970.99	231.73	887.20	53.28
18	103.00	1937.41	236.28	948.00	55.20
19	104.00	3630.98	241.84	1024.00	57.60
20	105.00	5745.27	247.27	1100.00	60.00

FULL CONDUIT FLOW, ELEV = 99.71 FT

ROUTED RESULTS	BTM WIDTH FT	MAX ELEV FT	VOL-MAX ACFT	AREA-MAX AC	EMG. HP FT	VOL-ES ACFT
SCS-ESH	250.0	103.06	952.2	55.3	2.06	156.2

PEAK - CFS DISCHARGE = Q-PS Q-ES Q-TOT
 236.6 1794.4 2031.0

EMERGENCY SPILLWAY---- CRITICAL DEPTH FT CRITICAL VELOCITY FT/SEC CRITICAL SLOPE-S/C FT/FT 25% OF S/C FT/FT
 1.16 6.08 .017 .023

EMERGENCY SPILLWAY---- DURATION FLOW HRS ATTACK OE/B ACFT/FT SUMMATION VEL**2 DELTA T (FT/SEC)**2 HRS
 18.4 4.6 618.5

EXIT CHANNEL FLOW SUPERCRITICAL: MAX VELOCITY= 8.42 FT/SEC
 EXIT SLOPE = .050 FT/FT
 FLOW DEPTH = .844

ROUTED RESULTS	BTM WIDTH FT	MAX ELEV FT	VOL-MAX ACFT	AREA-MAX AC	EMG. HP FT	VOL-ES ACFT
SCS-FBH	250.0	103.06	952.2	55.3	2.06	156.2

PEAK - CFS DISCHARGE = Q-PS Q-ES Q-TOT
 236.6 1794.4 2031.0

EMERGENCY SPILLWAY---- CRITICAL DEPTH FT CRITICAL VELOCITY FT/SEC CRITICAL SLOPE-S/C FT/FT 25% OF S/C FT/FT
 1.16 6.08 .017 .023

	DURATION	ATTACK	SUMMATION
	FLOW	OE/B	VEL**2 DELTA T
EMERGENCY	HRS	ACFT/FT	(FT/SEC)**2 HRS
SPILLWAY----	18.4	4.6	618.5

EXIT CHANNEL FLOW SUPERCRITICAL: MAX VELOCITY= 8.42 FT/SEC
 EXIT SLOPE = .050 FT/FT
 FLOW DEPTH = .844

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

***** MINIMUM DEPTH IN TR60 IS 3.000 FEET. *****
 MINIMUM ES 250.0 104.00 1024.0 57.6 3.00 228.0

1DAMS2.....JOB NO. 1 COMPLETE

PENO DAM OUTING 10/9/97

0 SUBWATERSHED(S) ANALYZED

1 STRUCTURE(S) ANALYZED

16 HYDROGRAPHS ROUTED AT LOWEST SITE

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

DAMS2.....COMPUTATIONS COMPLETE

1 SUMMARY TABLE 1 DAMS2 VERSION 01/01/90

WATERSHED ID	RUN DATE	RUN TIME
-----	-----	-----
PENO DAM	10/09/97	12:27:54

>>>	SITE	SUBWS	SUBWS DA	CURVE	TC	TOTAL DA	TYPE	STRUC	<<<
	ID	ID	(SQ MI)	NO.	(HRS)	(SQ MI)	DESIGN	CLASS	
	-----	-----	-----	-----	-----	-----	-----	-----	
	PENO	01	18.11	76.	10.00	18.11	TR60	A1	

PASS	DIA/	ES CREST	BTM	MAX	MAX	YARDAGE	OE/B*	EXIT*	TYPE
NO.	WIDTH	ELEV	WIDTH	HP	ELEV	EMB	(AF/FT)	VELOCITY	HYD
	(IN/FT)	(FT)	(FT)	(FT)	(FT)	(CY)		(FT/SEC)	
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1	48.0	100.00	120.00	3.00	103.00	0.	10.1	10.93	SCS-FBH
1	48.0	100.00	200.00	3.00	103.00	0.	6.2	9.19	MINIMUM ES
1	48.0	100.00	220.00	3.00	103.00	0.	5.6	8.88	MINIMUM ES
1	48.0	100.00	250.00	3.00	103.00	0.	5.0	8.50	MINIMUM ES
1	48.0	101.00	120.00	3.00	104.00	0.	9.4	10.76	MINIMUM ES
1	48.0	101.00	200.00	3.00	104.00	0.	5.8	9.12	MINIMUM ES
1	48.0	101.00	220.00	3.00	104.00	0.	5.2	8.83	MINIMUM ES
1	48.0	101.00	250.00	3.00	104.00	0.	4.6	8.42	MINIMUM ES

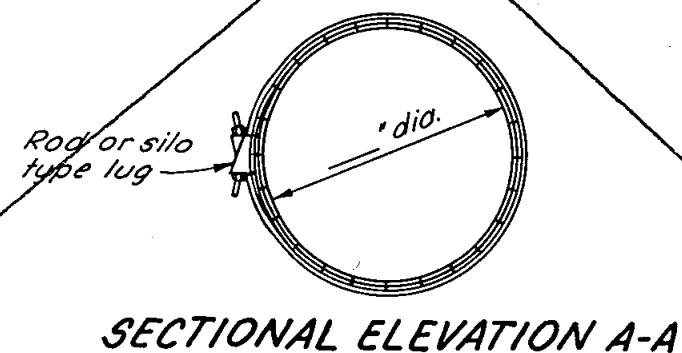
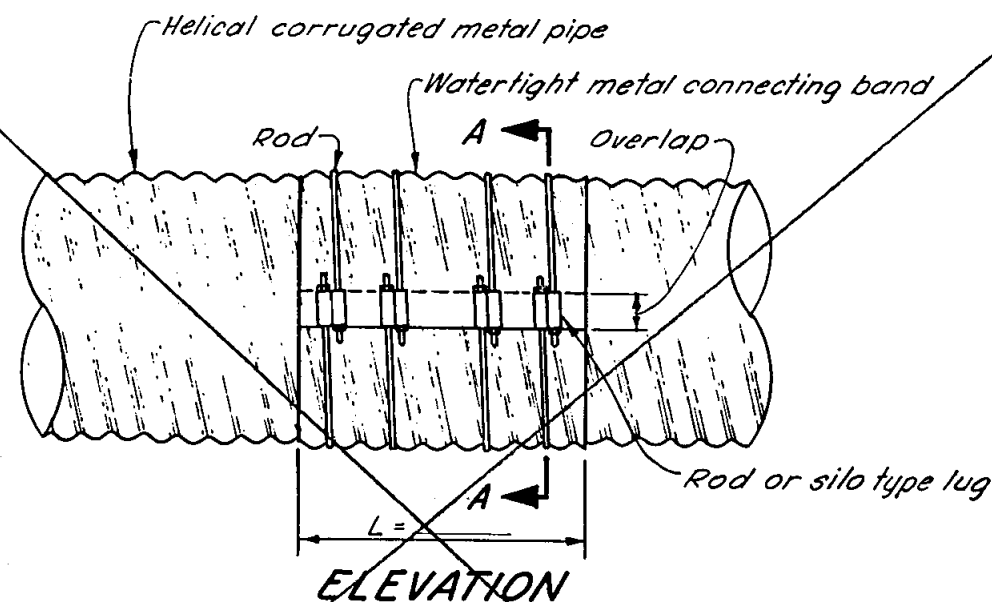
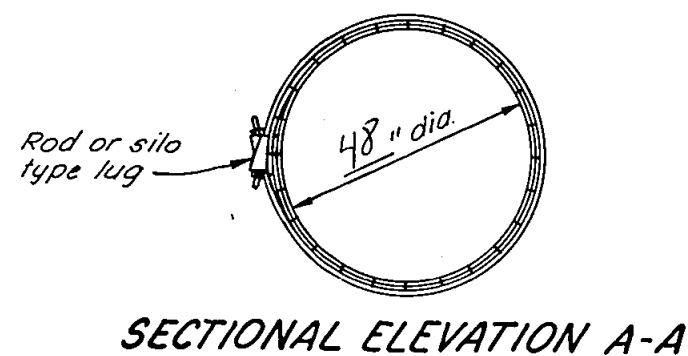
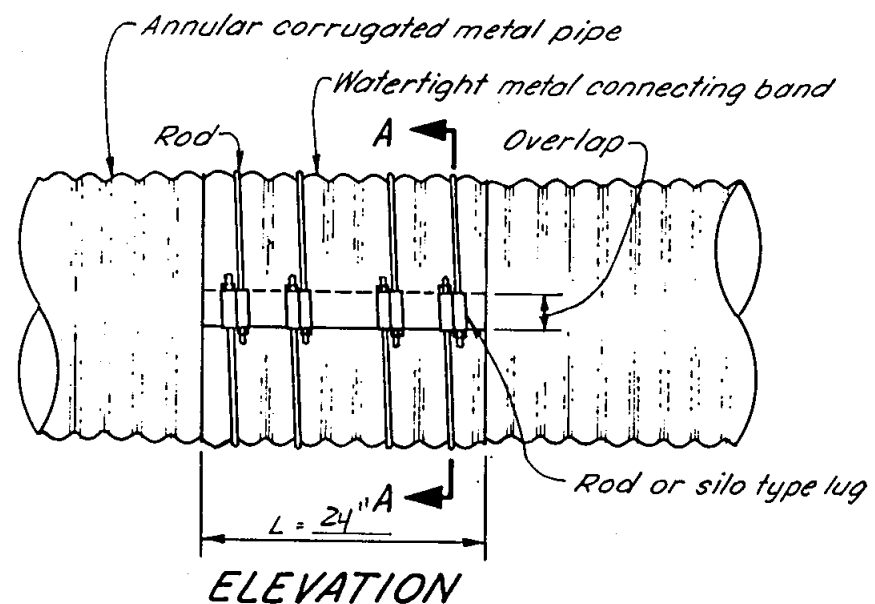
* OE/B AND EXIT VELOCITY ARE BASED ON THE ROUTED HYDROGRAPH
 AND WILL NOT RELATE TO THE MAX. ELEV.(TOP OF DAM),
 WHICH IS SET BY MINIMUM DESIGN CRITERIA.

DAMS2.....SUMMARY TABLE 1 COMPLETED

SCS DAMS2 VERSION 01/01/90
PEN0 DAM FILES

INPUT = c:\eng\dams2\peno.dat
OUTPUT = c:\eng\dams2\peno.0UT

DATED 10/09/97 12:27:54



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:

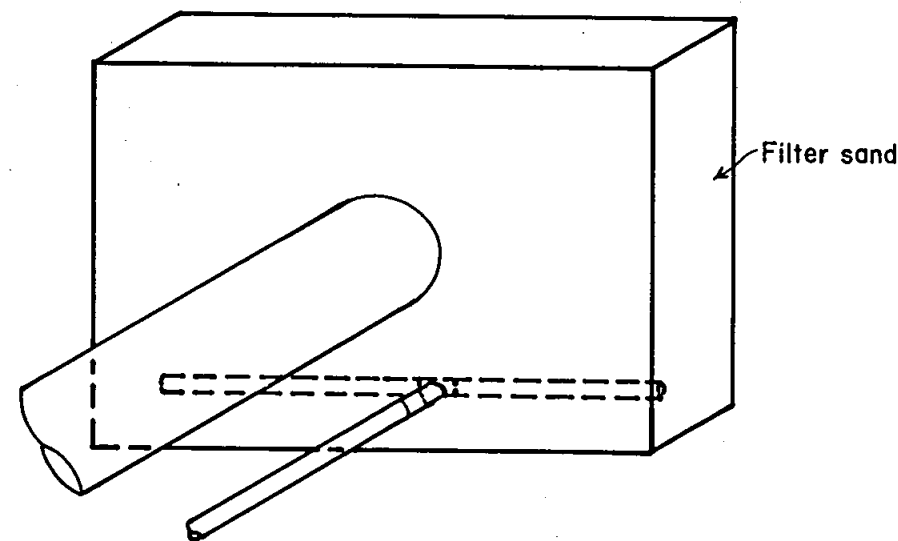
1. WATERTIGHTNESS WILL BE OBTAINED BY USE OF (1) 3/8" THICK NEOPRENE GASKET (WIDTH AS SHOWN) OR (2) ASPHALT MASTIC SEALING MATERIAL TO COVER FULL WIDTH OF BAND.
2. CROSS OUT BAND AND QUANTITIES NOT APPLICABLE.

WATERTIGHT CONNECTING BAND FOR ANNULAR AND HELICAL CORRUGATED METAL PIPE

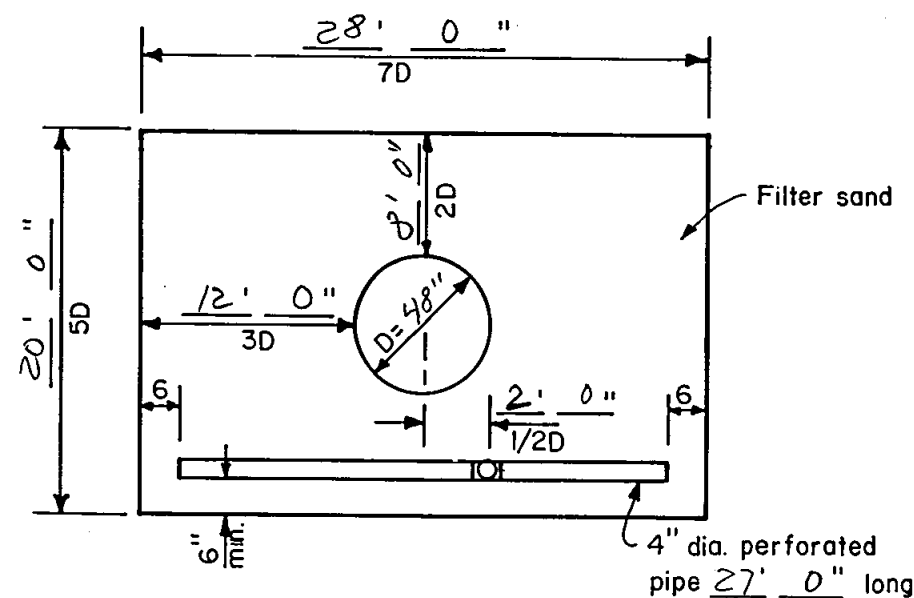
OPERATOR: <u>Peno Dam</u>	
CONSERVATION DISTRICT: <u>Hyde Co.</u>	
U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	
Designed <u>J. Roddy</u>	Date <u>11/97</u>
Drawn	Approved by
Traced	Title
Checked	Sheet <u>4</u> Drawing No
	No <u>8</u> of

JOB PLAN NO. 3.0

5, N-29, 073.30



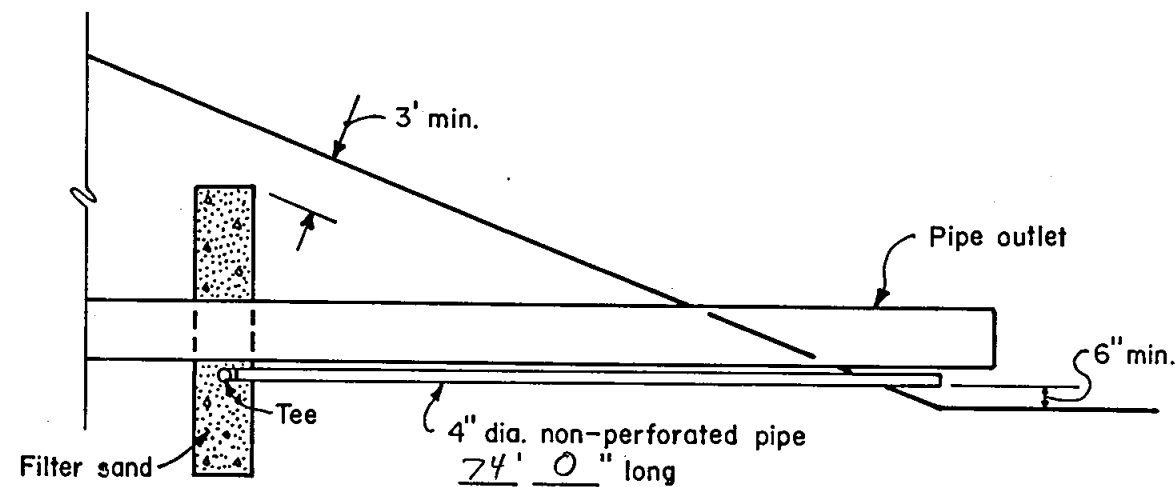
ISOMETRIC VIEW



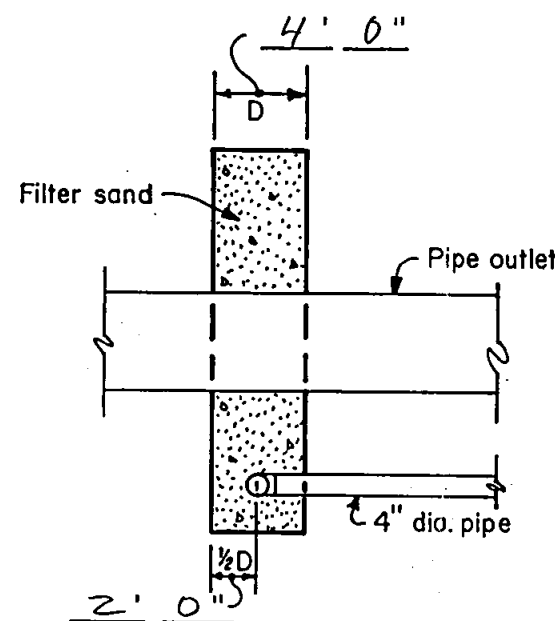
UPSTREAM VIEW

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 $\varnothing$ 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

Sec. _____, T. _____, R. _____

County _____

LOCATION

SAND ANTISEEP COLLAR

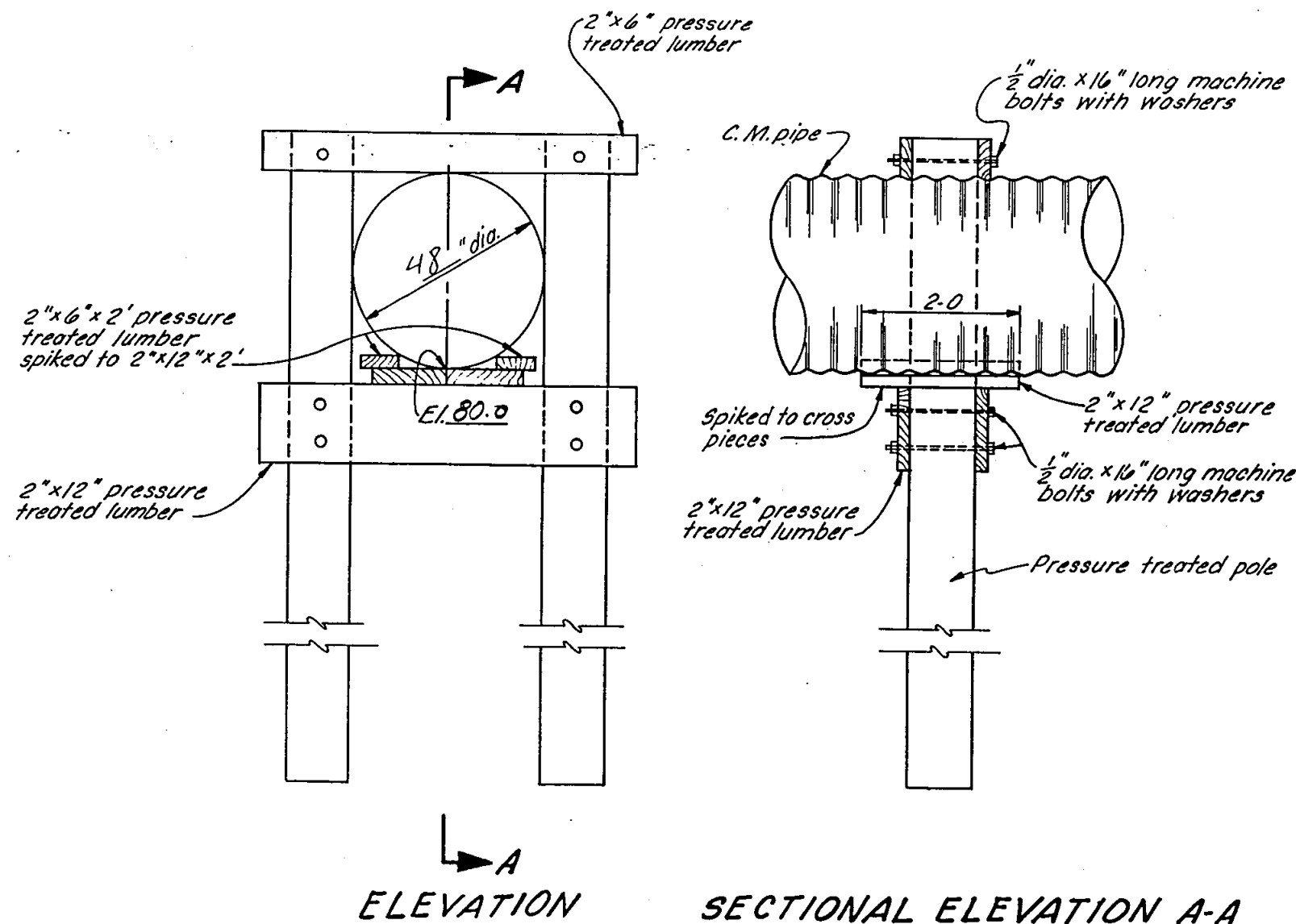
OPERATOR Peno Dam

CONSERVATION DISTRICT Hy de To.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Designed J. Rudy Date 10/9/92 Approved by _____
Drawn _____ Title _____
Traced _____ Title _____
Checked _____ Sheet 5 of 8 Drawing No. _____

JOB PLAN NO. 3.8



NOTES:

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

TABLE OF QUANTITIES

ITEM	LENGTH FOR 48" DIA. C.M. PIPE	UNIT	QUANTITY
PRESSURE TREATED POLE 10" DIA.	10'-0"	EACH	2
2" X 12" PRESSURE TREATED LUMBER	6'-0"	EACH	2
2" X 6" PRESSURE TREATED LUMBER	6'-0"	EACH	2
2" X 12" PRESSURE TREATED LUMBER	2'-0"	EACH	2
2" X 6" PRESSURE TREATED LUMBER	2'-0"	EACH	2
1/2" DIA. MACHINE BOLTS WITH NUTS	—	EACH	12
1/2" DIA. WASHERS	—	EACH	24

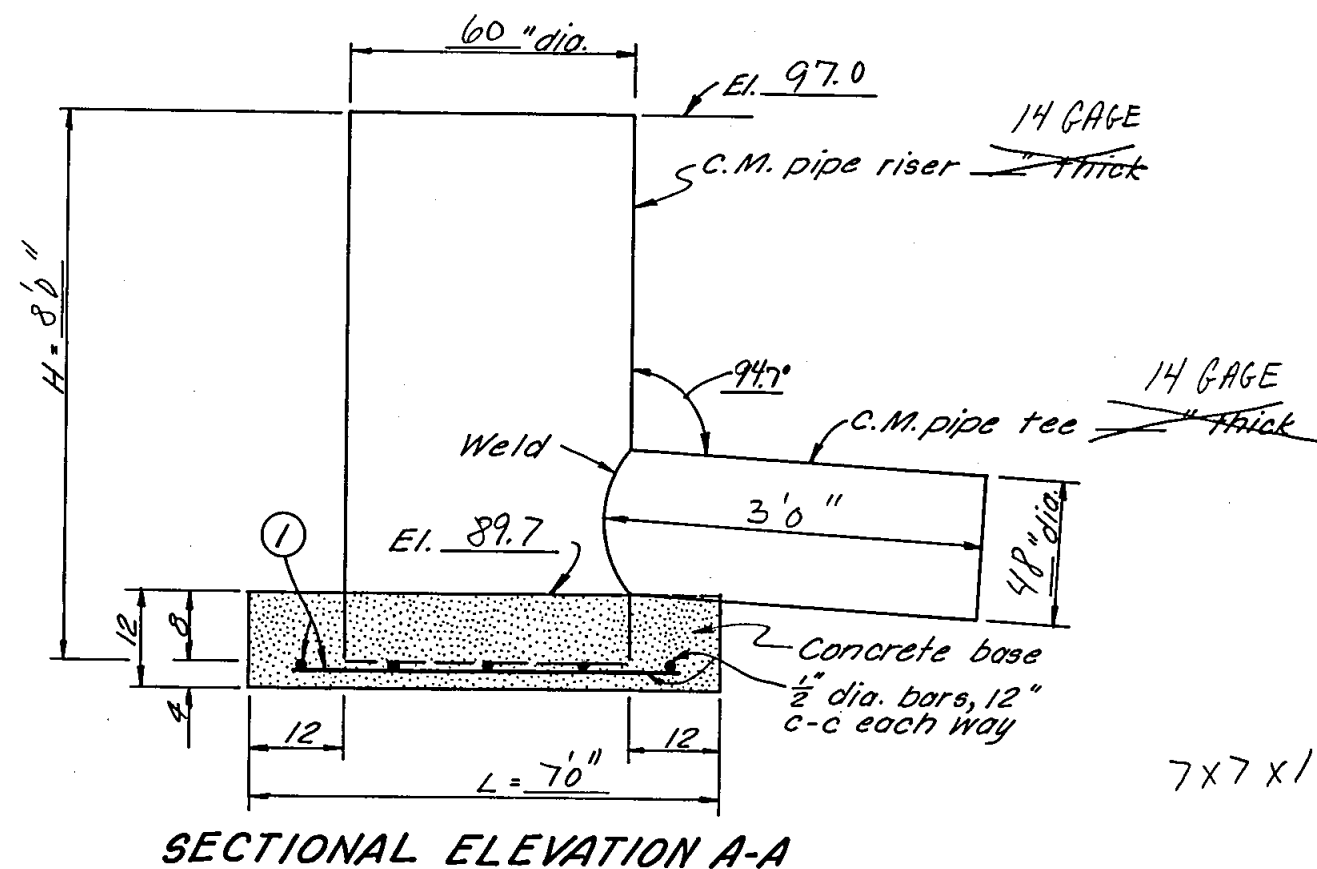
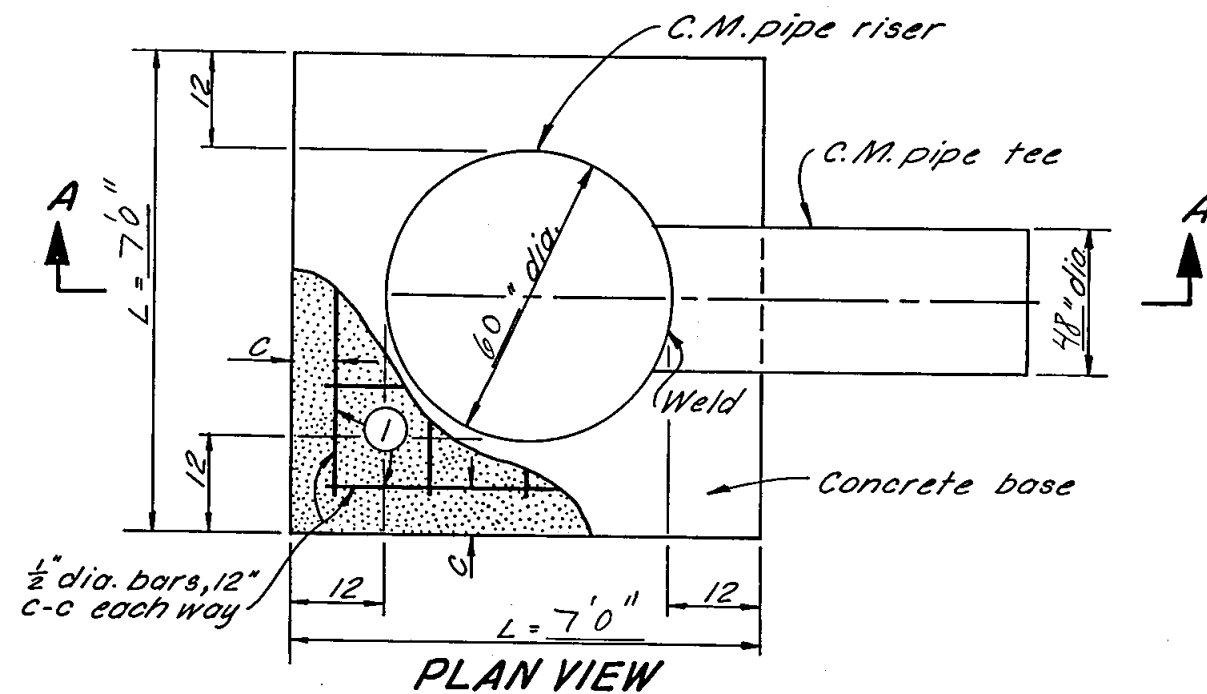
REFERENCE: GUIDE PLAN NO. 4.0

JOB PLAN NO. 4.0

TIMBER PIPE SUPPORT

OPERATOR: <u>Peno Dam</u>	
CONSERVATION DISTRICT: <u>Hy de Co.</u>	
U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	
Designed: <u>J. R. Rely</u>	Date: <u>1947</u>
Drawn: _____	Approved by: _____
Traced: _____	Title: _____
Checked: _____	Title: _____
	Sheet No. <u>6</u> of <u>8</u>
	Drawing No. _____

5, N-29,073.4a



$$7 \times 7 \times 1 = 49 \text{ ft}^3$$

$$= 1.8 \text{ yd}^3$$

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	1	STR.	14	6-0	84-0	56.1	6	7-0

TABLE OF QUANTITIES

ITEM	UNIT	QUANTITY
CONCRETE	CU. YD.	1.8
REINFORCING STEEL	LB.	56

NOTE:

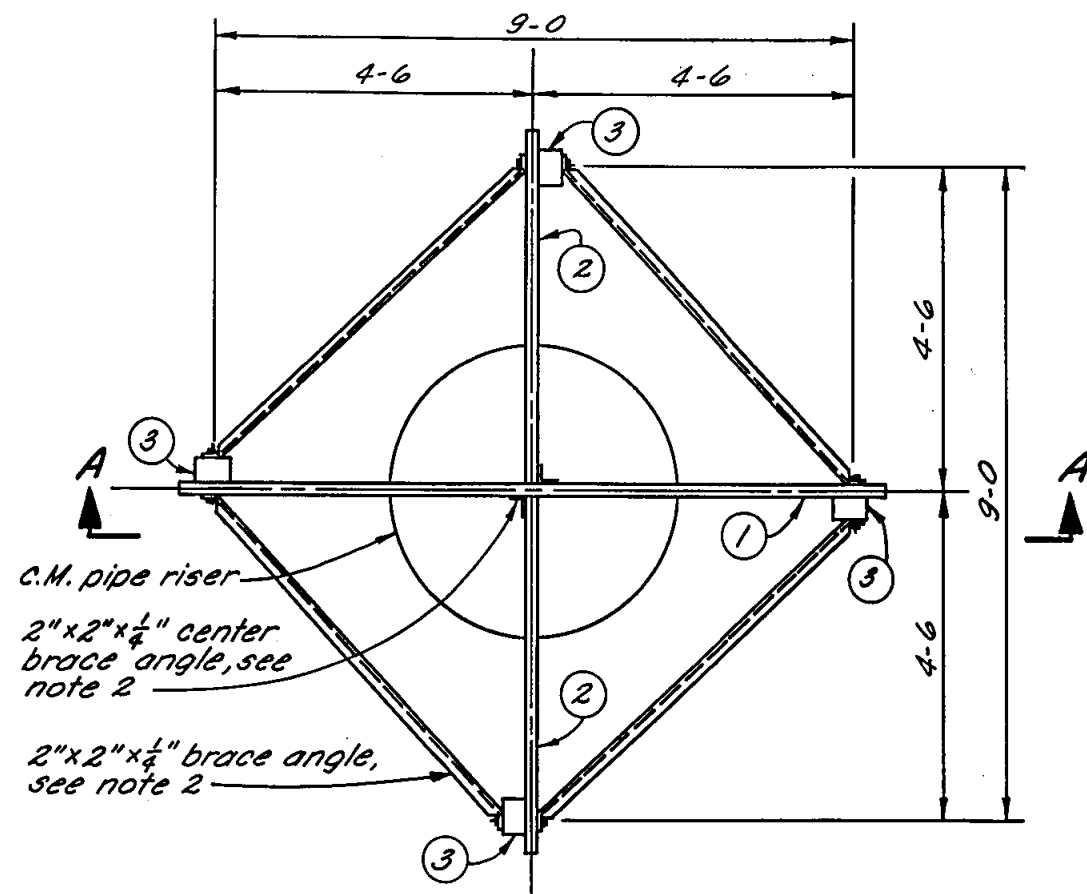
C.M. PIPE RISER WITH FABRICATED TEE

OPERATOR: <u>Peno Dam</u>	
CONSERVATION DISTRICT: <u>Hyde Co.</u>	
U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	
Designed: <u>J. Reedy</u>	Date: <u>10/97</u>
Drawn: _____	Approved by: _____
Traced: _____	Title: _____
Checked: _____	Sheet: <u>7</u> of <u>8</u>
	Drawing No. _____

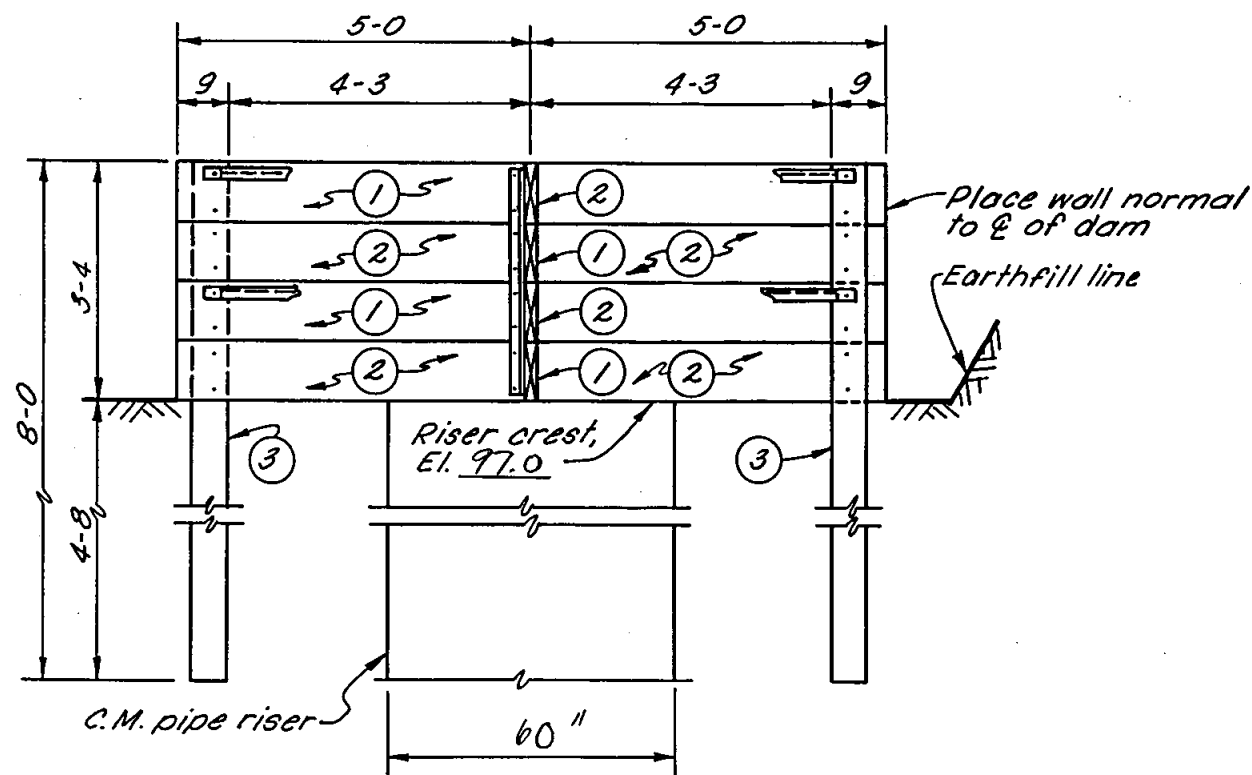
REFERENCE: GUIDE PLAN NO. 5.3

JOB PLAN NO. 5.3

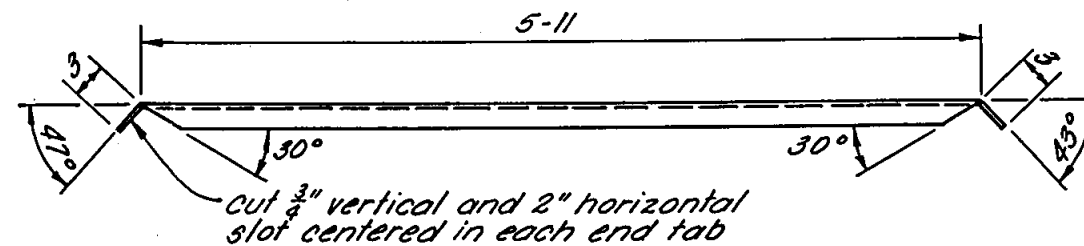
5, N-29, 073.5-30



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: <u>Pero Dam</u>	
CONSERVATION DISTRICT: <u>Hyde Co.</u>	
U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	
Designed: <u>J. Raby</u>	Date: <u>9/12</u>
Drawn: _____	Approved by: _____
Traced: _____	Title: _____
Checked: _____	Title: _____
	Sheet No. <u>8</u> of <u>8</u>
	Drawing No. _____

JOB PLAN NO. 6.4

5, N-29, 073.6-4a